### **Regulation 19 Representations**

3 messages

Dinny Shaw

To: "adurplanningpolicy@adur-worthing.gov.uk" <adurplanningpolicy@adur-worthing.gov.uk>

11 May 2016 at 15:25

Dear Sirs

Representations on Amendments to the Proposed Submission Adur Local Plan (2016)

Please find at the link below representations in response to the Regulation 19 consultation on the Amendments to the Proposed Submission Adur Local Plan (2016) which is open until the 11<sup>th</sup> May 2016 at midnight. These Reps are made on behalf of Hyde New Homes who own the land at New Salts Farm.

We submit the following information, in advance of the deadline, in support of these Reps:

- Regulation 19 Representations by Boyer
- Vision Document prepared by HGP
- Landscape Report by David Huskisson Associates
- Landscape Sensitivity and Capacity Assessment by David Huskisson Associates

The information is available at the following link: https://boyer.egnyte.com/fl/OGzTS1ji7n

We would appreciate if you would confirm safe receipt of this email and the enclosed documents.

We look forward to engaging with you further through this process.

Kind regards

Dinny

**Dinny Shaw MRTPI** 

Principal Planner Boyer Twickenham

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#### Planning Policy <planning.policy@adur-worthing.gov.uk> To: Dinny Shaw

11 May 2016 at 15:53

#### Dinny,

Please accept this email as confirmation of receipt of your representation regarding the Amendments to the Proposed Submission Adur Local Plan. I can also confirm that the link within your email to a number of other documents also works.

#### Regards,

**Ben Daines** Senior Planning Policy Officer [Quoted text hidden]

**Planning Policy Team** Adur and Worthing Councils

**Dinny Shaw** 

To: Planning Policy <planning.policy@adur-worthing.gov.uk>

11 May 2016 at 15:55

Thank you

Kind regards

Dinny

From:

**Dinny Shaw MRTPI** Principal Planner Boyer Twickenham

] On Behalf Of Planning Policy [mailto: Sent: 11 May 2016 15:54

To: Dinny Shaw Subject: Re: Regulation 19 Representations

[Quoted text hidden]

# Regulation 19 Representations Adur Local Plan

Land at New Salts Farm, Lancing



Prepared by Boyer on behalf of Hyde New Homes | April 2016

# Report Control

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# **EXECUTIVE SUMMARY**

These representations ('Reps') have been prepared on behalf of Hyde New Homes in response to the Regulation 19 consultation currently being carried out by Adur District Council on the Amendments to the Proposed Submission Adur Local Plan (2016).

We have set out in these Reps our submissions regarding the deficiencies in the Council's Local Plan. We are of the view that the Local Plan as currently drafted cannot be found sound as it is not positively prepared, justified, effective or consistent with National Policy.

The reasons for this are: the plan does not cover a 15 year time period; the Plan does not meet the objectively assessed housing needs; the Council does not have a five year housing land supply (5yhls) and is overly reliant on the proposed site allocations to meet its proposed housing target; the landscape studies are an unreliable evidence base, and site assessment and assessment of reasonable alternatives in the Sustainability Appraisal is considered to be inadequate.

We have provided with these Reps additional supporting information and studies which include: a review of the Adur 2015 objectively assessed needs of 291 homes per annum (Boyer OAN Review at Appendix 1); a comparative landscape sensitivity and capacity assessment of the proposed Adur District Local Green Gap (DHA Assessment); a landscape report (DHA Landscape report) and a Vision Document. These should be read in conjunction with our Reps.

We submit that in order to address the deficiencies in the Local Plan the land at New Salts Farm should be allocated to deliver 455 new homes in a sustainable location on the edge of Lancing. The allocation of the site would contribute towards the Council's 5yhls and contribute towards the objectively assessed housing need across the Plan period.

We have submitted evidence to demonstrate that the constraints to the site identified by the Council, namely flood risk and landscape, can be overcome and the site is deliverable and developable without constraints and can be allocated for residential development.

We propose that to address the deficiencies in the Local Plan the Inspector should, at the request of the Local Planning Authority, recommend main modifications to make the Plan sound. We propose that these modifications should include the allocation of New Salts Farm for housing development, subsequent inclusion of a new policy relating to the allocation and amendments to Policy 2 (Spatial Strategy) and Policy 3 (Housing Provision) to reflect this allocation along with amendments to the Proposals Map to include the site in the Built Up Area Boundary and remove it from the Countryside and Local Green Gap designation. Our recommendations for amendments to the Plan are set out at Section 6 of this report in full.

We consider that the allocation of New Salts Farm to deliver new homes would address the identified deficiencies in the Local Plan and the Plan can then be found sound.

# **1. INTRODUCTION**

- 1.1 These representations to the Regulation 19 consultation ('Reps') are submitted on behalf of Hyde New Homes.
- 1.2 The response provides comments on the Amendments to the Proposed Submission Adur Local Plan (2016) and Proposed Submission Adur Local Plan (2014) and its supporting evidence base. These Reps are in addition to those submitted by Boyer in December 2014.
- 1.3 Hyde New Homes have been providing new homes since 1967 and have a strong track record for promoting and delivering projects of an exceptional quality.
- 1.4 Hyde New Homes have a particular interest in the spatial strategy and housing policies which the Council proposes. Specifically the company owns the site known as New Salts Farm to the east of Lancing which is being promoted to be included as a strategic residential allocation within the Local Plan.
- 1.5 It is considered that the site can accommodate around 455 new high quality homes to be delivered in a sustainable location on the edge of Lancing, set within high quality landscaping and new public open space.
- 1.6 The site has been identified in the SHLAA (site ref: ADC/106/13) as potentially suitable for residential development, subject to overcoming identified flooding and landscape constraints.
- 1.7 The site has also been subject to assessment in the site options for the Sustainability Appraisal. New Salts Farm falls across two of those sites considered in the site options: site 6 (Land North West of Hasler Estate or 'Hasler') and site 7 (Land North East of Hasler Estate). Site 6 was originally included in the spatial strategy alternatives in 2012 but has subsequently not been included as a site allocation on flooding grounds.
- 1.8 Adur District Council has put forward a preferred housing growth target of 3,609 dwellings between 2011 and 2031 (180 dwellings per annum). This compares to an objectively assessed need (OAN) of 5,820 dwellings (291 per annum) identified in a study produced for Adur in 2015 ('2015 OAN') by GL Hearn
- 1.9 Hyde New Homes commissioned Boyer to examine the Adur OAN prepared by GL Hearn in 2015 and to prepare an objective assessment of the housing requirements in the district (Boyer OAN Review at Appendix 1). The report, which should be read alongside these Reps, identifies the OAN to be a minimum of 6,480 dwellings over the Plan period ('2016 OAN') equating to 324 dwellings per annum (based on 9% market signals uplift), an increase of 33 dwellings per annum from the 291 dwellings identified by GL Hearn. This report also considers an additional scenario based on recommendations in the Local Plan Expert Group Paper (March 2016) which could further increase the OAN.
- 1.10 In this statement we put forward our submissions regarding the deficiencies in the Council's Local Plan which results in the plan being unsound, namely:

#### Plan Period

1.10.1The Local Plan on adoption will not cover a 15-year time period and is not in accordance with paragraph 157 of the National Planning Policy Framework (NPPF) and is therefore unsound.

#### Housing Requirement

- 1.10.2The OAN of 291 dwellings per annum identified in the Adur OAN does not adequately reflect the full scale of housing need in the district. Boyer has identified a more realistic OAN of a minimum of 324 dwellings per annum.
- 1.10.3There is a significant level of unmet need in the Sussex Coastal area with a predicted shortfall of 1,552 dwellings per annum against the Sussex Coast HMA over the 2011 – 2031 period, which should be taken into account when considering how much housing Adur can accommodate.
- 1.10.4The Coastal West Sussex Strategic Housing Market Assessment (SHMA) is not fit for purpose and is out of date.
- 1.10.5The proposed housing requirement fails to address NPPF para 182 in so far as it has not been planned positively or to meet objectively assessed housing needs.
- 1.10.6The balance between the three elements of sustainable development has not been properly struck in the Local Plan in terms of the level of new housing in relation to the needs of the area, and the positive benefits that additional housing, including affordable housing, would provide in social and economic terms, compared to environmental impacts.

#### Housing Delivery

- 1.10.7The 5 year housing land supply (5yhls) does not account for the standard 10% lapse rate in respect of site with planning permission and only includes a 5% buffer. Taking these points into account the Council can only demonstrate 4.2 years housing land supply against the proposed target in the Local Plan and significantly less when measured against the 2015 OAN and Boyer 2016 OAN.
- 1.10.8There is an overreliance on the proposed site allocations in terms of the plans delivery and unrealistic assumptions on timing of delivery of new homes on these sites. When taking account of a more realistic housing trajectory for the proposed site allocations this further reduces the 5yhls to 3.0 years.

#### Alternative Sites

1.10.9Adur's landscape studies cannot be relied upon as an evidence base due to a number of inadequacies including that they have no detailed methodology and therefore are not transparent in this regard.

- 1.10.10 The assessment of site options has been inconsistent in the sustainability appraisal, particularly in respect of landscape and flood risk.
- 1.10.11 The assessment of 'reasonable alternatives' in the sustainability appraisal is considered to be inadequate.
- 1.11 On the basis of the information provided in these Reps we are of the view that the Local Plan as currently drafted cannot be considered 'sound' as it is not:
  - Positively Prepared the Plan does not meet objectively assessed housing development requirements and has not engaged every effort to meet those needs.
  - Justified the Plan has not considered all reasonable alternatives to meet objectively assessed housing needs and cannot be considered the most appropriate strategy.
  - Effective the Plan is over reliant on delivery of the proposed site allocations to meet its proposed housing target, and falls well short of meeting objectively assessed needs.
  - Consistent with National Policy the Plan is not in accordance with the
    policies in the NPPF and has not struck the right balance in terms of sustainable
    development. The Plan would not enable the delivery of sustainable
    development given the significant shortfall in meeting objectively assessed
    housing needs.
- 1.12 We submit that the Land at New Salts Farm should be allocated in the Local Plan to address these deficiencies and put forward the following compelling reasons why it should be allocated:
  - Parts of the site are available immediately and its delivery would assist in meeting the Council's 5yhls.
  - The remainder of the site would be available post completion of the Adur Tidal Walls Scheme in 2018 and would assist in contributing towards the OAN across the Plan period.
  - The site would provide an appropriate level of affordable housing thereby addressing local need.
  - S.106 or Community Infrastructure Levy (CIL) contributions would provide a number of community benefits.
  - It has been demonstrated that those constraints identified by the Council to development of the site, namely flood risk and landscape, can be overcome.
  - The site is available and deliverable, without ownership constraints and controlled by an established house builder, and would assist in meeting the 5yhlsand flexibility in meeting housing needs across the Plan period.

- 1.13 A separate Vision Document prepared by HGP was submitted to Adur in response to their call for sites in March 2016. This document is submitted again alongside these Reps. The Vision Document is underpinned by the following detailed technical studies which, along with the document itself, should be read together with this statement:
  - Flood Risk Assessment by Tully De'Ath, incorporating a Sequential and Exception Test by Boyer
  - Ecology Report by The Ecology Partnership
  - Landscape Assessment by David Huskinsson Associates (DHA)
  - Transport Assessment by Motion
- 1.14 The technical studies demonstrate that there are no significant constraints to the development of the site. The site is available and capable of delivering high quality new homes set within open space and integrated into the landscape, in a sustainable location with good access to public transport and local facilities and amenities.
- 1.15 It should be noted that an updated masterplan has been produced since submission of the original Vision Document which is included at Appendix 2 to this document. This was updated in response to comments received from Adur Council officers at a pre-application meeting in April 2016.
- 1.16 In addition to the supporting documents noted above, and given our concerns around the reliability of Adur's landscape studies, DHA were engaged to undertake two separate landscape studies which are submitted alongside and also support these Reps. These are the Landscape Sensitivity and Capacity Assessment ('DHA Assessment') and the Landscape Report ('DHA Landscape Report').
- 1.17 We have set out at Section 6 of these Reps the amendments we consider to be necessary to the Local Plan in order to address the identified deficiencies and for it to be found sound; specifically New Salts Farm should be allocated to deliver 455 homes across the Plan period.
- 1.18 We propose that the local planning authority should when submitting the plan for examination, request under Section 20(7C) that the Inspector recommends modifications of the document that would make the plan sound.
- 1.19 We propose that the Inspector recommends the allocation of New Salts Farm to deliver 455 new homes across the Plan period, in line with our recommendations at Section 6, as main modifications to the Local Plan to make the plan sound.
- 1.20 Aside from this introduction this document is set out as follows:
  - In Section Two we provide a brief review of National Policy
  - In Section Three we provide our critique of the councils proposed Local Plan
  - In Section Four we provide our critique of the Sustainability Appraisal of the proposed Local Plan

- In Section Five we highlight the suitability and potential of the land at New Salts Farm
- In Section Six a summary of our responses and recommendations in the context of specific policies is set out

# 2. STRATEGIC PLANNING CONTEXT

#### The National Planning Policy Framework

2.1 Paragraph 14 of the NPPF sets out the presumption in favour of sustainable development, which is a golden thread running through plan-making and decision taking. For plan making it means that:

"Local planning authorities should positively seek opportunities to meet the development needs of their area;

Local Plans should meet objectively assessed needs, with sufficient flexibility to adapt to rapid change, unless:

- any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework take as a whole; or

- specific policies in this Framework indicate development should be restricted."

- 2.2 Paragraph 15 requires policies in local plans to follow the presumption in favour of sustainable development so that it is clear that development which is sustainable can be approved without delay.
- 2.3 Paragraph 17 sets out the core planning principles which should underpin plan making and decision making, and these include:

"Proactively drive and support sustainable economic development to deliver the homes, business and industrial units, infrastructure and thriving local places that the country needs. Every effort should be made objectively to identify and then meet the housing, business and other development needs of an area, and respond positively to wider opportunities for growth. Plans should take account of market signals, such as land prices and housing affordability, and set out a clear strategy for allocating sufficient land which is suitable for development in their area, taking account of the needs of the residential and business communities;"

2.4 Paragraph 47 identifies that to boost the supply of housing local planning authorities should:

"Use their evidence to ensure that their Local Plan meets the full, objectively assessed needs for market and affordable housing in the housing market area, as far as is consistent with the policies set out in this Framework, including identifying key sites which are critical to the delivery of the housing strategy over the plan period."

2.5 Paragraph 151 identifies that 'Local Plans must be prepared with the objective of contributing to the achievement of sustainable development.'

- 2.6 Paragraph 152 sets out that local planning authorities should seek to achieve net gains across each of the three dimensions of sustainable development but acknowledges that this is not always possible and states that '*Significant adverse impacts on any of these dimensions should be avoided and, wherever possible, alternative options which reduce or eliminate such impacts should be pursued. Where adverse impacts are unavoidable, measures to mitigate the impacts should be considered. Where adequate mitigation measures are not possible, compensatory measures may be appropriate.'*
- 2.7 Paragraph 158 states that 'each local planning authority should ensure that the Local Plan is based on adequate, up to date and relevant evidence about the economic, social and environmental characteristics and prospects of the area.'
- 2.8 Paragraph 159 outlines the evidence required to underpin a local housing target and identifies that local planning authorities should:

*"Prepare a Strategic Housing Market Assessment to assess their full housing needs, working with neighbouring authorities where housing market areas cross administrative boundaries."* 

2.9 And:

"Prepare a Strategic Housing Land Availability Assessment to establish realistic assumptions about the availability, suitability and the likely economic viability of land to meet the identified need for housing over the plan period."

2.10 Paragraph 181 states that:

"Local planning authorities will be expected to demonstrate evidence of having effectively cooperated to plan for issues with cross-boundary impacts when their Local Plans are submitted for examination".

2.11 Paragraph 182 identifies that the local planning authority should submit a plan for examination which it considers is sound namely that it is:

'Positively prepared – the plan should be prepared based on a strategy which seeks to meet the objectively assessed development and infrastructure requirements, including unmet requirements from neighbouring authorities where it is reasonable to do so and consistent with achieving sustainable development;

Justified – the plan should be the most appropriate strategy, when considered against the reasonable alternatives, based on proportionate evidence;

Effective – the plan should be deliverable over its period and based on effective joint working on cross-boundary strategic priorities; and

Consistent with national policy – the plan should enable the delivery of sustainable development in accordance with the policies in the Framework.'

2.12 National policy sets out the presumption in favour of sustainable development and emphasises the need to make every effort to provide sufficient housing to meet objectively assessed housing needs unless adverse impacts demonstrably outweigh the benefits. It is clear in national policy that there is a balance to be struck between the three elements of sustainable development; economic, social and environmental.

# 3. REVIEW OF LOCAL PLAN

#### **Spatial Strategy**

- 3.1 The Council's spatial strategy seeks to maximise development on brownfield land within existing settlements while adding sustainable greenfield urban extensions adjacent to existing urban areas in locations which give opportunity for integration with existing communities and use of nearby facilities, services and public transport. It also seeks to prevent coalescence to help maintain the existing character of the settlements and ensure development is sustainably located.
- 3.2 It acknowledges that there is a need to balance the development and regeneration requirements of the district against the physical capacity of Adur without having detriment to the environmental quality.
- 3.3 Policy 2: Spatial Strategy seeks to focus development in the Built Up Area Boundaries, Shoreham Harbour, Shoreham Airport and two greenfield sites: New Monks Farm, Lancing and West Sompting.
- 3.4 Policy 3: Housing Provision seeks to deliver a minimum of 3,609 dwellings comprising 1,429 within the built up area of Adur, 1,100 in Shoreham Harbour, 600 at New Monks Farm and 480 at West Sompting.
- 3.5 The Council's strategy to promote development in the most sustainable locations is supported in principle; however we put forward in our submission what we believe to be the deficiencies in the Plan.

#### Plan Period

- 3.6 The Local Plan period is from 2011 to 2031. The anticipated adoption date, as set out in the Adur Local Development Scheme (LDS) is March 2017. This means that even where the Council's programme for preparation of the plan accurately follows the main milestones set out in the LDS, on adoption it will only cover a 14 year period. It is therefore not in accordance with para 157 of the NPPF which seeks a 15 year time horizon, or para 47 which sets out that local planning authorities should where possible identify a supply of specific, developable sites for years 11 to 15. The plan is therefore unsound on this basis
- 3.7 The Local Plan period must therefore be updated to add at least an extra year to provide a 15 year time horizon with housing projections rolled forward over this time period.

#### **Strategic Housing Market Assessment**

3.8 NPPF Paragraph 159 sets out that local planning authorities should prepare a Strategic Housing Market Assessment to assess their full housing needs, working with neighbouring authorities where housing market areas cross administrative boundaries.

- 3.9 Adur falls within the Coastal West Sussex Housing Market Area which also includes Chichester, Arun, Worthing, Brighton and Hove and Lewes. The most recent Strategic Housing Market Assessment for this area is the Coastal West Sussex Strategic Housing Market Assessment (SHMA) Update dated November 2012. A number of studies have been carried out since this date but have not updated the SHMA. The SHMA is therefore already 4 years out of date, and will be at least 5 years out of date by the time of the anticipated adoption of the Adur Local Plan. The NPPG states that local needs assessments should be informed by the latest available information and the NPPF is clear that Local Plans should be kept up to date.
- 3.10 It is our view that the 2012 SHMA is out of date and not based on the most recent available information and therefore is not fit for purpose. The Local Plan is therefore not based on adequate, up-to-date and relevant evidence and it is therefore unsound.
- 3.11 What is also relevant, as is demonstrated in the OAN Review undertaken by Boyer (Appendix 1), is that there is a significant level of unmet need in the Sussex Coastal area particularly following inspectors reports on the Local Plans at Brighton and Hove (March 2016) and Lewes (March 2016) agreeing targets less than the objectively assessed needs for these districts. There is a predicted shortfall of 1,552 dwellings per annum against the Sussex Coast HMA over the 2011 2031 period. This does not include any shortfall which might arise from Arun whose Local Plan is currently under review or from the South Downs National Park which is almost inevitably going to fall short of meeting its OAN.
- 3.12 Therefore as a minimum there is a significant exported need across the HMA of at least 1,552 dwellings per annum (31,040 dwellings across the Plan period), which will have a significant consequence for affordability.
- 3.13 This should be taken into consideration when considering how much housing Adur can accommodate. Chichester, Brighton and Hove and Lewes, have all had housing targets agreed at levels which do not meet their objectively assessed needs. Adur, at its current proposed target, will be further contributing towards that shortfall across the HMA as it is not proposing to meet its own 2015 OAN which worsens the situation bringing the shortfall to 1,663 dwellings per annum (33,260 over the Plan period) and is further increased when considered against the 2016 OAN.
- 3.14 It is therefore clear that Adur should be making every effort to at least meet its own OAN, and in the context of the wider exported need across the HMA, should be building as many homes as possible. In this regards we consider that Adur has not demonstrated that it has made every effort to meet housing need.

#### **Housing Requirement**

3.15 Contrary to the NPPF the emerging Plan proposes a constrained housing target of 3,609 across the Plan period which falls significantly below the 2015 OAN identified by GL Hearn of 5,820 dwellings.

#### **Objectively Assessed Housing Need**

- 3.16 As set out in our accompanying OAN Review undertaken by Boyer (Appendix1) we consider there to be several factors to support a higher OAN for the District of a minimum of 6,480 dwellings across the Plan period or 324 dwellings per annum (based on a just a 9% market signals uplift), thereby further increasing the gap between the number of dwellings that the Council intend to plan for (180 per annum), and the actual number required.
- 3.17 Against the Council's own 2015 OAN with a constrained housing target of 180 dwellings per annum it is only meeting 62% of its housing need but this significantly worsens to just 56% when based on Boyer's 2016 OAN.
- 3.18 In terms of affordable housing, the 2015 OAN report sets out the level of need in Adur as 233 homes per annum. It then goes on to suggest that the need is in fact 141 homes per annum over the Plan period taking account of the annual supply of re-lets. However, as set out in Boyer's OAN Review this approach is fundamentally flawed, given that he 233 homes per annum already takes account of re-lets. This is in addition to a number of other concerns in the approach to calculating affordable housing need set out in the 2015 OAN Report. Therefore we consider that the affordable housing need is at least 233 dwellings per annum, rather than the 141 set out in the 2015 OAN.
- 3.19 Adur in its OAN suggests that an increase of 10 dwellings per annum would improve affordability but this figure arguably would not achieve any significant improvements.
- 3.20 In any case the council is only proposing a target of 180 dwellings per annum (against the OAN of 291 which 'takes account' of affordability) which would only achieve around 54 affordable units per year if 30% is assumed. This falls significantly short not only of the level of need identified in the 2015 OAN by 87 dwellings per annum, but is even worse when considered against what we consider is a more realistic figure for affordable housing need by 179 dwellings per annum (as set out at Table 1 below).

| Target per annum      | Affordable Shortfall of housing of net need of (shortfall of annum) at 30% per annum period) |              | Shortfall of affordable<br>housing compared to net<br>need of 233 (shortfall<br>over 20 yr plan period) |
|-----------------------|--|--------------|---|
| 180 (proposed target) | 54   | -87 (-1,740) | -179 (-3,580)   |
| 291 (GL Hearn OAN)    | 87   | -54 (-1,074) | -146 (-2,914)   |
| 324 (Boyer OAN)       | 97   | -44 (-876)   | -136 (-2,716)   |
| 371 (LPEG OAN)        | 111  | -30 (-594)   | -122 (-2,434)   |

Table 1: Potential affordable housing delivery at 30% of total based on proposed targets

- 3.21 This should also be considered in the context that there is significant unmet demand across the wider HMA which is further contributing towards affordability issues in the sub region.
- 3.22 It is therefore considered that Boyer's 2016 OAN of at least 324 dwellings per annum is more appropriate as even though it would not completely meet affordable need, it would deliver a greater amount of affordable housing with an appropriate amount of market housing to meet assessed needs.
- 3.23 We consider that where Adur are falling so far short of meeting their own 2015 OAN figure, let alone Boyer's 2016 OAN figure, the Council has not demonstrated every effort has been made to meet housing need, including affordable housing, in terms of seeking as many suitable and appropriate sites as possible for new housing that are realistically deliverable and developable in sustainable locations in the district.
- 3.24 The reasons given for not meeting their objectively assessed housing needs are identified as flood risk and landscape constraints. We believe that the Council has been overly cautious in its approach to allocating sites and has not left every stone unturned in seeking sites that are deliverable and developable to provide new homes within the district. Specifically in respect of flood risk and landscape our concerns with the Council's approach is addressed further below.

#### Flood Risk

- 3.25 Adur has identified flood risk as a significant constraint to development in the district with the River Adur bisecting the District and given its coastal location.
- 3.26 However, given the significant shortfall in meeting the objectively assessed housing need already identified in Adur there is a need to introduce additional sites as Strategic Allocations as there will continue to be a need for new housing to be delivered within the Local Plan Area.
- 3.27 We put forward that flood risk is not a constraint which cannot be overcome in respect of New Salts Farm site and that Adur has been inconsistent in its approach to sites at risk of flooding.

#### Sequential and Exception Test

- 3.28 The Council has already accepted the principle that sites within Flood Zone 3a and 3b will be required to be allocated in order to meet objectively assessed needs within the District.
- 3.29 The Adur and Worthing Councils Strategic Flood Risk Assessment (SFRA) (2012) identifies that 8 of the 10 allocated sites in Adur are at risk of flooding from the River Adur and wave overtopping and are in Flood zone 3a with 6 partially in Flood Zone 3b. New Monks Farm is predominantly within Flood Zone 3a with parts in Zone 1 and 2, Shoreham Airport falls within Flood Zone 3b with parts in 3a, 2 and 1, and Shoreham Harbour is within Flood Zones 1, 2 and 3a.

3.30 Adur's Sequential and Exceptions Test dismisses New Salts Farm (known as Land North East of Hasler Estate) as not sequentially preferable as it is located in Flood Zone 3a and 3b and that no evidence has yet been submitted to overcome concerns regarding surface water and groundwater flooding. It also states that:

'Land North East of Hasler Estate, were excluded, not specifically because they are at risk of flooding, but because there is still no evidence at this stage of the plan process to suggest that the numerous flood issues on these sites can be overcome. Both the Environment Agency and West Sussex County (as the Lead Local Flood Authority) have also expressed significant concerns about the flood risk on these sites. Therefore, there are large uncertainties about the delivery and viability of development at these sites which is why they have been excluded from the Sequential and Exceptions Test'.

- 3.31 However, in respect of New Monks Farm recommended mitigation to flood risk is proposed within the Sequential and Exceptions Test. We would put forward that the proposed mitigation methods identified for New Monks Farm in the Strategic Flood Risk Assessment could equally be applied to New Salts Farm, with a site specific Flood Risk Assessment being provided at planning application stage and the site could therefore be allocated for housing.
- 3.32 Notwithstanding this, Boyer have prepared a site specific Sequential and Exception Test (which accompanies these representations and should be read in conjunction with them) which demonstrates that there are no other suitable or available sites within Adur of a similar capacity which could provide the development proposed at New Salts Farm and that fall into an area with a lower probability of flooding. Further the site is demonstrated to provide sustainability benefits to the wider community that outweigh flood risk and would incorporate measures to manage and mitigate flood risk at the site without increasing flood risk elsewhere.
- 3.33 The site is therefore deliverable and developable can be allocated for residential development in the Local Plan.

#### Flood Risk Assessment

- 3.34 Recommendations in the SFRA in respect of New Salts Farm identify that the site would need to demonstrate it passes the Exception Test and provide a site specific Flood Risk Assessment, it also suggests a sequential approach to development to minimise flood risk.
- 3.35 As noted earlier, one of the reasons Adur has stated for not taking forward New Salts Farm as a strategic site allocation is a lack of evidence to suggest flood issues on these sites can be overcome. However the SFRA provides a strategic view across the district and identifies potential measures to address flood risk at a strategic level. This document does not suggest that the site is incapable of overcoming flood risk and states that *'all development proposals should be accompanied by a FRA'*. Therefore at a strategic level there is nothing to suggest that the site cannot be developed.

- 3.36 Indeed as noted earlier New Monks Farm and Shoreham Airport have been taken forward as site allocations based on evidence in the SFRA and despite being within Flood Zones 3a and 3b.
- 3.37 We would put forward that the appropriate stage at which to submit evidence to demonstrate how flood risk on individual sites could be managed and mitigated is normally at the point of submitting a planning application whereby a site specific Flood Risk Assessment would be provided as is advocated in the SFRA.
- 3.38 In this regard para 4.129 of the Local Plan states that 'Where sites have passed the sequential test, they have been assessed against the objectives of the Sustainability Appraisal to determine whether the sustainability benefits to the community outweigh flood risk as part of the Exceptions Test. The sites that demonstrate these wider benefits and have also shown that flood risk on the site can be managed without increasing flood risk elsewhere have been allocated in this plan.' It goes on to say 'The second part of the Exceptions Test requires that a site specific flood risk assessment must be undertaken to demonstrate that the development will be safe for its lifetime taking account of the vulnerability of users, without increasing flood risk elsewhere, and , where possible, will reduce flood risk overall. This part of the Exceptions Test would be undertaken at planning application stage.'
- 3.39 The Council therefore accepts that the second part of the Exception Test would be undertaken at planning application stage.
- 3.40 Notwithstanding this we have prepared a site specific Flood Risk Assessment to demonstrate how flood risk would be managed and mitigated on site for the lifetime of the development without increasing flood risk elsewhere (the FRA accompanies these representations and should be read in conjunction with them).
- 3.41 Therefore the Council now has before it a Sequential and Exceptions Test and site specific Flood Risk Assessment which demonstrates that there are no other sequentially preferable sites which could deliver the development and how flood risk can be overcome on the site.
- 3.42 This evidence has demonstrated that flood risk is not a constraint to development in respect of New Salts Farm and the site can be allocated in the Local Plan.

#### Shoreham Adur Tidal Walls

3.43 The Adur Planning Committee resolved to grant planning permission, subject to conditions, at the committee meeting on the 15<sup>th</sup> March 2016 for the Shoreham Adur Tidal Walls scheme, a scheme for improved flood defences in the River Adur. When implemented, these will have a positive impact at the New Salts Farm site by partly addressing concerns regarding tidal and fluvial flooding. It would also re-designate those parts of the site within Flood Zone 3b as Flood Zone 3a.

- 3.44 The Sustainability Appraisal for the Adur Local Plan identifies that New Salts Farm is located within Flood Zone 3a and 3b and it is therefore dependent on construction of the Shoreham Tidal Walls scheme, however in respect of Shoreham Airport which falls with Flood Zone 3b a different approach has been taken.
- 3.45 In respect of Shoreham Airport the Sequential and Exception Test states that 'Shoreham Airport, which is currently designated as Flood Zone 3b (functional floodplain), would be redesignated as Flood Zone 3a (high probability) following construction of the tidal walls. This has been reflected in this Sequential Test'.
- 3.46 The summary of the Sequential Test concludes that 'Development at Shoreham Airport is not currently appropriate due to the site's designation as Flood Zone 3b: functional floodplain. However once the Shoreham Tidal Walls have been constructed, the flood zone for both sites (sic) will change to 3a (high probability) which will then allow Shoreham Airport to pass the test.'
- 3.47 Taking this into account proposed Policy 7: Shoreham Airport in the Local Plan states that 'Due to the current Flood Zone 3b (functional floodplain) designation at the Airport, no development shall take place within the allocated area until the relevant section of the Shoreham Adur Tidal Walls on the west bank has been completed'.
- 3.48 We accept that parts of the New Salts Farm site within Flood Zone 3b could not be developed until after the Shoreham Tidal Walls scheme has been completed and the area has been re-designated. However there are areas of the site which fall with Flood Zone 3a and could be developed in the short term prior to completion of the Shoreham Tidal Walls scheme. Further there is no reason why those parts of the site falling within Flood Zone 3b currently could not be addressed in a similar approach to that adopted by the Council for Shoreham Airport site allocation.
- 3.49 This would enable those parts of the site within Flood Zone 3a to be delivered in the short term and contribute towards the 5yhls with those in Flood Zone 3b delivered post completion of the Shoreham Tidal Walls. In any case, with completion anticipated in 2018 this would enable delivery of the whole site within the Plan period.

#### Summary of Flood Risk Constraints

- 3.50 The Council has, in allocating New Monks Farm, Shoreham Airport and Shoreham Harbour as strategic sites, already accepted the principle that development is necessary within the flood zone in order to seek to meet the needs of the district and that any flood risk is capable of being mitigated. However given the significant shortfall in meeting objectively assessed housing need in Adur, there is a need to allocate additional sites to deliver new homes within the plan period.
- 3.51 A site specific Sequential and Exceptions Test and Flood Risk Assessment have been carried out for the site to demonstrate that it is suitable for development and that flood risk is not a constraint to development.

- 3.52 We consider that the evidence provided demonstrates that there no flooding constraints to the strategic allocation of New Salts Farm in the Local Plan to deliver new homes in Adur
- 3.53 Further that construction on those parts of the site within Flood Zone 3b could be controlled through appropriate wording in policy, as is adopted for Shoreham Airport, to ensure these areas are not delivered prior to completion of the Shoreham Adur Tidal Walls and its redesignation as Flood Zone 3a.

#### Landscape

- 3.54 Landscape and the importance of the Local Green Gaps and resistance to coalescence is also identified in the Local Plan as a significant constraint to development within Adur. Notwithstanding this the Council have accepted that there is a need to allocate greenfield sites to meet development needs however it has not gone far enough.
- 3.55 The Council commissioned a number of studies to inform the release of greenfield sites including the Urban Fringe Study 2006, Landscape and Ecology Study 2012, and most recently the Landscape Study Update 2016 (referred to collectively as Adur's landscape studies in this report). These documents seek to identify opportunities and constraints in landscape terms for development.
- 3.56 New Salts Farm spans two character areas identified in the study Area LG 6 (New Salts Farm) and Area LG 7 (Hasler Fringe). The results from the 2012 Landscape and Ecology Study and 2016 update are noted below. It is noted that the 2016 update amended the Overall Landscape Sensitivity in respect of LG6 but with no clear explanation as to why this had changed.

| LCA                      | Landscape cha<br>sensitivity | aracter         | Visual sensitiv | /ity            | Overall Landscape<br>sensitivity |                 |  |
|--------------------------|------------------------------|-----------------|-----------------|-----------------|----------------------------------|-----------------|--|
|                          | 2012                         | 2016            | 2012            | 2016            | 2012                             | 2016            |  |
| LSG6 (New<br>Salts Farm) | Medium-high                  | Medium-<br>high | Medium          | Medium-<br>high | Medium-low                       | Medium-<br>high |  |
| LSG7 (Hasler<br>Fringe)  | Medium                       | Medium          | Medium-low      | Medium-<br>Iow  | Medium                           | Medium          |  |

Table 2: Comparison of Landscape Sensitivity – New Salts Farm

3.57 For a comparison the results for those greenfield sites allocated are noted below (nb there was no change in the 2016 update to the landscape sensitivity results for these sites.). As can be seen, the sites that have been allocated have similar overall landscape sensitivity to New Salts Farm. It should be noted that West Sompting allocation crosses areas SG1, SG2 and SG3 and New Monks Farm falls within areas LG1 and LG2.

| LCA                           | Landscape character sensitivity | Visual sensitivity | Overall Landscape<br>sensitivity |  |  |
|-------------------------------|---------------------------------|--------------------|----------------------------------|--|--|
|                               | 2012                            | 2012               | 2012                             |  |  |
| WSG1<br>(Sompting)            | Medium                          | High               | Medium-high                      |  |  |
| WSG2<br>(Sompting)            | Medium-high                     | Medium-high        | Medium-high                      |  |  |
| WSG3<br>(Sompting)            | Medium                          | Medium             | Medium                           |  |  |
| LSG1 (New<br>Monks Farm)      | Low                             | Medium             | Medium-low                       |  |  |
| LSG2 (New<br>Monks Farm)      | Medium-low                      | Medium             | Medium                           |  |  |
| LSG3<br>(Shoreham<br>Airport) | Medium-high                     | High               | High                             |  |  |

Table 3: Comparison of Landscape Sensitivity – Greenfield Site Allocations

3.58 The Landscape Study from 2012 also includes indicative development principles. In respect of the areas within which New Salts Farm falls this states with regard to Land NW of Hasler Estate (LG7) that:

<u>"Development on this site could be accommodated without detriment to the landscape and</u> <u>visual character of this relatively enclosed part of the Lancing Gap</u>. Development areas could be slotted between areas of retained woodland/scrub and new belts of woodland would screen views to housing while conserving landscape character. There would be opportunities to provide an excellent multi-functional GI corridor, with much needed public access". (our emphasis)

3.59 It states in respect of Land NE of Hasler Estate (LG6) that:

"This development would be highly visible from local roads (A259 and New Salts Farm Road) and is in a relatively open landscape towards the fringes of the Adur Estuary. It would result in a change to the inherent landscape character; but with positive benefit sin terms of public access and the development of an enhanced built/landscape interface in this part of South Lancing. <u>There are not predicted to be detrimental impacts on key views across the Lancing Gap</u>. Development here could provide the catalyst for the sustainable management of land to the east of New Salts Farm Road for public access and nature conservation purposes, with further scope for enhancements to the adjacent Adur Recreation Ground and the footpaths on the edge of the Estuary". (our emphasis)

- 3.60 It is therefore clear that Adur's landscape studies have accepted the development potential of the site without detriment to the landscape or Lancing Gap, and yet the Local Plan has not allocated the site on landscape constraints.
- 3.61 A later study referred to in the Sustainability Appraisal 'New Salts Farm Landscape and Visual appraisal of development proposals' (2016) is no longer available to view on the Councils website therefore cannot be relied upon as evidence to the Local Plan, and as we are unable to view this we cannot comment on its appropriateness as an evidence base. Nevertheless the Sustainability Appraisal states that this document sets out a number of potential mitigation measures that could help to minimise the impact of development on views from the National Park and on the Local Green Gap but that the Council still have concerns regarding the impact such a development would have. Therefore it appears that even this latest study identifies potential mitigation measures for development of the site.
- 3.62 Notwithstanding that Adur seem to have drawn the conclusion from their own landscape studies that the site has landscape constraints, we consider that the above mentioned studies on which Adur Council relies as evidence for its Local Plan clearly demonstrate that the site is capable of development without adverse impact on landscape or the Local Green Gap or resulting in coalescence.
- 3.63 Nevertheless, we do have concerns about Adur's landscape studies themselves as an evidence base. There is no detailed methodology included and they are therefore not transparent in this regard and cannot be relied upon. Furthermore as mentioned there is a change in the overall landscape sensitivity of LG6 between 2012 and 2016, the reasons for which are not apparent and with no clear explanation this further amplifies the lack of transparency and inadequacy of the studies.
- 3.64 Hyde New Homes have therefore instructed David Huskisson Associates (DHA) to undertake a Comparative Landscape Sensitivity and Capacity Assessment of the Proposed Adur District Local Green Gap which addresses the landscape within the proposed Local Green Gaps ('DHA Assessment') and a Landscape Report ('DHA Landscape Report'). These documents seek to provide a more reliable evidence base and should be read alongside these Reps.

- 3.65 The DHA Assessment carries out a Landscape Sensitivity and Capacity Assessment for both the Worthing Sompting and Lancing Shoreham Local Green Gaps followed by analysis of the proposed Adur District Local Green Gaps and provides a critique of the landscape evidence base to the Local Plan noting a number of inadequacies.
- 3.66 The DHA Landscape Report summarises the DHA Assessment and compares the findings with the Adur evidence base studies to make recommendations as to whether New Salts Farm site could accommodate residential development without detriment to the landscape or the Local Green Gap.
- 3.67 Key findings from the studies are summarised below and highlight the inadequacies in Adur's landscape evidence base.
  - The Adur landscape evidence base provides no detailed methodology to define the criteria that underpin the assessment or demonstrate how they have been applied in a consistent and methodical way to reach assessment judgements and rankings.
  - The Adur landscape studies are an assessment of inherent landscape sensitivity and do not consider the sensitivity of the landscape to a particular type or scale of change.
  - The Adur landscape character area boundaries are flawed and do not reflect fundamental differences in character that are noted in assessment findings.
  - The visual sensitivity studies from 2012 and 2016 each consider 15 views selected as the most important – however they differ between the studies with no justification provided. A further two additional views are discussed and identified in 2016 as making important contributions to the Local Green Gap but no photographs or analysis are provided to illustrate this, as are provided with other important views.
  - The landscape character assessment rankings within each of the Adur urban fringe landscape studies from 2006, 2012 and 2016 draw different conclusions and it is unclear why given the premise that all three studies are based on landscape character assessment, and the limited physical and landscape planning policy change underpinning these studies.
  - There is a change in judgement and advice in terms of the landscape character areas sensitivity between the 2012 and 2016 studies with no justification or explanation provided.
  - The 2012 and 2016 Adur Landscape studies do not analyse the importance of the Local Green Gaps as a whole or of its constituent Landscape Character Areas to maintaining a physical and visual settlement separation.
  - There appears to be a lack of consistency in approach to the site allocations, given the Adur landscape evidence base suggests that there are six potential sites to accommodate development and yet there is no explanation as to why some of these have not been taken forward in the Local Plan.

- 3.68 As a result of these inadequacies it is not considered that Adur's landscape studies can be considered a reliable evidence base to support the site allocations or Policy 14 relating to Local Green Gaps.
- 3.69 The DHA Assessment demonstrates that different conclusions can be drawn with regard to the landscape sensitivity of parts of the proposed Local Green Gap when a detailed methodology is followed and when landscape sensitivity is considered in relation to specific types of development. It has also provided a finer grain of study to the character areas, taking advice from earlier assessment findings and what is evident on the ground.
- 3.70 The assessment demonstrates that there are a number of sites within the proposed Local Green Gaps that when properly assessed can be identified as having capacity to accommodate change. Specifically with regards to New Salts Farm the assessment finds that the site has a moderate-high capacity to accommodate housing.
- 3.71 It is considered that development of New Salts Farm will only affect views from the A259 to a very minor degree and would not result in any perception of visual coalescence, nor indeed would it result in physical coalescence. There is also a clear opportunity for substantial enhancement of the quality of the existing urban edge in urban design and landscape terms.
- 3.72 Further the allocation of New Salts Farm would not result in the loss of the whole of the Local Green Gap. Indeed the DHA Landscape report identifies that the area to the east of New Salts Farm Road makes a particular contribution to landscape setting and wider area of separation within the Local Green Gap and is therefore the most logical area to be retained as part of the Local Green Gap. Map 1 below demonstrates the area within the Lancing Shoreham Local Green Gap which would still be retained should New Salts Farm be allocated along with the already proposed allocations of New Monks Farm.

#### Summary of Landscape Constraints

- 3.73 In summary, notwithstanding our substantial concerns in respect of the reliability of Adur's landscape studies as an evidence base, there is a clear inconsistency in how Adur have adopted the advice within these studies in relation to taking forward site allocations in the Local Plan.
- 3.74 The DHA Assessment has demonstrated that there are a number of sites within the proposed Local Green Gaps with potential to accommodate change, and specifically New Salts Farm has moderate-high capacity to accommodate housing and would not result in coalescence as a significant area of space would be retained as a Local Green Gap.
- 3.75 We consider that New Salts Farm could be allocated for residential development and the Local Green Gap would still be maintained between Lancing and Shoreham-by-Sea (as demonstrated on the map above) and that the principles of landscaping and mitigation across the site can be set out through policy wording, as is the case with the proposed site allocations at New Monks Farm and West Sompting.

#### Figure: 1 Potential extent of Local Green Gap



#### **Summary of Constrained Housing Requirement**

- 3.76 We consider that the reasons for adopting a constrained housing figure in Adur are inappropriate in this instance. We have demonstrated that Adur have adopted an inconsistent approach to allocating sites on the basis of their own evidence base (notwithstanding its unreliability) with sites being excluded from the Local Plan on questionable reasoning.
- 3.77 We have demonstrated that flood risk is not a constraint to development at New Salts Farm which cannot be overcome through technical detail and an appropriate approach to policy wording. Further that the allocation of New Salts Farm would not result in demonstrable landscape impact or coalescence and the Local Green Gap would be maintained between Shoreham-by-Sea and Lancing.
- 3.78 The negative impacts of a constrained housing figure are significant, in social and economic terms due to not meeting housing, and affordable housing need in Adur, and further contributing towards the unmet need across the HMA.

- 3.79 This is at the expense of the environmental positive of maintaining a slightly larger Local Green Gap between settlements. However Adur have arguably placed too much emphasis on the positives of this environmental impact in contrast to the significant negatives in social and economic terms. Particularly when considering that the allocation of New Salts Farm would not so significantly reduce the Local Green Gap as to warrant it inoperable, as we have demonstrated.
- 3.80 We are of the view that Adur is able to allocate additional sites in the Local Plan in order to contribute more fully towards meeting its objectively assessed housing need, and that New Salts Farm should be allocated to contribute an additional 455 new homes over the Local Plan period.

#### **Housing Delivery**

- 3.81 NPPF Paragraph 17 sets out that Local Authorities should make every effort to meet the housing needs of an area. Paragraph 47 also sets out that in order to boost significantly the supply of housing, local planning authorities should identify a supply of specific deliverable and developable sites. Footnote 11 sets out that to be considered deliverable sites should be viable, available now, offer a suitable location for development now and be achievable with a realistic prospect that housing will be delivered within 5 years. Footnote 12 sets out that developable sites should be in suitable locations for housing development and that there should be a reasonable prospect that the site is available and could be viably developed.
- 3.82 In terms of housing delivery the Council has identified in Table 1 of the Plan, the housing delivery for the Plan period (2011 to 2031).

#### Past Completions

- 3.83 The Council has stated that it has delivered 528 dwellings in the period 2011 2015 based on monitoring by the local authority, but without knowing what the monitoring data comprises we reserve judgement on the reliability of this data. DCLG figures suggest just 340 completions have been achieved in this time. If it is found that the figure of 340 dwellings is more accurate this alone would have a significant negative impact on the 5yhls as calculated by Adur bringing it to just 4.5.
- 3.84 Nevertheless, for the purposes of this report we have used Adur's monitoring figure of 528. This figure equates to around 132 dwellings per annum, which is significantly below the target in the Local Plan of 180 dwellings per annum, let alone the 2015 OAN figure or 2016 OAN (see Table 4). As such, there is already a significant shortfall against the housing delivery figures.
- 3.85 As set out below, it is considered that there are also significant issues with the Council's assumptions in relation to their anticipated delivery from commitments; SHLAA sites; and strategic allocations.

| Period  | Completions (net) | Annualised Target<br>(180) | 2015 OAN (291) | 2016 OAN (324) |
|---------|-------------------|----------------------------|----------------|----------------|
| 2011/12 | 193               | 13                         | -98            | -131           |
| 2012/13 | 146               | -34                        | -145           | -178           |
| 2013/14 | 93                | -87                        | -198           | -231           |
| 2014/15 | 96                | -84                        | -195           | -228           |

Table 4: Past Completions against housing target and OANs

#### Commitments

- 3.86 The Council considers that 326 dwellings will be delivered through commitments which it defines as large sites of 6 or more dwellings and small sites of 5 or fewer dwellings that have extant permission and are either under construction or have not yet started.
- 3.87 Given the definition above it is odd that the Council have not included Riverbank Business Centre in their commitments given it was granted planning permission in June 2015. We have included this in commitments for the purposes of our calculations bringing the total to 446.
- 3.88 However, it is commonplace that not all commitments and permissions will be delivered and therefore it is standard to apply a lapse rate to these which the Council has not done in its calculations. A standard10% lapse rate would reduce the number of dwellings to be delivered through this route to 401

#### SHLAA Sites

- 3.89 Table 1 of the Plan also includes 291 dwellings to come forward on the eight sites identified in the Council's 2015 SHLAA.
- 3.90 The Council anticipate that all 291 potential dwellings will come forward within the first five years of the plan. We consider this to be highly unrealistic. Specifically for reasons noted in Table 5 below, we consider that the total from SHLAA sites should at least be reduced by 18 dwellings and the 120 at Riverbank should be moved to commitments (as noted above). This would bring the total to 153 dwellings.

| SHLAA/Monitoring<br>reference | Site  | Capacity | Achievability                          | Comment on achievability  |
|-------------------------------|---|----------|--|---|
| ADC/049/13                    | Riverbank Business<br>Centre, Shoreham-<br>by-Sea | 120      | Planning<br>permission<br>granted June | As this site now has<br>planning permission it<br>should be included in the |

Table 5: SHLAA Sites Achievability

|            |   |    | 2015  | commitments rather than SHLAA sites   |
|------------|---|----|---|---|
| ADC/083/13 | Lancing Manor<br>Filing Station,<br>Lancing       | 8  | Permission<br>refused<br>November<br>2015.<br>Appeal<br>Lodged<br>January<br>2016 | As this site is currently at<br>appeal following a refusal<br>there is no certainty that it<br>will come forwards,<br>especially in the first 5<br>years, and therefore should<br>not be included in the<br>SHLAA sites |
| ADC/09013  | Northbourne<br>Medical Centre,<br>Shoreham-by-Sea | 10 | Site no<br>longer being<br>marketed<br>and current<br>use is to be<br>retained    | As the Council has stated<br>that the current use of this<br>site is to be retained it<br>should no longer be<br>included as a SHLAA site   |

#### Site Allocations

- 3.91 The Plan proposes two Strategic Allocations and a Broad Location (New Monks Farm, West Sompting and Shoreham Harbour) which together are anticipated to deliver 2,048 net additional dwellings over the Plan period. Due to the high housing requirement there is a need to release some greenfield sites. The Council has recognised this and has released two sites at New Monks Farm (600 homes) and West Sompting (480 homes) totalling 1050 new homes. However, in our view, and in light of the deliverability risks associated with the strategic locations identified above, insufficient sites have been taken forward by the Council to meet these needs and further sites must be released.
- 3.92 As a general point, the anticipated supply from these three sites (2,048) equates to 57% of the overall housing supply. It is considered that the Plan is overly reliant on the delivery of these three sites to meet their target (notwithstanding our view that the target should be significantly increased) and does not provide the required flexibility to account for any potential problems with the future implementation of this strategy.
- 3.93 In terms of the specific suitability and deliverability of the three strategic sites, it is considered that there are outstanding matters that may jeopardise their deliverability particularly in the short to medium term and ability to contribute towards the 5yhls.
- 3.94 New Monks Farm is located adjacent to Shoreham Airfield, between the airfield and the built up area of Lancing and adjacent to the Brighton and Hove Football Academy and is expected to deliver 600 dwellings over the Plan period.
- 3.95 The site is owned by a development company and not a known house builder which could in turn delay the construction start date. In addition to this we understand that there has

been limited housebuilder interest in the site and therefore consider that the housing trajectory for this site is extremely unrealistic.

- 3.96 The site is not without its constraints, being located within the Local Green Gap and predominantly within Flood Zone 3a. As identified in the 2015 SHLAA, the delivery of the New Monks Farm designation is also subject to the resolution of transport matters alongside flood risk and landscape. We also understand that foul drainage is another matter requiring resolution. Whilst these constraints may not be barriers to development per se, they again raise questions about how quickly these large strategic sites could come forward.
- 3.97 In respect to infrastructure requirements the deliverability of the site requires significant investment, including a new roundabout and access road to be shared with the proposed new land allocation at Shoreham Airport. This further increases the deliverability risk for both sites as each is reliant on the other coming forward and within similar timeframes.
- 3.98 A planning application (application reference: L/168/05/TP) for the erection of 100 dwellings was refused by the Council in November 2010 of the northern part of the New Monks Farm site. The reasons for refusal include matters relating to the impact of the development on the Strategic Gap between Shoreham and Lancing; the impact of the proposal on the character and appearance of the area; the unacceptable impact on highways; and the impact of the impact of the impact of the proposal on ecology and nature conservation.
- 3.99 There are also significant delivery risks in respect to Shoreham Harbour, as outlined in the Nationwide CIL Service Adur District Council Whole Plan & Community Infrastructure Levy Viability Assessment (November 2014) (NCS). The site is assessed within the NCS as having a negative viability, due to complicated site assembly and significant abnormal costs, including: decontamination; transport infrastructure; flood risk mitigation; and relocation of existing businesses to appropriate alternative sites within the district and neighbouring districts. The NCS concludes that Shoreham Harbour has a negative viability which based on the Commercial and Residential Viability Appraisals (combined) would make a net development loss of more than £10M (based on zero CIL rate). According to the NCS report the viability of the Shoreham Harbour is therefore dependant on future government funding (Ref. NCS Chapter 6.10. p38) which would be reasonable to conclude cannot be relied upon.
- 3.100 In relation to the proposed allocation of Land at West Sompting for 480 dwellings this site is also located on greenfield land within the Local Green Gap between West Sompting and Worthing, which in this location is particularly narrow and sensitive to new development, and therefore is not without constraints.
- 3.101 We are of the view that, on the basis of the identified constraints to delivery for the site allocations of New Monks Farm, West Sompting and Shoreham Harbour a more realistic trajectory for their delivery is set out in Table 6 below, alongside the likely trajectory for New Salts Farm. This is the trajectory we have used in our 5 year housing land supply calculations as we believe it to be more realistic.

|                     | 15/16 | 16/17 | 17/18 | 18/19 | 19/20 | 20/21 | 21/22 | 22/23 | 23/24 | 24/25 | 25/26 | 26/27 | 27/28 | 28/29 | 29/30 | 30/31 | Total |
|---------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Shoreham<br>Harbour | 0     | 0     | 0     | 0     | 179   | 179   | 179   | 179   | 179   | 36    | 37    | 0     | 0     | 0     | 0     | 0     | 968   |
| Shoreham<br>Harbour | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 179   | 179   | 179   | 179   | 179   | 36    | 37    | 0     | 0     | 968   |
| New<br>Monks        | 0     | 0     | 0     | 80    | 80    | 80    | 80    | 80    | 80    | 80    | 40    | 0     | 0     | 0     | 0     | 0     | 600   |
| New<br>Monks        | 0     | 0     | 0     | 0     | 0     | 80    | 80    | 80    | 80    | 80    | 80    | 80    | 40    | 0     | 0     | 0     | 600   |
| West<br>Sompting    | 0     | 0     | 25    | 80    | 80    | 80    | 80    | 80    | 55    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 480   |
| West<br>Sompting    | 0     | 0     | 0     | 25    | 80    | 80    | 80    | 80    | 80    | 55    | 0     | 0     | 0     | 0     | 0     | 0     | 480   |
| New Salts<br>Farm   | 0     | 0     | 0     | 25    | 50    | 75    | 80    | 80    | 80    | 65    | 0     | 0     | 0     | 0     | 0     | 0     | 455   |

Table 6: Site Allocation Proposed Housing Trajectory 2015/2016 to 2030/2031(Adur Housing Trajectory in Red Boyer in Green)

- 3.102 Our case which is set out in more detail later in this report is that land at New Salts Farm should also be released for residential development to deliver around 455 new homes, including 75 within the 5year period 2015 to 2020. We make the case that development of the site is capable of being delivered and that those constraints identified by the Council can be mitigated.
- 3.103 Further the site is owned by Hyde New Homes, a known house builder, who have a successful track record of delivering on their planning consents. The landowner is keen to deliver sustainable new homes, including affordable homes, on this site to help contribute towards known housing need in the district.

- 3.104 For the reasons noted in this section, we are of the view that the Council have not gone far enough in seeking to meet their OAN. Not only would this have a negative impact on the district as a whole by not delivering enough housing including affordable housing, to meet the identified needs but it would also have a significant worsening effect on the wider HMA which is already significantly failing in meeting its objectively assessed needs.
- 3.105 Table 7 below illustrates the significant shortfall in the Council's projected housing delivery against the 2015 OAN and 2016 OAN. The table illustrates the contribution that New Salts Farm will make to reduce the overall shortfall. By allocating New Salts Farm as a site in the Plan for residential development, to deliver 455 new homes, there will be significant positive economic and social benefits with a greater number of homes being delivered.

| Adur Delivery<br>(2011 -2031) | Shortfa             | all (%)                           | Delivery<br>Including New | Shortfall (%)       |             |  |  |
|-------------------------------|---------------------|-----------------------------------|---------------------------|---------------------|-------------|--|--|
|                               | 2015 OAN<br>(5,820) | 2016 OAN<br>(6,480) (2011 – 2031) | 2015 OAN<br>(5,820)       | 2016 OAN<br>(6,480) |             |  |  |
| 3,648                         | 2,172<br>(37%)      | 2,832<br>(44%)                    | 4,103                     | 1,717 (30%)         | 2,377 (37%) |  |  |

| Table | 7: | Projected | housing | delivery | against | OAN |
|-------|----|-----------|---------|----------|---------|-----|
|       |    | -         | •       |          | •       |     |

#### Five Year Housing Land Supply (5yhls)

- 3.106 NPPF guidance requires councils to identify and update annually a supply of specific deliverable sties sufficient to provide 5 years' worth of housing against their requirements. In respect to Plan making an emerging Plan should not be considered sound unless a five year supply of housing land (5yhls) can be demonstrated upon adoption.
- 3.107 Table 4 of the Council's Housing Implementation Strategy (March 2016) sets out that the Council can demonstrate 5.2 years' worth of housing land supply for the period 2015 to 2020 based on their proposed target of 3,609 dwellings across the plan period.
- 3.108 Evidently, the current 5yhls calculations will need to be updated to align with the anticipated adoption date of March 2017, in order to demonstrate a 5yhls on adoption. However, we have reviewed the Council's current 5yhls calculations for the period 2015 to 2020 and have raised a number of points below which would affect their calculations.
- 3.109 For reasons explained the Council should include a 10% lapse rate on commitments, which it has not done. In addition it has included SHLAA sites within the 5 year period 2015 to 2020 on which, as explained earlier, we consider delivery is extremely questionable. These points alone bring Council's five year position down from their original calculation of 5.2 to 5.0. Leaving them in a weakened position where there is very little flexibility should any of the anticipated site allocations not come forward.

- 3.110 In addition to this the Council have included only a 5% buffer to their five year requirement on the basis that there has not been a persistent under delivery of housing in the District when considered against previous housing targets. However this has assessed the delivery against the South East Plan target (105dpa), now revoked, and the West Sussex Structure Plan target (99 dpa), which holds no formal status in the planning system.
- 3.111 This is also in contrast to the approach adopted in their 'Five Year Housing Land Supply Assessment 1<sup>st</sup> April 2015 to 31<sup>st</sup> March 2020' which had assessed housing delivery against the objectively assessed need figure since the revocation of the South East Plan. This document concluded that:

'As this figure has not been met for the past four years, a 20% buffer has been applied'.

- 3.112 We put forward that delivery should as a minimum be assessed against the proposed Local Plan target. As demonstrated in Table 3 earlier in this report it is clear that, delivering an average of 132 dwellings per year, the Council have consistently under-delivered against their proposed annual target of 180 dwellings per year, let alone the OAN figures. On this basis, we consider that a 20% buffer should be applied.
- 3.113 In this scenario (and including a 10% lapse rate and reduced SHLAA sites) the Council would only be able to demonstrate 4.2 years' worth of housing land supply. Again, this position would be significantly worsened when assessed against a higher target in line with the 2015 OAN and 2016 OAN for the District.
- 3.114 In addition to this, for reasons set out earlier, we believe that the proposed housing trajectory for the site allocations is unrealistic and have set out at Table 5 what we believe to be a more realistic amended housing trajectory based on the constraints identified. Taking this into account the Council's 5 year housing land supply falls to just 3.0.
- 3.115 In Table 8 we have provided a five year supply matrix for the period 2015 to 2020 which sets out the five year supply position in a number of different scenarios discussed above against the emerging target, the 2015 OAN and the 2016 OAN.
- 3.116 These demonstrate how New Salts Farm can help contribute towards the 5yhls for the period 2015 2020.

#### **Housing Supply Summary**

- 3.117 We consider, for reasons explained earlier, the Council's housing trajectory is overly optimistic.
- 3.118 In particular we consider that the scale of delivery anticipated over the five year period 2015 to 2020 is unrealistic and particularly in this case, where the full OAN is also not being met over the Plan period, it is important that more sites are allocated to ensure the best possible opportunity for provision of homes, including affordable homes, to meet housing need in the district.

- 3.119 Overall, it has been demonstrated that currently the Council are unable to demonstrate a five year supply of housing land for the period 2015 to 2020, but that with inclusion of New Salts Farm there is flexibility to contribute towards the 5yhls and also towards meeting the OAN.
- 3.120 As previously mentioned we anticipate that the Council will be updating their 5yhls in advance of adoption to bring it up to date, and in accordance with the NPPF to seek to demonstrate a 5yhls on adoption. We reserve judgement on any future calculations until we have seen them, however in any case, we maintain that given the significant shortfall on meeting the OAN in Adur the Council must release further sites from the SHLAA in order to contribute towards meeting housing need in the district.

| Scenario  | Core<br>Strategy<br>Target<br>(180/annum) | 2015 OAN<br>(291/annum) | 2016 OAN<br>(324/annum) |
|---|---|-------------------------|-------------------------|
| Commitments + 5% buffer   | 5.2                                       | 2.7                     | 2.4                     |
| Commitments + 20% buffer  | 4.6                                       | 2.4                     | 2.1                     |
| Commitments + 5% buffer +<br>10% lapse rate*  | 5.0                                       | 2.7                     | 2.3                     |
| Commitments + 20% buffer +<br>10% lapse rate  | 4.2                                       | 2.6                     | 2.0                     |
| Commitments + 20% buffer +<br>10% lapse rate + amended<br>housing trajectory        | 3.0                                       | 1.6                     | 1.4                     |
| Commitments + 5% buffer +<br>NSF*   | 6.1                                       | 3.7                     | 3.3                     |
| Commitments + 20% buffer +<br>NSF*  | 5.4                                       | 3.3                     | 2.9                     |
| Commitments + 5% buffer +<br>10% lapse rate + NSF*                                  | 5.6                                       | 3.7                     | 3.3                     |
| Commitments + 20% buffer +<br>10% lapse rate + NSF*                                 | 4.9                                       | 3.2                     | 2.9                     |
| Commitments + 20% buffer +<br>10% lapse rate + amended<br>housing trajectory + NSF* | 3.2                                       | 1.7                     | 1.5                     |

Table 8: Five Year Supply Matrix
### 4. SUSTAINABILITY APPRAISAL

#### Introduction

- 4.1 Section 19 of the Planning and Compulsory Purchase Act 2004 requires a Local Planning Authority to carry out a sustainability appraisal of each of the proposals in a Local Plan during its preparation.
- 4.2 Paragraph 152 of the NPPF states that

"Local planning authorities should seek opportunities to achieve each of the economic, social and environmental dimensions of sustainable development, and net gains across all three. Significant adverse impacts on any of these dimensions should be avoided and, wherever possible, alternative options which reduce or eliminate such impacts should be pursued. Where adverse impacts are unavoidable, measures to mitigate the impact should be considered. Where adequate mitigation measures are not possible, compensatory measures may be appropriate".

4.3 Paragraph 018 of the NPPG (ref ID:11-018-20140306) states that:

"The sustainability appraisal must consider all reasonable alternatives and assess them in the same level of detail as the option the plan-maker proposes to take forward in the Local Plan".

4.4 It goes on to say that:

"Reasonable alternatives are the different realistic options considered by the plan-maker in developing the policies in its plan They must be sufficiently distinct to highlight the different sustainability implications of each so that meaningful comparisons can be made. The alternatives must be realistic and deliverable".

4.5 We put forward that the approach to testing the OAN has not considered all reasonable alternatives and that the approach to site options appraisal within the Sustainability Appraisal has been inconsistent.

#### **Review of Sustainability Appraisal**

#### Spatial Strategy Alternatives

4.6 The Sustainability Appraisal considered 4 housing growth alternatives in 2011 (noted in Table 9 below). The highest of these was 270 homes per year (Option 4) which was ruled out as it was considered that there was no spatial approach that could be taken to enable this level of growth to be sustainably delivered. The Sustainability Appraisal states that:

"Whilst achieving this level of growth would enable housing needs to be met, it would lead to a severe impact on the Local Green Gaps, the landscape quality of Adur, biodiversity, risk of flooding and transport infrastructure / traffic congestion."

Table 9: Housing Growth Alternatives

| Option   | Homes per year |
|----------|----------------|
| Option 1 | 65             |
| Option 2 | 105            |
| Option 3 | 155            |
| Option 4 | 270            |

- 4.7 In addition of the spatial strategy alternatives developed and tested (set out at Table 10.1 of the Sustainability Appraisal) the highest spatial strategy tested would deliver 188 new homes per annum. Therefore these options do not even take account of the 2015 OAN of 291 dwellings per annum.
- 4.8 Section 13 of the Sustainability Appraisal 2016 seeks to assess the 2015 OAN of 291 dwellings per annum alongside the proposed target of 180 dwellings per annum. However we would consider that the assessment carried out is far from thorough and would not constitute a full assessment.
- 4.9 In its assessment of the 2015 OAN the Sustainability Appraisal identified a combination of increased densities and increased development area as the most practical approach to assessing the impacts of delivering the OAN. Therefore the option (Option 2) considered was:

"Additional land-take in the gaps and an increase in density at West Sompting so both New Monks Farm and Sompting are assessed for the OAN option at a density of 40-50dph. To achieve the OAN, this scenario would result in the New Monks Farm development area being increased from 27ha to approx. 43ha and the West Sompting allocation being increased from 27ha to approx. 47ha."

- 4.10 This approach is considered to be flawed for a number of reasons explained below.
- 4.11 The approach has not taken into account a number of other options or reasonable alternatives which could potentially deliver the OAN, namely the inclusion of additional site allocations. At para 10.2.15 of the Sustainability Appraisal where discussing the spatial strategy alternatives selected in 2012 it states that 'these alternatives were considered in 2012/2013 to represent the 'reasonable' alternatives, and are still considered to represent reasonable alternatives, i.e. nothing has come to light since the 2013 consultation to suggest that there is any other option that should reasonably have been appraised'.

- 4.12 This is despite Adur having received reps on their 2014 consultation from Boyer, on behalf of the owners of New Salts Farm, setting out its concerns with the Local Plan and reasons why New Salts Farm should be allocated in order to help contribute towards housing need in the district.
- 4.13 The approach has not considered sites previously ruled out subsequent to the Site Options appraisal process. This approach should be reconsidered to take account of up to date information and to consider all reasonable alternatives including the allocation of New Salts Farm to help meet housing need.
- 4.14 This scenario assumes a far smaller country park is delivered at New Monks Farm to allow for additional development, this can be accounted for within the overall site area of 61ha identified in the site options appraisal, albeit results in significant additional land take. However it is not made clear where the additional 20ha at Sompting would be taken from as the sites as appraised only amount to 27ha.
- 4.15 The appraisal concludes that the proposed spatial strategy of 180 dwellings per annum achieves a greater balance between the social, environmental and economic sustainability objectives than the discounted Option 2. However, arguably this is the only conclusion that could be reached in the approach taken especially given the reliance on delivering additional development in the Lancing/Sompting Worthing gap which is particularly sensitive to development.
- 4.16 A more rounded approach would be to also consider an alternative where additional sites are allocated to meet or contribute towards the OAN. There are additional sites, notably New Salts Farm, which are deliverable and developable and should be taken into account in an assessment of the OAN scenario.
- 4.17 It is considered that the impacts of such an approach are likely to have more positive results, particularly as there would be no need to encroach further on the Lancing/Sompting and Worthing Local Green Gap which is identified by the Council as having particularly high value. Nor would there be a need to reduce the New Monks Farm Country Park which is seen as a benefit of that allocation. There would however be a greater contribution towards meeting housing need and potential to deliver additional open space to which public access is currently restricted. Whilst there would be an additional greenfield site released to development, New Salts Farm has been demonstrated to not have any constraints with regards to flooding or landscape and can be developed whilst maintaining the Local Green Gap and avoiding any perceived coalescence.
- 4.18 We are of the view that the Council has not considered all reasonable alternatives in assessing the OAN scenario.

- 4.19 In addition to the above when reviewing the assessments of the spatial strategy alternatives against the sustainability objectives carried out at Appendix IV of the Sustainability Appraisal it is not clear that Adur have fully or appropriately considered the harm caused by not delivering the full OAN. In the assessment of each option against sustainability objective 14 'to meet the need for housing and ensure that all groups have access to decent and appropriate housing' it identifies that Options 1 to 3 would have a positive impact on the sustainability objective with Option 4 having a significant positive impact. It is questionable whether an option which only contributes towards 22% of the objectively assessed need for housing (Option 1) can be considered as having a positive impact.
- 4.20 We are of the view that inadequate consideration has been given as to what harm might be caused by not delivering the full OAN and the negatives of such an impact.
- 4.21 We would also question why none of the spatial strategy alternatives consider an option which does not include New Monks Farm. This approach is flawed as it has not tested an approach where this site is not allocated for development.

### Site Options Appraisal

- 4.22 New Salts Farm has been assessed as part of the Sustainability Appraisal for the Local Plan, the results included at Appendix III of that document. This presents the appraisal findings in relation to each site option considered for the Local Plan and considers the sites against a number of sustainability criteria including water quality, land use efficiency, biodiversity, historic environment, countryside, green space and outdoor facilities, pollution, sustainable transport, sustainable economic development flood risk, and access to key services and centres.
- 4.23 Site options were subjected to appraisal in isolation to determine if they are appropriate for development. It should be noted that New Salts Farm falls partly within two sites assessed Land North West of Hasler Estate (Hasler) and Land North East of Hasler Estate.
- 4.24 The greenfield sites identified as appropriate through this process in 2012 were Sompting Fringe & Sompting North, New Monks Farm and Hasler.
- 4.25 In 2012 Hasler was recommended to be included as a site allocation despite concerns around flooding. However in the 2016 Sustainability Appraisal it is stated that Hasler is no longer being taken forward due to concerns relating to flood risk, specifically ground and surface water flooding. Land North East of the Hasler Estate was not included as a site allocation through this process as it was considered to be constrained by flood risk issues and landscape constraints.
- 4.26 The methodology for the site options appraisals is not clearly set out in the Sustainability Appraisal and there is no clear scoring of each of the site options in the appraisal.
- 4.27 We would put forward that the appraisal and allocation of sites has not been consistent particularly in respect of the Countryside and Flood Risk criteria within the Site Options Appraisal.

- 4.28 For example, there are sites which have been allocated in the Local Plan that are of comparable landscape and visual sensitivity to New Salts Farm. Therefore the council has accepted that it is necessary to allocate such sites. There is no clear reason why New Salts Farm has been excluded on the basis of its visual and landscape sensitivity.
- 4.29 Notwithstanding our earlier discussion around the landscape studies carried out by Adur, these have evidenced the Site Options Appraisal. Sompting Fringe which is identified as having medium to high overall landscape sensitivity and high visual sensitivity is appraised as only having 'some impact or potential for impact'. Whereas Land North East of the Hasler Estate which falls within areas of medium-high overall landscape sensitivity and medium high visual sensitivity (albeit only in part as some area falls within medium low overall landscape sensitivity and low visual sensitivity) is considered to have 'significant impact or conflict'. This approach appears inconsistent, particularly where the Lancing/Sompting and Worthing Green Gap is far narrower than the Lancing / Shoreham Gap and therefore arguably more susceptible to impact.
- 4.30 Further as discussed earlier in Section 3 the site options appraisal suggests that development on the site is dependent on the Shoreham Adur Tidal Walls scheme being completed. This is accepted as parts of the site fall within Flood Zone 3b and could not be delivered until the walls were completed and the area was re-designated as 3a. Nevertheless, in respect of Shoreham Airport which also lies wholly in Flood Zone 3b the impact is identified as 'some impact or potential for impact' and in respect of New Salts Farm is 'significant impact or conflict'.
- 4.31 In respect of New Monks Farm, which lies within Flood Zone 3a, similar to parts of New Salts Farm, the overall conclusion of the site options appraisal is that 'although there are significant flood risk concerns on the site, development of the site is not dependent on the Shoreham Tidal Walls Scheme'. There are parts of New Salts Farm which are also within Flood Zone 3a and not dependent on the Shoreham Tidal Walls Scheme, which has not been addressed in the appraisal. Further, given that the reliance on the Shoreham Tidal Walls Scheme did not preclude Shoreham Airport from being allocated suggests again an inconsistent approach.
- 4.32 In respect of surface water flooding Sompting North and Sompting Fringe are both identified as having parts of the site at risk from surface water flooding, and yet in respect of these two sites this has been appraised as 'Amber – some impact or potential for impact'. However in the case of Land North East of Hasler Estate which is also identified as parts of the site at risk from surface water flooding, this impact is appraised as 'Red – significant impact or conflict'.
- 4.33 In summary it is considered that the Council's approach to site options appraisal is unreliable due to a number of identified contradictions in approach.

4.34 Notwithstanding that we believe if the appraisal had been appropriately carried out New Salts Farm should have been allocated for development, we have now in any case provided further evidence which demonstrates that any constraints to development identified by the Council can be successfully mitigated.

### 5. NEW SALTS FARM

### Introduction

- 5.1 Further sites need to be allocated within the Plan in order to meet the five year requirement and to also provide greater flexibility in housing supply in the medium and longer term. It is our view that Land at New Salts Farm provides an available, suitable and deliverable allocation option with the capability of providing an additional 455 homes (75 within the first five years of the plan period (2015 – 2020)) to significantly bolster the identified five year shortfall, and the overall shortfall against the OAN for the district. Table 6 earlier in this report shows the annual projected completions for the site.
- 5.2 The land is owned by Hyde New Homes who have been building high quality homes for local people since 1967.
- 5.3 The site presents an opportunity to create attractive high quality new homes in a sustainable location on the edge of Lancing and within walking distance of a number of key services and local facilities.
- 5.4 The site is being actively promoted by the landowner. Details of the site and its potential development capacity have been provided to the council in response to a call for sites. In addition a planning application for Phase 1 of the site, which would comprise 49 new homes, is currently in preparation and has undergone consultation with the public and the Council and is intended to be submitted in summer 2016.

### **Development Potential and Suitability**

5.5 A number of technical studies in respect of flooding, landscape, ecology and transport have been undertaken to assess the suitability of the site to accommodate development. The findings of these studies have been used to inform a Vision Document prepared by HGP which demonstrates the development potential of the site. A summary of the technical studies and Vision Document is made below, however this report should be read in conjunction with those documents.

### Flood Risk

5.6 A Sequential and Exceptions Test by Boyer (March 2016) demonstrates that there are no other available sites within a lower Flood Zone that could provide the development proposed and that the proposed development would provide sustainability benefits to the wider community that outweigh flood risk. Further a Flood Risk Assessment by Tully De'Ath (March 2016) identifies current and future flood risk at the site and has demonstrated how this could be managed and mitigated over its lifetime without increasing flood risk elsewhere and includes details of sustainable drainage options and surface water drainage proposals. The Sequential and Exceptions Tests have both been demonstrated to have been passed for the site and development can therefore be considered appropriate.

### Ecology

- 5.7 A number of ecological surveys have been undertaken at New Salts Farm by The Ecology Partnership in 2015, these were informed by previous survey work carried out on behalf of the Council.
- 5.8 A letter from the Ecology Partnership dated 2<sup>nd</sup> March 2016 concludes that:

*"It is considered that the site is deliverable in terms of development. Whilst there are some areas of higher ecological interest, these can be accommodated within the Scheme, and maintained and enhanced within the red line boundary."* 

- 5.9 It is considered that there is potential to accommodate existing ecology and provide real ecological benefits on the site as part of any new development proposals.
- 5.10 In April 2016 (following preparation of the Vision Document) a further badger survey was also carried out with the Field Officer for the Badger Trust, Sussex to identify the extent of badger use of the wider site and resurvey the badger sett identified in the preliminary ecology appraisal in July 2015. This is included at Appendix 3. The badger sett did not appear to be active, nor were further setts identified in the red line boundary.

### Landscape

- 5.11 A Landscape and Visual Statement has been prepared by David Huskisson Associates (March 2016). This had regard to a number of studies commissioned by Adur Council (it should be noted that the report was prepared in advance of the further work discussed earlier in Section 3).
- 5.12 This document concludes that:

'Whilst development of any greenfield site would inevitably result in a direct loss of landscape resource, it is considered that there is scope to accommodate a degree of development on the site broadly based upon the Indicative Development Principles and Landscape Strategy that would address the key landscape and visual sensitivities identified as contributing to the Gap and the overall landscape sensitivity of the LCAs within which the site sits.

The site lies within landscape character areas assessed by Adur DC as making a contribution to the Strategic Gap/Local Green Gap. It is considered however, that development of the site as envisaged would not be perceived as materially eroding the Strategic Gap/Local Green Gap in this area which would continue to provide a green and open setting, with the potential benefit of landscape management that could be secured for the long term by legal agreement. The fundamental role of the Strategic Gap/Local Green Gap in this vicinity would not be compromised by its release for development adopting the principles identified on the Illustrative Masterplan and landscape strategy'

### Transport

- 5.13 A Preliminary Transport Appraisal has been prepared by Motion (March 2016) to provide transport and highways advice for the proposed strategic development of the site. This report concludes that New Salts Farm is conveniently located to encourage the use of more sustainable modes of transport given close proximity to existing bus routes. It demonstrates that a suitable access strategy can be delivered that can accommodate up to 500 residential units on the site and junction modelling demonstrates there would be no adverse disruption to the free flow of traffic on the local highway network or the existing sustainable transport networks.
- 5.14 The Transport Appraisal Report has demonstrated that New Salts Farm development can be fully integrated and accommodated on the highway, pedestrian, cycle and public transport networks whilst bringing forward benefit to the wider area.
- 5.15 An addendum to the Transport Appraisal was prepared in April 2016 (Appendix 4) to take account of the February 2016 addendum to the Adur Core Strategy and Shoreham Harbour Transport Study 2011. It concludes that

'Findings within the Adur Local Plan Second Addendum, Transport Study (February 2016) are not considered to have an impact on the work undertaken to date, or materially change our conclusions based on the earlier work'

### **Vision Document**

- 5.16 The Vision Document prepared by HGP incorporates an illustrative masterplan which demonstrates the way the site could be developed taking account of the opportunities and constraints at the site. The masterplan has been updated following discussions with Adur Council officers and the latest version is attached at Appendix 2.
- 5.17 The illustrative masterplan demonstrates how 455 new homes could be sensitively laid out incorporating new open spaces, and enhanced boundary planting and retention and enhancement of the ditch network. The proposed approach responds to the findings of the technical studies carried out on behalf of the client and those which evidence the Adur Local Plan as well as discussions with the Local Planning Authority and West Sussex County Council. The layout seeks to integrate the development within the existing wider landscape, incorporate new pedestrian routes and open spaces for new and existing residents and provide ecological benefits.
- 5.18 The benefits identified from allocating the site include:
  - New homes close to the town centre
  - Access to new public open space
  - Landscape and ecological enhancements
  - Integration with existing public rights of way

- 5.19 In summary the Vision Document and accompanying technical studies and updates identify that the site is capable of delivering high quality new homes with open space and enhanced landscaping. It has been demonstrated that there are no technical constraints to development.
- 5.20 The delivery of the site would provide flexibility in terms of housing supply and would provide a range of housing types and sizes to help meet the objectively assessed housing need. The Vision Document demonstrates how the development of the site could positively contribute to the character of the area and enhance public access and ecological diversity.

# 6. SUMMARY OF RESPONSE AND RECOMMENDATIONS

6.1 In this Statement we have put forward our submissions regarding deficiencies in the Council's Proposed Submission Local Plan.

### Summary of Response

- 6.2 A summary of these deficiencies is made below:
- 6.2.1 The Local Plan on adoption will not cover a 15-year time period and is not in accordance with paragraph 157 of the NPPF and is therefore unsound.
- 6.2.2 The OAN of 291 dwellings per annum identified in the Adur OAN does not adequately reflect the full scale of housing need in the district. Boyer has identified a more realistic OAN of a minimum of 324 dwellings per annum.
- 6.2.3 There is a significant level of unmet need in the Sussex Coastal area with a predicted shortfall of 1,552 dwellings per annum against the Sussex Coast HMA over the 2011 – 2031 period, which should be taken into account when considering how much housing Adur can accommodate.
- 6.2.4 The Coastal West Sussex SHMA is not fit for purpose and is out of date.
- 6.2.5 The proposed housing requirement fails to NPPF para 182 in so far as it has not been planned positively or to meet objectively assessed housing needs.
- 6.2.6 The balance between the three elements of sustainable development has not been properly struck in the Local Plan in terms of the level of new housing in relation to the needs of the area, and the positive benefits that additional housing, including affordable housing, would provide in social and economic terms, compared to environmental impacts.
- 6.2.7 The 5yhls does not account for the standard 10% lapse rate in respect of committed sites and only includes a 5% buffer. Taking these points into account the Council can only demonstrate 4.2 years housing land supply against the proposed target in the Local Plan and significantly less when measured against the 2015 OAN and Boyer 2016 OAN.
- 6.2.8 There is an overreliance on the proposed site allocations in terms of the plans delivery and unrealistic assumptions on timing of delivery of new homes on these sites. When taking account of a more realistic housing trajectory for the proposed site allocations this further reduces the 5yhls to 3.0 years.
- 6.2.9 Adur's Landscape Studies cannot be relied upon as they do not include a detailed methodology and therefore are not transparent in this regard.
- 6.2.10The assessment of site options has been inconsistent in the sustainability appraisal, particularly in respect of landscape and flood risk.

- 6.2.11The assessment of 'reasonable alternatives' in the sustainability appraisal is considered to be inadequate.
- 6.3 **Policy 2: Spatial Strategy:** Insufficient greenfield sites have been released to meet the objectively assessed needs in Adur and further sites must be released. Our case is that New Salts Farm should be released for residential use.
- 6.4 **Policy 3: Housing Provision:** Notwithstanding we believe the actual objectively assessed needs for Adur to be far higher than the 2015 OAN, Adur is falling far short of meeting that target let alone the Boyer 2016 OAN presented in Boyer's OAN Review. Given the significant shortfall in housing delivery, and in meeting affordable housing needs in Adur, we consider that further sites must be released. There are no outstanding constraints at New Salts Farm and as such we consider that the land should be allocated to assist the Council in meeting its housing requirements.
- 6.5 **Strategic Allocation:** We submit that New Salts Farm must be allocated as a strategic site for 455 houses to address these deficiencies, and have put forward compelling reasons as to why it should be allocated as follows:
  - Parts of the site are available immediately and its delivery would assist in meeting the Council's 5yhls.
  - The remainder of the site would be available post completion of the Adur Tidal Walls Scheme in 2018 and would assist in contributing towards the OAN across the Plan period.
  - The site would provide an appropriate level of affordable housing thereby addressing local need.
  - S.106 or Community Infrastructure Levy (CIL) contributions would provide a number of community benefits.
  - It has been demonstrated that those constraints identified by the Council to development of the site, namely flood risk and landscape, can be overcome.
  - The site is available and deliverable, without ownership constraints and controlled by an established house builder, and would assist in meeting the 5yhls and in meeting housing needs across the Plan period.
- 6.6 On the basis of the information provided in these Reps we are of the view that the Local Plan as currently drafted cannot be considered 'sound' as it is not:
  - Positively Prepared the Plan does not meet objectively assessed housing development requirements and has not engaged every effort to meet those needs.

- **Justified** the Plan has not considered all reasonable alternatives to meet objectively assessed housing needs and cannot be considered the most appropriate strategy.
- **Effective** the Plan is over reliant on delivery of the proposed site allocations to meet its proposed housing target, and falls well short of meeting objectively assessed needs.
- **Consistent with National Policy** the Plan is not in accordance with the policies in the NPPF and has not struck the right balance in terms of sustainable development. The Plan would not enable the delivery of sustainable development given the significant shortfall in meeting objectively assessed housing needs.

### **Recommendations for the Plan**

6.7 We are of the view that in order for the Plan to be found 'sound' it must include New Salts Farm as a site allocation to contribute towards meeting housing needs in the District. The table below outlines the amendments we consider to be necessary in order to address the identified deficiencies in the plan and for it to be found sound.

| Policy No.                       | Amendments Proposed  |  |  |  |  |
|----------------------------------|--|--|--|--|--|
|                                  | old text struck through  |  |  |  |  |
|                                  | new text bold  |  |  |  |  |
| Policy 2:<br>Spatial<br>Strategy | <ul> <li> It will also be necessary to release the following greenfield sites on the edge of the built up areas to ensure a supply of suitable land for development subject to the requirements of Policies 5, 5a and 6:</li> <li>New Monks Farm, Lancing (residential, employment, and community uses)</li> <li>West Sompting (residential)</li> <li>New Salts Farm (residential)</li> </ul>  |  |  |  |  |
| Para 2.13                        | The most up-to-date work on OAN, and that which is<br>used in this Local Plan, is the <del>Objectively Assessed Need for</del><br><del>Housing: Adur District</del> Boyer OAN Review 2016. This sets<br>out the OAN at not less than 324 dwellings per annum. At<br>this level the OAN is still not beginning to address<br>affordable housing need in the District or exported need<br>from the wider HMA. There is therefore a requirement for<br>Adur to build as many homes as possible within the Plan<br>period. |  |  |  |  |
| Para 2.16                        | In terms of Adur's Objectively Assessed Needs the study recommends the delivery of 291 dwellings per annum (5820   |  |  |  |  |

|                                   | <del>dwellings over the Plan period)</del> an OAN of not less than 324<br>dwellings per annum (6480 dwellings over the Plan<br>period).  |   |  |  |  |
|-----------------------------------|--|---|--|--|--|
| Para 2.22                         | Given this evidence two [ ,<br>allocated: at New Monks F<br>dwellings (Policy 5) , New<br>dwellings (Policy 5a), [ ,<br>deliver 480 dwellings (Poli<br>deliver 480 dwellings (Poli<br>deliver 480 f] dwellin<br>OAN. Taking these green<br>deliver 3609 dwellings (18<br>dwellings.  | Given this evidence two [] greenfield sites have been<br>allocated: at New Monks Farm, Lancing which will deliver 600<br>dwellings (Policy 5), New Salts Farm which will deliver 455<br>dwellings (Policy 5a), [], and West Sompting which will<br>deliver 480 dwellings (Policy 6). Together these sites will<br>deliver 1080 [] dwellings over the plan period towards the<br>OAN. Taking these greenfield sites into account the Plan can<br>deliver 3609 dwellings (180 dpa), leaving a shortfall of 2211<br>dwellings.   |  |  |  |
| Table 1                           | Insert:  |   |  |  |  |
|                                   | Sites to be identified in Local Plan   | Number of dwellings   |  |  |  |
|                                   | New Salts Farm   | 455   |  |  |  |
| Para 2.23                         | Consequently the Local Pl<br>objectively assessed hous<br>5820- 6480 dwellings indic<br>out in Policy 3 below is the<br>based on the level of hous<br>plan period, having regard<br>potential development cap<br>there is a requirement fo<br>possible within the Plan<br>housing and affordable l   | Consequently the Local Plan, is not able to meet the full,<br>objectively assessed housing needs figure of a minimum of<br><del>5820</del> - <b>6480</b> dwellings indicated above. The housing target set<br>out in Policy 3 below is therefore a 'capacity-based' figure<br>based on the level of housing that can be delivered within the<br>plan period, having regard to the identified constraints and<br>potential development capacity. However it is clear that<br>there is a requirement for Adur to build as many homes as<br>possible within the Plan period to contribute towards<br>housing and affordable housing needs. |  |  |  |
| Para 2.24                         | The figures in Policy 3 about the fi | The figures in Policy 3 above equate to an annual target of <b>180</b> [] dwellings per year over the 20 year plan period.  |  |  |  |
| Policy 3:<br>Housing<br>Provision | Over the period 2011 – 20<br>dwellings will be develope<br><br>• 455 at New Salts Farm   | <ul> <li>Over the period 2011 – 2031 a minimum of <del>3609</del>. [] dwellings will be developed in Adur, as follows:</li> <li></li> <li>455 at New Salts Farm</li> </ul>  |  |  |  |
| Policy 5a:<br>New Salts<br>Farm   | Land at New Salts Farm (will be allocated for reside 455 homes, 30% of which   | Land at New Salts Farm (within the area shown on Map 2a)<br>will be allocated for residential development comprising:<br>455 homes, 30% of which are to be affordable, providing a mix  |  |  |  |

| of types and tenures in accordance with identified needs.  |
|--|
| Provision or funding of mitigation for off-site traffic impacts on the Strategic Road Network and local roads where required.  |
| Provision or funding of sustainable transport infrastructure<br>including public transport and cycle, pedestrian and equestrian<br>links to Lancing, Shoreham-by-Sea and the South Downs<br>National Park where required.  |
| Site-specific travel behaviour initiatives which encourage<br>sustainable modes of transport. (This should include a<br>package of travel behaviour initiatives such as residential<br>travel plans).  |
| Developers will need to work with Adur District Council, West<br>Sussex County Council and the Environment Agency to<br>ensure that tidal and fluvial flooding as well as surface water<br>and groundwater flooding are adequately mitigated without<br>worsening flood risk elsewhere. A Flood Risk Assessment<br>(FRA) will be required at the planning application stage. The<br>FRA must take account of and seek to facilitate relevant<br>recommendations of the Lancing Surface Water Management<br>Plan. |
| No development shall take place within those parts of the site<br>currently designated as Flood Zone 3b (functional floodplain)<br>until the relevant section of the Shoreham Adur Tidal Walls<br>has been completed.  |
| As part of a Landscape Strategy / Green Infrastructure Strategy for the site, the following are to be delivered:   |
| <ul> <li>Ecological enhancements to address safeguarding and<br/>enhancement of biodiversity assets</li> </ul>   |
| <ul> <li>Retention and enhancement of the existing network of<br/>ditches on site for drainage and ecological benefits.</li> </ul>   |
| <ul> <li>Openspace and recreation areas (to include children's play<br/>areas) located within the development in accordance with<br/>Council standards</li> </ul>  |
| <ul> <li>Strategically sited boundary treatments to provide a<br/>distinctive green edge to the development</li> </ul>   |
| Development of this site, the location and layout of built development, green infrastructure and other landscaping is to   |

|                            | be based on the following principles and site-specific requirements:   |  |  |  |
|----------------------------|--|--|--|--|
|                            | Development must respect the landscape of the surrounding countryside and South Downs National Park.   |  |  |  |
|                            | Affordable housing is to be distributed throughout the whole development site  |  |  |  |
|                            | • The development is to be connected to sewerage and water distribution networks at the nearest points of adequate capacity, as agreed with Southern Water   |  |  |  |
|                            | Infrastructure requirements are to be secured through<br>CIL/s106/planning conditions as appropriate   |  |  |  |
| Map 1: Site<br>Allocations | Map should be updated to include New Salts Farm  |  |  |  |
| Map 2a: New<br>Salts Farm  |  |  |  |  |
| Policies Map               | The Indicative Built Up Area Boundary should be adjusted to include<br>New Salts Farm and the Local Green Gap boundary and Countryside<br>allocation should be adjusted to exclude New Salts Farm. |  |  |  |

## **APPENDIX 1 – BOYER OAN REVIEW**

## Adur OAN Review

New Salts Farm, Shoreham by Sea



Prepared by Boyer on behalf of Hyde New Homes | May 2016

### Report Control

| Project:       | Review of OAN in Adur District  |
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### **EXECUTIVE SUMMARY**

Boyer (Development Economics) have reviewed the Adur OAN 2015 on behalf of Hyde New Homes in relation to the promotion of land for residential development at New Salts Farm in Adur district.

The Adur OAN Assessment was undertaken by consultants GL Hearn and identified an OAN figure of 291 dwellings per year for the district for the period 2011 to 2031.

We have reviewed the methodology used to identify the OAN and found several areas of concern. These include:

- The downward adjustment of the demographic starting point to take into account 'Unattributable Population Change' (UPC) which is contrary to the advice of ONS and not consistent with the latest ONS mid-year estimates which are showing higher growth than projected in 2012.
- A very small market signals adjustment of 4% which is equivalent to around 10 dwellings per annum has been applied which we believe is not sufficient for an area with very high property prices and worsening affordability. We believe this should form part of the demographic adjustment and that a further market signals uplift is required in line with the NPPG.
- Economic scenarios are showing much higher levels of growth (around 362 dwellings per annum) meaning that potential for economic growth may be constrained if a lower target is used.
- Issues relating to the methodology and availability of data used to calculate affordable housing need which means that the figures may be unreliable.

We consider that Adur's OAN should be no less than 324 dwellings per annum as set out in the table below.

|   | Dwellings |
|---|-----------|
| Baseline demographic scenario (unadjusted CLG Projections)    | 286       |
| Demographic adjustment for 24-35 year olds                    | 4%        |
| Total Dwellings with demographic uplift                       | 297       |
| Further Market Signals uplift (based on affordability ratios) | 9%        |
| Total dwelling requirement with demographic adjustment and    | 324       |
| market signals uplift   |           |

Table 1 – Summary of Boyer OAN

Based on the proposed methodology of the LPEG this could be up to 371 dwellings per annum if the amendments to the NPPG that they put forward are adopted by CLG.

The emerging Adur Local Plan proposes a target of just 180 dwellings per year. This falls well below the OAN for the district and is likely to lead to worsening affordability, a lack of affordable housing and will constrain economic growth.

These figures do not include any allowance for the significant unmet need in the rest of the HMA, which we have calculated to be at least 1,696 dwellings per annum (with an OAN of 324 for Adur and not including Arun district which is under review). This is likely to have a significant impact on need in Adur and must be taken into consideration when setting a housing target.

It is recognised that Adur and the wider HMA is highly constrained by South Downs National Park and the sea and this report does not seek to take that into consideration. However it is clear that Adur must seek every available opportunity to try and meet their OAN and the significant unmet need of the rest of the HMA.

### **1. INTRODUCTION**

### **Purpose of Report**

- 1.1 This report has been prepared by Boyer (Development Economics) on behalf of Hyde New Homes in relation to the promotion of land for residential development at New Salts Farm in Adur District. The purpose of the report is to review the Council's 2015 Objective Assessment of Housing Need (referred to as the Adur 2015 OAN Report from herein).
- 1.2 The report examines the Adur 2015 OAN Report, prepared by GL Hearn in 2015 as it contains Adur's most recent assessment of housing need, however where relevant we also review the previous SHMAs undertaken in Adur and the wider Housing Market Area (HMA). Our focus is primarily on the objectively assessed need (OAN) although we also review the need for affordable housing with particular reference to how it impacts the OAN.
- 1.3 At this stage we have not run any modelling of our own and are only assessing the inputs, methodology and assumptions made by the consultants to calculate the OAN. Therefore we are assuming that the outputs from the modelling in each of the scenarios are correct. If it is felt necessary, further modelling may be run at a later stage.
- 1.4 This report does not seek to discuss whether or not the OAN is likely to be deliverable in the district as this consideration should not form part of the assessment of need according to national guidance.
- 1.5 Following this short introduction, the report will be structure as follows:

**Chapter 2: Policy Review** - this chapter will briefly review the relevant policies of the National Planning Policy Framework (NPPF) and the National Planning Practice Guidance (NPPG), however more detailed discussion of particular aspects of the guidance will be provided where relevant throughout the remainder of the report. It will also briefly outline the planning policy background in Adur District.

**Chapter 3: The Housing Market Area** - this chapter will review the methodology used to define the housing market area Adur sits within. Although this report is focused purely on Adur District, this chapter will discuss the identified OAN for other districts in the HMA compared to likely housing supply to identify whether there is likely to be any unmet need which could impact need in Adur.

**Chapter 4: Demographics** – this chapter will review the demographic 'starting point' used to form the basis of the OAN. This is usually the latest ONS/CLG Population and Household Projections with adjustments made where it is felt that past trends may not accurately reflect future need (such as the impact of the recession).

**Chapter 5: Market Signals** – this chapter will review and update the key market signals in Adur such as house and rental prices and affordability ratios. These market signals will help us to determine whether the demographic starting point outlined in the previous chapter needs to be adjusted to improve affordability.

**Chapter 6: Economic Considerations** – this chapter will review how economic projections have been taken into consideration in the SMHA and whether any further adjustments are required to support economic growth.

**Chapter 7: Affordable Housing Need** – this chapter will review the assessment of affordable housing need in Adur with a particular focus on how this integrates with the overall OAN.

**Chapter 8: Wider HMA Need and the Duty to Cooperate** – this chapter briefly summarises need across the HMA and the requirements of the Council under the Duty to Cooperate in terms of meeting housing need.

**Chapter 9: Summary and Conclusions** – this chapter summarises the findings of the previous chapters and outlines whether we think the OAN identified is robust. If it is felt it is not robust, it will outline our opinion on what the OAN should be.

### **2. POLICY CONTEXT**

### The National Planning Policy Framework (NPPF)

- 2.1 The NPPF was published in 2012 and set out the Government's planning policies for England and how it expects them to be applied. The key principle of the NPPF is 'the presumption in favour of sustainable development'. In summary, this means seeking to meet the development needs of the area unless any adverse impacts of doing so would significantly and demonstrably outweigh the benefits.
- 2.2 One of the key policies of the NPPF has been to 'boost significantly the supply of housing'. Paragraph 47 requires local planning authorities to use their evidence base to ensure that their Local Plan meets the full, objectively assessed needs for market and affordable housing in the housing market area.

### National Planning Policy Guidance (NPPG)

- 2.3 In March 2014 the Government published the NPPG which provided further guidance on how the policies of the NPPF should be applied. The guidance includes sections on 'Housing and Economic Development Needs Assessments' and 'Housing and Economic Land Availability Assessments' amongst others.
- 2.4 These sections guide local planning authorities in objectively assessing and evidencing development needs for housing and economic development. It requires that the assessment of development needs is based on facts and unbiased evidence. Therefore, plan makers should not apply constraints to the overall assessment of need, such as limitations imposed by the supply of land for new development, historic under performance, viability, infrastructure or environmental constraints.
- 2.5 The methodology required by the NPPG is discussed in more detail in the following chapters However in summary;
  - The latest household projections published by the Department for Communities and Local Government should provide the starting point of estimating overall housing need.
  - However, plan makers may consider sensitivity testing these projections, specific to their local circumstances, based on alternative assumptions in relation to the underlying demographic projections and household formation rates.
  - An assessment should also be made of the likely change in job numbers based on past trends and/or economic forecasts as appropriate and also having regard to the growth of the working age population in the housing market area.

- The housing need number suggested by household projections (the starting point) should be adjusted to reflect appropriate market signals, as well as other market indicators of the balance between the demand for and supply of dwellings. Prices or rents rising faster than the national/local average may well indicate particular market undersupply relative to demand.
- Any worsening trends in factors such as affordability, house prices/rents etc, identified by the market signals analysis will require upward adjustment to planned housing numbers compared to ones based solely on household projections.

#### Local Plans Expert Group

- 2.6 We have also considered the recently published Local Plans Expert Group (LPEG) Report in our assessment. Although not (yet) guidance and is currently out to consultation, we believe this shows a direction of travel for Government guidance.
- 2.7 The Local Plans Expert group is an independent expert group set up by the Government to examine what measures or reforms might be helpful in ensuring the efficient and effective production of Local Plans. The group includes a wide range of industry experts from both the private and public sector including John Rhodes (Quod, Director), Keith Holland (retired Senior Planning Inspector), Adrian Penfold (British Land) and John Howell MP amongst others.
- 2.8 The Group published their report 'Local Plans report to the Communities Secretary and to the Minister of Housing and Planning' in March 2016 which recommended proposals to speed up and simplify the process of making Local Plans and sets out proposed changes to the NPPG. There is currently much debate surrounding the LPEG Report and in particular the methodology suggested for calculating OAN.
- 2.9 We will discuss the findings of the report throughout the relevant chapters however as a key headline, the report states *that "for decades the planning system has failed to deliver the scale of housing necessary to meet national needs. The scale of the national housing shortage needs no elaboration here, although the urgency of the situation is reinforced by <u>an understanding of the lack of affordability that has arisen from chronic under-provision and an extreme shortage of supply</u>" (paragraphs 2.2 2.3 Boyer emphasis).*

### Local Policy

- 2.10 Adur District Council are currently preparing a new Local Plan. The Proposed Submission Adur Local Plan was published in 2014 and it had been anticipated that it would be submitted to the Secretary of State in March 2015 following the publication stage and assessment of the representations received. However, some proposed changes relating to one of the strategic allocations in the Plan, New Monks Farm, were raised in representations. Following this, amended proposals for the site were submitted to the Council for consideration.
- 2.11 Following consideration of these proposals, an additional consultation exercise was undertaken between late 2015 and early 2016, specifically relating to proposed amendments to the strategic allocation at New Monks Farm. Changes to the strategic allocation (as well as amendments in relation to other matters) have been included within a revised version of the Local Plan, called 'Amendments to the Proposed Adur Local Plan (2016)'.
- 2.12 This document is currently out for consultation to allow for representations to be made as to whether the amendments meet the 'Tests of Soundness' and/or are legally compliant.

#### Local Evidence Base (Housing Need)

- 2.13 There have been several studies in recent years relating to housing need. Starting with the most recent, these are:
  - Objectively Assessed Need for Housing: Adur District (GL Hearn, August 2015) this document is the subject of this report.
  - Assessment of Housing Development Needs Study: Sussex Coast HMA (GL Hearn, April 2014)
  - Updated Demographic Projections for Sussex Coast HMA Authorities (GL Hearn, October 2013)
  - Housing (Duty to Cooperate) Report (GL Hearn, May 2013)
  - Coastal West Sussex SHMA Update (GL Hearn, November 2012)
  - Adur Locally-Generated Needs Study (GL Hearn, May 2011)
  - Arun Locally-Generated Needs Study (GL Hearn, May 2010)

### **Recent Appeal Decisions**

2.14 We have reviewed appeal decisions over the last 2 years in Adur however did not find any of relevance in relation to OAN.

### **3. THE HOUSING MARKET AREA**

- 3.1 The NPPG requires that needs are assessed in relation to the relevant functional areas, which for housing would be the Housing Market Area (HMA). It describes HMAs as geographical areas defined by household demand and preferences for all types of housing, reflecting the key functional linkages between places where people live and work.
- 3.2 It states that HMAs should be broadly defined by analysing the following;
  - House prices and rates of change in house prices
  - Household migration and search patterns
  - Contextual data (for example travel to work area boundaries, retail and school catchment areas)
- 3.3 The Adur 2015 OAN Report is focussed solely on Adur District however recognises that it is part of the wider Sussex Coast Sub-Regional HMA. This includes the districts of Chichester, Arun, Worthing, Adur, Brighton and Hove and Lewes, as shown on the map below.



Figure 1 – Sussex Coastal HMA

3.4 The HMA also includes a large part of South Downs National Park, which is now the responsibility of the South Downs National Park Authority (SDNPA) and will eventually have its own Local Plan based with targets based on its own OAN.

- 3.5 The Adur 2015 OAN Report builds on and updates a number of previous studies (2008, 2012, 2013 and 2014) by GL Hearn for Coastal West Sussex which covered all 6 of the districts in the HMA.
- 3.6 We have reviewed the methodology used to define the HMA in the previous SHMAs and have no reason to disagree with the definition of the HMA in this instance, particularly in relation to Adur which sits in the middle of the HMA.
- 3.7 However, as the NPPG requires that housing need is assessed at HMA level, it is clear that Adur should not be examined in isolation and that any unmet needs in the remainder of the HMA are taken into consideration.
- 3.8 The table below outlines the latest OAN and housing targets for the other districts in the HMA and shows that there is clearly a significant level of unmet need in the Sussex Coastal area, with all of the districts being currently unable to meet their own housing needs due to the restricted nature of the area between the South Downs and the sea.

| District   | Latest OAN<br>(per annum) | Adopted/<br>Proposed<br>Target | Differenc<br>e<br>between<br>OAN and<br>target | Notes  |
|------------|---------------------------|--------------------------------|--|--|
| Adur       | 291                       | 180                            | -111   | The OAN figure is the subject of this review and therefore may   |
|            |                           |                                |  | need to be amended.  |
| Chichester | 505*                      | 410                            | -95  | Local Plan adopted July 2015<br>but target does not meet OAN.<br>Inspector allowed plan to be<br>adopted on basis that is was<br>reviewed within 5 years   |
| Arun       | 758                       | TBC                            | TBC  | The Council agreed at the Full<br>Council meeting on 9th<br>September 2015 to the principle<br>of a suspension of the Local<br>Plan Examination process for a<br>period of 12-18 months to work<br>towards meeting the higher<br>OAN requirement of 758<br>dwellings per annum |
| Worthing   | 636                       | 200 (Core                      | -436   | Worthing Local Plan currently  |

Table 2 – OAN and Targets in Other Districts in Sussex Coastal HMA<sup>1</sup>

<sup>&</sup>lt;sup>1</sup> Source: Boyer examination of various documents. Does not include SDNP OAN Assessment as this sits within a wider HMA however we know that SDNP is also not able to meet its OAN as discussed below.

| District           | Latest OAN<br>(per annum) | Adopted/<br>Proposed<br>Target | Differenc<br>e<br>between<br>OAN and<br>target | Notes   |
|--------------------|---------------------------|--------------------------------|--|---|
|                    |                           | Strategy<br>2011)              |  | being prepared. Current target<br>of 200 dwellings p.a not<br>objectively assessed.   |
| Brighton &<br>Hove | 1,506                     | 660                            | -846   | City Plan part 1 – inspectors<br>report March 2016 agreed that<br>the plan only meets 44% of the<br>objectively assessed need for<br>new housing however<br>recognised that the City is<br>subject to significant constraints<br>in finding land for new<br>development |
| Lewes              | 520**                     | 345                            | -175   | Target agreed in Inspectors<br>Report (March 2016) but plan<br>not yet formally adopted. The<br>Inspector acknowledges that<br>this does not meet the full OAN.   |
| Total              | 4,216                     | 1,795***                       | -1,663***                                      |   |

\* excludes SDNP

\*\* 460-520 however Inspector stated that the top of the range represented the full, objectively assessed needs of the district

\*\*\*Excludes Arun which is under review

- 3.9 The current information suggests a full objectively assessed need for 4,216 homes per annum across the Sussex Coast HMA over the 2010/11-30/31 period (including Adur at 291 which is subject to this review).
- 3.10 At present, none of the other districts in the HMA are able to meet their own OAN and therefore will be unable the meet the unmet needs of other districts. Based on the figures in the table above, this means there could be around 1,663 fewer dwellings than the OAN provided per annum across the HMA (excluding Arun which is under review).
- 3.11 Although we are not assessing need in these districts, it is important to note that any unmet need in the HMA is likely to have a significant impact in Adur and therefore should be taken into consideration when considering how much housing Adur is able to accommodate. This is an important point which we return to later in our assessment.

South Downs National Park (SDNP)

- 3.12 The South Downs National Park sits across a number of local authority areas on the South Coast, including Adur. Planning within the SDNP is now the responsibility of the South Downs National Park Authority (SDNPA).
- 3.13 A Local Plan is currently being prepared for the SDNP and it has its own assessment of housing need<sup>2</sup> which incorporates the overall OANs for each of the districts. The need identified within the SDNP was between 416 and 454 dwellings per annum within the whole SDNP area. However, according to the SDNP SHMA, only around 1% (approx 6 dwellings per annum) of this need is stated as being required within Adur District.
- 3.14 Despite the small proportion of need identified in Adur, the Local Plan proposes an overall housing target of 4,596 dwellings across the National Park, which equates to 255 dwellings per year between 2014 and 2032. This is clearly well below the OAN and due to its status as a national park it is unlikely that it will be able to accommodate any significant further housing. This will put further pressure on the areas outside of the national park in all districts to meet this unmet need.

<sup>&</sup>lt;sup>2</sup> <u>https://www.southdowns.gov.uk/wp-content/uploads/2015/09/SDNP-SHMA-2015.pdf</u>

### 4. DEMOGRAPHICS

### The Starting Point

- 4.1 The NPPG states that the starting point for establishing the need for housing should be the latest household projections published by the Department for Communities and Local Government (CLG). These are currently the CLG 2012-based Sub National Household Projections (published in 2015) which are based on the ONS 2012 based Sub National Population Projections (published in 2014).
- 4.2 These projections are largely trend based, i.e. they provide the household levels and structures that would result if the assumptions based on previous demographic trends in the population and rates of household formation were to be realised in practice. They do not attempt to predict the impact that future government policies, changing economic circumstances or other factors might have on demographic behaviour and therefore may require adjustment, a point which we will return to later in this report.
- 4.3 The 2012 ONS population projections estimate that the population of Adur is expected to grow by around 8,700 between 2011 and 2031. The 2012 CLG household projections show that the number of households in Adur is expected to increase from 27,023 in 2011 to 35,540 by 2031, which is an increase of 5,517 or around 276 households per year.
- 4.4 The NPPG states that account should also be taken of the most recent demographic evidence including the latest ONS population estimates. Accordingly, the consultants have amended the projections slightly to account for the ONS mid-2013 population estimates which show that the population has increased by a further 305 people than the projections suggested by 2013. According to the consultant's calculations, this results in a small increase in the number of households to 5,579 by 2031, which equates to 279 households per annum between 2011 and 2031.

|      | Households<br>2011 | Households<br>2031 | Change in<br>Households | Households<br>per annum | Dwellings<br>per<br>annum |
|------|--------------------|--------------------|-------------------------|-------------------------|---------------------------|
| Adur | 27,024             | 32,603             | 5,579                   | 279                     | 286                       |

Table 3 – GL Hearn estimates of household change (using CLG 2012 projections updated with 2013 mid-year population estimate

4.5 To convert the number of households into dwellings, the Adur 2015 OAN Report includes an uplift of 2.7% which takes account of vacant and second homes. This is based on the proportion of vacant and second homes in the Adur at the time of the 2011 Census and appears to be a reasonable approach.

4.6 Since the production of the Adur 2015 OAN Report, the mid 2014 population estimates have also been published. These show that the population of Adur was estimated to have increased by a further 576 people above the projected figure for 2014, a combined increase of 881 people for 2013 and 2014 compared to the 2012 based projections, as shown in the table below.

|      | ONS 2012SNPP | ONS Mid-year<br>population<br>projection | Difference | % Increase |
|------|--------------|--|------------|------------|
| 2012 | 61,900       | 61,900                                   | n/a        | n/a        |
| 2013 | 62,200       | 62,505                                   | +305       | +0.49%     |
| 2014 | 62,600       | 63,176                                   | +576       | +0.92%     |
|      |              | Total                                    | +881       | +1.38%     |

Table 4 – Difference between 2012 SNPP and ONS mid-year estimates in Adur<sup>3</sup>

- 4.7 It is recognised that the 2014 mid-year estimates were published after the Adur 2015 OAN Report was prepared and that it is not practical or feasible to update the OAN each time a new set of figures is released. The NPPG recognises this, stating that wherever possible, local needs assessments should be informed by the latest available information however this does not automatically mean that housing assessments are rendered out of date every time new projections are issued.
- 4.8 It is not suggested that the figures necessarily need to be recalculated to take account of this. However it is worth noting at this stage in our assessment that the most recent midyear estimates are showing growth which is higher than the 2012 projections have suggested.

### Alternative Scenarios

- 4.9 The NPPG requires that the ONS/CLG projections be used as the starting point as they are statistically robust and are based on nationally consistent assumptions. However, it does state that plan makers may consider sensitivity testing, specific to their local circumstances, based on alternative assumptions in relation to the underlying demographic projections and household formation rates.
- 4.10 The Adur 2015 OAN Report includes a further three scenarios; one based on 5 year migration trends, one based on 12 year migration trends and one which considers unattributable population change (UPC). The scenarios are summarised in the table below:

<sup>&</sup>lt;sup>3</sup> Source: ONS Mid-Year Estimates

http://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/ populationestimatesanalysistool Based on previous publication dates, the 2015 estimates are expected to be released in June 2016

|                      | 2012 Based | 12 Year   | 5 Year    | With UPC   |
|----------------------|------------|-----------|-----------|------------|
|                      | SNPP       | Migration | Migration | Adjustment |
| Households 2011      | 27,024     | 27,024    | 27,024    | 27,024     |
| Households 2031      | 32,603     | 31,706    | 31,878    | 32,400     |
| Change in households | 5,579      | 4,683     | 4,854     | 5,376      |
| Households per annum | 279        | 234       | 243       | 269        |
| Dwellings per annum  | 286        | 240       | 249       | 276        |

Table 5 – Adur 2015 OAN Report Demographic Scenarios (table 17 in GL Hearn document)

### 5 Year Migration Scenario

- 4.11 The 5 year (short term) migration trend looks at the level of population/housing growth that might be expected if migration levels in the future are the same as seen over the past 5 years.
- 4.12 Generally the SNPP uses 5 year migration trends therefore it is expected that this scenario should be similar to the 2012 based SNPP. However, according to the consultant's calculations, this scenario suggests an estimated population increase of 7,287 between 2011 and 2031, which is below the figure of 9,117 estimated by the SNPP 2012 (adjusted for the 2013 mid-year population as described above).
- 4.13 Without running further modelling it is not completely clear why GL Hearn's 5 year trend scenario is different from the SNPP 2012. GL Hearn state in the Adur 2015 OAN Report that the SNPP is not a simple roll forward of past trends and the methodology calculates migration separately for each year of the projection. They acknowledge that this can vary over time depending on how the age structure of the population develops and therefore future migration can either go up or down when compared with past trends. However, in Adur the ageing population may provide some support for the SNPP expecting net migration to increase in the future as a result of retirement moves.
- 4.14 This scenario is not taken forward in the OAN Report as the baseline demographic scenario on this basis.

### 12 Year Migration Scenario

- 4.15 The 12 year (long term) migration trend looks at the level of population/housing growth that might be expected if migration levels in the future are the same as seen over the past 12 years.
- 4.16 This scenario produces an estimated population increase of 6,851 between 2011 and 2031.
  This suggests that migration levels were lower in the earlier part of the 12 year period (2000 2007) than the most recent part (2008 2012).
- 4.17 This scenario is not taken forward in the OAN Report as the baseline demographic scenario.

#### Unattributable Population Change Scenario

- 4.18 Unattributable population change (UPC) is the difference between the population recorded at the census and the population estimated by the intercensal mid-year population estimates. In order to produce a revised set of mid-year estimates for the period between censuses ONS apportion the UPC across each of the 10 years using a cohort method which takes account of the fact that individuals age as the decade progresses.
- 4.19 ONS state that the cause of UPC is likely to be due to a combination of mis-recording of migration or mis-recording of the census in 2001 or 2011, as estimates of births and deaths are usually relatively accurate.
- 4.20 The Adur 2015 OAN Report states that in Adur UPC was negative, which means that the population at the 2011 census was below previous population estimates. The consultants consider that in Adur, UPC is most likely attributed to over-estimation of migration and have produced an alternative scenario which reduces the population projection by 50% of the UPC.
- 4.21 This scenario reduces the projected population between 2011 and 2031 to 8,601 compared to the 2012 SNPP estimate of 9,117, which in turn reduces the dwelling requirement from 286 to 276 per annum. This is the scenario that the consultants take forward in the rest of the Adur 2015 OAN Report as their baseline projection (the starting point).

#### Issues with UPC

- 4.22 We do not agree with this approach of reducing the SNPP 2012 figures to take account of UPC. In 2014, ONS produced a report outlining why UPC should not be included in the 2012 SNPP<sup>4</sup>. In the report, ONS state that UPC is unlikely to be seen in continuing subnational trends for various reasons including improvements in the methodology used to estimate migration adopted in recent years.
- 4.23 ONS state that no UPC adjustment was made in the 2012 based SNPPs as an adjustment could only be made if it can be demonstrated that it measures a bias in the trend data that will continue into the future. The report goes on to state that quality assurance of the 2012-based SNPPs did not reveal any problems indicating that adjustments for UPC are necessary and that the resulting projections generally appear to better reflect trends across all the LAs. Therefore, ONS conclude that no adjustment should be made in the 2012-based SNPPs.

<sup>&</sup>lt;sup>4</sup> ONS Report on Unattributable Population Change 20/01/2014 <u>http://www.ons.gov.uk/ons/about-ons/get-</u> <u>involved/consultations-and-user-surveys/consultations/consultation-on-the-2012-based-subnational-population-projections-</u> <u>for-england/snpp-consult-upc.pdf</u>

- 4.24 This approach of not adjusting for UPC in future projections is also supported by the Local Plans Expert Group (LPEG), a group of experts and advisors who have been put together to consider how local plan making can be made more efficient and effective. In their recently published report to Government<sup>5</sup> they recommend that it should not be open for plan makers or other interested parties to reject the use of the official population and household projections because of their perceived concerns over their statistical robustness such as the implications of UPC.
- 4.25 As discussed previously, it is also important to note that the latest mid-year population estimates are suggesting that the population growth is in fact higher than the 2012 SNPPs are projecting, which further supports the case for not applying a reduction.
- 4.26 However, despite this GL Hearn state that the past issues of over-estimating population growth may have influenced the 2012 based SNPPs and they consider that the 2012 based SNPPs potentially over-estimate growth in the population relative to past trends.
- 4.27 It is also worth noting that UPC adjustments have not been made in the SHMAs/OAN Assessments for the recently approved Brighton and Hove and Lewes Local Plans. In Lewes, which is based on the 2014 Sussex Coast HMA SHMA, UPC is not discussed or considered. In the Brighton and Hove OAN Assessment 2015, UPC is positive which means that the mid-year population estimates over-estimated the population between 2001 and 2011 however no adjustment is made to the OAN to account for this. The report states that *"it is difficult to be precise as to whether UPC relates to under-recording of migration or to issues regarding the accuracy of Census data (and particularly if the 2001 Census under-recorded the City's population). The ONS report dealing with Unattributable Population Change sets out ONS' view that UPC is unlikely to seen in continuing sub-national trend" (Brighton and Hove OAN Report June 2015 GL Hearn paragraph 2.6).*
- 4.28 The inspector considering Arun's Local Plan also recommended against adjusting for UPC as ONS are now reporting that international migration to UK has been underestimated to a statistically significant extent and ONS population projections in 2014 indicate faster growth of population than the 2012 projections. The Inspector noted that, while the effects of these factors on Arun are unknown, it is clear that population growth in the District has already exceeded the 2012-Based SNPP judged by the 2013 and 2014 MYEs, as is also the case in Adur. He also stated that work underpinning the London Plan concludes that net population outflows will take place from London into the wider South East of which Arun is part<sup>6</sup>.

<sup>&</sup>lt;sup>5</sup> Local Plans report to the Communities Secretary and to the Minister of Housing and Planning March 2016 <u>http://www.ons.gov.uk/ons/about-ons/get-involved/consultations-and-user-surveys/consultations/consultation-on-the-2012-based-subnational-population-projections-for-england/snpp-consult-upc.pdf</u>

<sup>&</sup>lt;sup>6</sup> Arun Inspector OAN Conclusions Report (IDED18) 2<sup>nd</sup> February 2016 <u>http://www.arun.gov.uk/local-plan-examination</u>
### Conclusion on Starting Point

- 4.29 For the reasons set out above, we do not agree that the UPC adjusted scenario should be taken forward as the demographic starting point as this scenario does not form a sound basis for projecting future population growth. We consider that the starting point should be the unadjusted SNPP/CLG 2012 based projection of 27,024 people between 2011 and 2031 which equates to **5,579** households (**286** dwellings per annum).
- 4.30 We acknowledge that this appears to be slightly above the 5 and 12 year migration trends however as GL Hearn themselves recognise in the OAN Report (page 39 para 3.32), the SNPP is not a simple roll forward of past trends and that future migration can either go up or down when compared with past trends.

Table 6 – Comparison of demographic starting point

| GL Hearn dpa | Boyer dpa |
|--------------|-----------|
| 276          | 286       |

### Household Formation (Headship) Rates

- 4.31 Household formation rates are the rate at which new households form and are often expressed by the age of the head of the household/household reference person. They are used to translate the population estimates into household estimates.
- 4.32 Over the past few years there has been much discussion amongst demographers and those involved in the OAN process surrounding headship rates, as they can have a significant impact on the final dwelling requirement. The publication of the 2012-based population and household projections in 2015 has made the situation somewhat clearer than in recent years where there was a reliance on the interim 2011 projections, which were widely considered to be unreliable.
- 4.33 However, one of the main concerns with the 2012 household projections is that they are largely based on a recessionary period (2008-2012). During this recessionary period household formation rates decreased, particularly amongst younger age groups who struggled to be able to afford to form new households.
- 4.34 The Adur 2015 OAN Report analyses household formation rates by age group and found that, like many other areas, the rates for the 25-34 age group have been particularly suppressed during this period when compared with the 2008 based SNPPs which were based on a pre-recessionary period. Household formation suppression is likely to be an indication of affordability issues within the HMA, as well as low levels of housing provision.
- 4.35 Allowing for an increase in household formation within this age group would help to cater for the true level of housing demand within the population. However, we believe that this adjustment should form part of the demographic-led housing needs assessment.

- 4.36 The OAN Report does apply this headship rate adjustment but does it as part of the 'Market Signals' analysis, by modelling the housing need based on returning household formation in the 25-34 age group to the 2001 levels by 2031.
- 4.37 We will discuss this further in the market signals analysis section as we believe this to be an incorrect interpretation of the guidance which has implications for the calculation of OAN.

## **5. MARKET SIGNALS**

- 5.1 The NPPG requires that the housing need number suggested by household projections (the starting point) should be adjusted to reflect appropriate market signals, as well as other market indicators of the balance between the demand for and supply of dwellings. It states that prices or rents rising faster than the national/local average may well indicate particular market undersupply relative to demand.
- 5.2 It suggests that relevant market signals may include land prices, house prices, rents, affordability, rate of development and overcrowding. The Adur OAN Report examines these market signals, which we have in turn reviewed and updated where possible below:

### Land Prices

5.3 Not discussed in the OAN Report. Although there is a lack of readily accessible data on this topic, this market signal should have been considered.

### House Prices

- 5.4 The OAN Report stated that the mean house price in Adur (Jan 2013 to Nov 2014) was £246,000 and the median was £228,000. It found that on average, prices in Adur were lower than Coastal West Sussex as a whole, where the mean house price was £274,000 and the median £232,000.
- 5.5 It also found that median house prices in Adur increased by 226% over the pre-recession decade (1998 to 2007) which was above that experienced in the wider area with Coastal West Sussex experiencing a 199% increase, the South East experienced a 188% increase and England and Wales experienced a 190% increase. This demonstrates that house prices have been rising much faster than average.
- 5.6 Since 2007, the Adur 2015 OAN Report reports that all areas in the HMA experienced a price fall in late 2008/early 2009 at the onset of the recession but that house prices in Adur returned to pre-recession levels by early 2010 and have then plateaued, remaining roughly level since.
- 5.7 GL Hearn state that stable house prices over the last five post-recession years provides no evidence of a current supply/demand imbalance for market housing in Adur and that taking account of inflation, the evidence indicates that the value of housing has fallen in real terms.
- 5.8 We have analysed average house prices in 2015 to determine how the market has changed since the production of the Adur 2015 OAN Report in the table below.

|                 | Detached | Semi-Detached | Terrace  | Flats    | Overall  | %<br>increase<br>2014-<br>2015 |
|-----------------|----------|---------------|----------|----------|----------|--------------------------------|
| Chichester      | £594,788 | £325,119      | £318,293 | £210,641 | £398,953 | <b>个</b> 4%                    |
| Brighton & Hove | £586,821 | £393,170      | £416,343 | £266,840 | £349,988 | <b>↑</b> 6%                    |
| Lewes           | £409,501 | £308,272      | £281,533 | £187,307 | £312,999 | <b>↓</b> 1%                    |
| Adur            | £395,186 | £301,015      | £282,701 | £182,948 | £286,474 | <b>1</b> 8%                    |
| Arun            | £408,459 | £260,891      | £227,416 | £154,304 | £276,885 | <b>↑</b> 7%                    |
| Worthing        | £406,281 | £299,327      | £254,873 | £193,728 | £262,989 | <b>↑</b> 8%                    |

Table 7 – Mean House prices (Jan to December 2015)<sup>7</sup>

- 5.9 As shown in the table above, the overall average in Adur in 2015 (January to December) was around £286,500 which is an 8% increase compared to the 2014 average (January to December).
- 5.10 Adur and Worthing have both experienced an 8% increase between 2014 and 2015 which is the highest increase in the HMA, followed by Arun at 7%. The greater increase may be a reflection of the lower prices in these three districts compared to areas such as Chichester, Brighton and Hove and Lewes. As discussed in the HMA section, these other areas are unable to meet their OAN, which is likely to have an impact on the prices in surrounding areas where house prices were lower.

### Rents

- 5.11 The Adur 2015 OAN Report found that the median rental price in Adur was £730pcm which was the same as the overall Coastal West Sussex average. The OAN Report examined trends in private rental values and found that median rental values increased by 5% since 2011 which was slightly below the average for West Sussex (6.9%) and the South East (8.6%) however was still considerably higher than the England average at 3.5%.
- 5.12 We have examined average private rental prices for 2014/15 (the latest currently available on the VOA) and have found that the median rental price has now increased to £775pcm, an increase of 6% compared to the OAN report's previous figure of £730pcm. This brings the median very close to the South East median of £779 which is considerably above the England average of £600. This suggests that rents are rising quicker than regional and national averages and highlights potential affordability issues.

<sup>&</sup>lt;sup>7</sup> Source: Land Registry Price Paid Data

| Area            | Mean Rental Price 2014-2015 | Median Rental Price 2014-2015 |
|-----------------|-----------------------------|-------------------------------|
| Adur            | £806                        | £775                          |
| Arun            | £722                        | £695                          |
| Chichester      | £909                        | £850                          |
| Lewes           | £897                        | £995                          |
| Brighton & Hove | £1,109                      | £950                          |
| Worthing        | £711                        | £695                          |
| South East      | £891                        | £779                          |
| England         | £768                        | £600                          |

Table 8 – Mean and Median Rents 2014/15<sup>8</sup>

#### Affordability Ratios

- 5.13 The 2015 OAN Report states lower quartile house prices in Adur are 9.6 times higher than lower quartile earnings. This compares to 8.9 times for Coastal West Sussex as a whole and to 6.5 times for England highlighting clear affordability issues. These figures are 2013 based and unfortunately CLG do not appear to have published any updates to these figures since<sup>9</sup>. However, they do show that there were significant affordability issues in Adur in 2013 and the wider Coastal West Sussex area.
- 5.14 We have produced our own estimate of the 2015 affordability ratio for Adur based on information taken from Land Registry price paid data for 2015 and the Annual Survey of Hours and Earnings (ASHE) 2015. This shows that lower quartile earnings in Adur in 2015 were around £18,230 per year compared to a lower quartile house price of £220,000 which would give an affordability ratio of 12.1.
- 5.15 We have not updated the affordability ratios for the rest of England and Wales as this is beyond the scope of this report and there are also issues relating to the availability of ASHE data in some districts. However, this clearly shows that affordability has worsened in Adur in recent years.

#### Rates of Development

- 5.16 The NPPG states that if the historic rate of development shows that actual supply falls below planned supply, future supply should be increased to reflect the likelihood of under-delivery of a plan.
- 5.17 The OAN Report measures Adur's housing completions against the South East Plan (SEP) target of 105 dpa from 2006/7 until its revocation in 2013 and then against the Adur OAN 2014 estimate of 180-240 dpa from 2014.

<sup>&</sup>lt;sup>8</sup> Source: VOA Private Rental Data

<sup>&</sup>lt;sup>9</sup> We understand from CLG that updates are due to be published in late May 2016

- 5.18 It concludes that overall housing delivery over this time period exceeds the target in five of the eight years studied and exceeded the target applicable at the time in the relevant monitoring year by 7% over the eight year period. However it does acknowledge that housing targets have not met objectively assessed need and that local housing markets may still be restrained by supply trends, even where housing targets are met.
- 5.19 The net completions in the table below show that the supply of new dwellings in Adur has been falling well short of anticipated need since 2011 which is the base date of OAN assessment, even if we base it on the Adur 2015 OAN Report's assessment of 291.

| Period                         | Net Completions | OAN (GL Hearn<br>Methodology) |  |
|--------------------------------|-----------------|-------------------------------|--|
| 2011/12                        | 193             | 291                           |  |
| 2012/13                        | 146             | 291                           |  |
| 2013/14                        | 93              | 291                           |  |
| 2014/15                        | 99              | 291                           |  |
| 2015/16 (projected)            | 35              | 291                           |  |
| Total                          | 566             | 1,455                         |  |
| Difference                     | -889            |                               |  |
| Requirement 2016/17 to 2030/31 | 350             |                               |  |

Table 9 – Delivery compared to GL Hearn OAN

- 5.20 Adur are 889 dwellings short of meeting OAN to date, even if we base this on 291 dwellings per year, which means that in order to make up this shortfall, the OAN would need to increase to 350 dwellings per annum over the remaining 15 years of the assessment period. This needs to be taken into consideration when determining a target for the district.
- 5.21 On a general note, the low level of completions over the past 5-10 years will be reflected in the demographic trends which will have been supressed due to the lack of new housing and which in turn is likely to have led to worsening affordability.

### Overcrowding

- 5.22 The OAN Report presents an analysis of the proportion of over occupied properties and Houses in Multiple Occupation (HMOs) from the 2001 and 2011 censuses.
- 5.23 It states that in Adur the number of households living in over occupied properties increased from 5.1% to 5.6% although the figure of 5.6% in 2011 was lower than the regional and national average. The proportion of people living in HMOs grew by 1.3% between 2001 and 2011 which is equal to the growth in England and slightly above the average growth in the South East at 0.9%.
- 5.24 We have also analysed the proportion of concealed families at the time of the 2001 and 2011 census and found it has increased from 0.86% to 1.44% in Adur.

- 5.25 A concealed family is one living in a multi-family household in addition to the primary family, such as a young couple living with parents. The proportion of concealed families in Adur is similar to other districts in the local area and is slightly below the South East average of 1.61% and the England average of 1.85%.
- 5.26 We therefore agree with the OAN Report's conclusion that there has been an increase in over-occupied properties, HMOs and concealed families, which is a reflection of regional and national trends which is likely to be the general lack of housing supply compared with population growth.

### Market Signals Uplift

- 5.27 The Adur 2015 OAN Report market signals chapter concludes that house prices have been stable over the last five years and that rental prices have been stable in real terms. It found that housing delivery since 2006/7 has been significantly above housing targets, however acknowledged that past housing targets have been low as they have been influenced by available land. It also found that there are affordability issues with a lower quartile affordability ratio of 9.6 and a decline in owner occupation and an increase in private renting HMOs. However, it states that these are consistent to wider trends and affordability has not been worsening.
- 5.28 We believe this to be misleading as just because these trends are consistent with wider trends, it does not mean that this area does not have affordability issues and if anything, highlights the extreme affordability issues that have been accepted as the norm in this area and the wider South East. In addition, as set out above, our own analysis and review has found that the latest published data shows that house prices in Adur have been rising at a higher rate than the local and national average and affordability ratios have worsened significantly.
- 5.29 Reflecting market signals GL Hearn make adjustments to household formation rates for 25-34 year olds, as discussed earlier in order to improve affordability over time. This adjustment represents an uplift of 4% (10 dwellings per annum), as outlined in the table below.

|                      | 12 Year<br>Migration | 5 Year<br>Migration | With UPC<br>Adjustment<br>(GL Hearn<br>preferred) | 2012-based<br>SNPP (Boyer<br>preferred) |
|----------------------|----------------------|---------------------|---|---|
| Households 2011      | 27,024               | 27,024              | 27,024  | 27,024                                  |
| Households 2031      | 31,706               | 31,878              | 32,400  | 32,603                                  |
| Change in Households | 4,683                | 4,854               | 5,376   | 5,579                                   |
| Households per annum | 234                  | 243                 | 269   | 279                                     |
| Dwellings per annum  | 240                  | 249                 | 276   | 286                                     |

Table 10 – GL Hearn scenarios with market signals uplift

|                           | 12 Year<br>Migration | 5 Year<br>Migration | With UPC<br>Adjustment<br>(GL Hearn<br>preferred) | 2012-based<br>SNPP (Boyer<br>preferred) |
|---------------------------|----------------------|---------------------|---|---|
| Market Signals Uplift     | 4%                   | 4%                  | 4%  | 4%                                      |
| Total Dwellings per annum | 250                  | 259                 | 287*  | 297*                                    |

\* Boyer calculation slightly different to GL Hearn's (by 1 dwelling - possible rounding error)

- 5.30 Based on GL Hearn's preferred demographic scenario (with UPC adjustment) this leads to a dwelling requirement of 287 dwellings per year. If this was to be based on the 2012 SNPP scenario, which is Boyer's recommended scenario, as outlined in the demographic analysis section, this gives a dwelling requirement of 297 dwellings.
- 5.31 However, we believe that this methodology is not consistent with the guidance in the NPPG. The NPPG paragraph 015 (What is the starting point to establish the need for housing) states that "the household projection-based estimate of housing need may require adjustment to reflect factors affecting local demography and household formation rates which are not captured in past trends". (NPPG *P*aragraph: 015 Reference ID: 2a-015-20140306).
- 5.32 The NPPG paragraph 019 (How should market signals be taken into account?) then goes on to state that "the housing need number suggested by household projections (the starting point) should be adjusted to reflect appropriate market signals, as well as other market indicators of the balance between the demand for and supply of dwellings" (NPPG Paragraph: 019 Reference ID: 2a-019-20140306).
- 5.33 This clearly makes a distinction between adjustments to be made to the demographic 'starting point' where the latest projections and the adjustments to be made are based on the market signals analysis.
- 5.34 We believe that a 4% increase in this instance (which represents around 10 dwellings per year) is just not adequate to alleviate the affordability issues in Adur. It is recognised that this approach of adjusting household formation rates for 25-34 year olds as a market uplift has been accepted by Inspectors in other areas however, the proportion is younger people is lower than average in Adur. Therefore applying an adjustment for this age group only represents a very small uplift.

5.35 It is also recognised that the NPPG does not currently outline how the market signals uplift should be calculated and therefore there has been much debate around this issue. The recently published Local Plan Expert Group Paper (March 2016) also recommends a stepped approach to calculating OAN in line with the current NPPG and suggests that adjustments to the household formation rates for younger age groups should be made as part of the demographic analysis and then following this adjustment, a further market signals adjustment should be made of between 0% and 25% based on affordability thresholds. Their methodology proposes that where the house price ratio (HPR) is at or above 8.7, and/or the rental affordability ratio (RAR) is at or above 35%, a 25% uplift should be applied.

### Boyer Methodology

- 5.36 There has been some debate around the proposed LPEG methodology with some commentators suggesting that it will lead to a significant over provision at a national level due to the number of local authorities that would be required to apply the full 25% uplift.
- 5.37 Taking this point into consideration and whilst there is still uncertainty we have therefore applied an alternative methodology which requires local authorities to apply an uplift of between 0% and 25% depending on their affordability ratio compared to other local authorities. This would mean the least affordable authority would apply the full 25% uplift and the most affordable authority would apply 0% uplift, with all other local authorities applying a proportional ratio between 0% and 25%.
- 5.38 We have taken the affordability ratio of each of the local authorities in England and have ranked them in order of least affordable to most affordable (based on the 2013 CLG affordability data as this is the last full England wide set available). We have calculated an approximate uplift for each local authority based on its affordability compared to the least affordable which receives the maximum 25% uplift.
- 5.39 Based on this methodology, Adur would require an additional 9% uplift<sup>10</sup>.

|  | 2012-based SNPP |
|--|-----------------|
|  | Scenario        |
| Dwellings per annum (baseline demographic scenario)                              | 286             |
| Demographic uplift for 24-34 year olds   | 4%              |
| Total Dwellings with demographic uplift  | 297             |
| Market Signals uplift (based on affordability ratios)                            | 9%              |
| Total dwelling requirement with demographic adjustment and market signals uplift | 324             |

Table 11 – Adur OAN Scenarios with 9% uplift

<sup>&</sup>lt;sup>10</sup> The least affordable local authority has an affordability ratio of 26.81 and Adur has a ratio of 9.64. Calculation = 9.64 / 26.81 = 0.36. 0.36 \* 25 = 8.99 (rounded to 9% uplift).

- 5.40 This gives us 324 dwellings per annum based on the 2012 SNPP scenario which we believe should be used.
- 5.41 Although this may not be a perfect methodology, at a time of uncertainty in how the NPPG will be amended, we believe that an uplift of 9% (a 13% uplift overall including the demographic uplift) is reasonable given the need for housing in this area. This is also more in line with the recommendations by the Inspector in nearby Eastleigh District. In Eastleigh, the Inspector considered that a 10% uplift would be appropriate due to the 'modest' pressure of market signals<sup>11</sup>. As a comparison, Eastleigh had an affordability ratio of 8.41 in 2013, compared to 9.64 in Adur.
- 5.42 An uplift of 30% from the demographic starting point was recommended by the Inspector in the Canterbury Local Plan Examination, taking their OAN from 620dpa to 803 dpa. The Inspector stated that this took reasonable account of market signals, economic factors, a return to higher rates of household formation and affordable housing needs<sup>12</sup>. As a comparison, the affordability ratio in Canterbury was 9.12 in 2013 compared to 9.64 in Adur.
- 5.43 This leads us to consider whether a greater uplift may be required, which is discussed below.

Local Plans Expert Group Recommended Methodology

- 5.44 As previously outlined, the Local Plans Group Report (Appendix 6) proposed methodology recommends an uplift of 25% in this instance. Their methodology proposes that where the house price ratio (HPR) is at or above 8.7, and/or the rental affordability ratio (RAR) is at or above 35%, a 25% uplift should be applied. As discussed above, the HPR in Adur is well above 8.7.
- 5.45 The Group state that they "recognise that some local authorities may perceive a 25% uplift as significant, but uplifts of 25% (coupled with responses to address affordable housing need) will be the minimum necessary to achieve Government objectives" (paragraph 3.21 iv).
- 5.46 The table below reviews the OAN in line with the recommendations from the Local Plans Expert Group.

|   | 2012-based    |
|---|---------------|
|   | SNPP Scenario |
| Dwellings per annum (baseline demographic scenario) | 286           |
| Demographic uplift for 24-34 year olds              | 4%            |
| Total Dwellings with demographic uplift             | 297           |

Table 12 – Adur OAN Scenarios based on Local Plan Expert Group proposed scenario (25% uplift)

<sup>&</sup>lt;sup>11</sup> Eastleigh Local Plan Inspectors Report 2015

https://www.eastleigh.gov.uk/media/31287/ppi\_InspectorsreportFeb15.pdf

<sup>&</sup>lt;sup>12</sup> Note on main outcomes of Stage 1 hearings August 2015 <u>https://www.canterbury.gov.uk/planning/planning-policy/local-plan/</u>

|  | 2012-based    |
|--|---------------|
|  | SNPP Scenario |
| Market Signals uplift (based on affordability ratios)      | 25%           |
| Total dwelling requirement with demographic adjustment and | 371           |
| market signals uplift                                      |               |

- 5.47 This gives us 371 dwellings per annum using the 2012 SNPP scenario (7,420 dwellings between 2011 and 2031).
- 5.48 Whilst the Expert Group findings have not yet been adopted by DCLG as being formal guidance, the advice which has been prepared by a panel of experts on OAN matters sets out a methodology which is more in line with the current national guidance than that adopted by GL Hearn as it adjusts for demographic and market signals separately.

### Market Signals Summary

- 5.49 In summary, we believe that in the case of Adur, the 4% uplift (equivalent to around 10 dwellings per annum) to an already downward adjusted demographic scenario is not sufficient to relieve affordability pressures in the district and provide sufficient affordable housing. We discuss this further in Chapter 7.
- 5.50 The Adur 2015 OAN report argues that worsening affordability in Adur is consistent with wider trends however we believe that this approach does not take into consideration the 'step change' that is required to improve affordability.
- 5.51 In 2004, the Barker Review of Housing supply<sup>13</sup> argued that continuing at the current rate of housebuilding was not a realistic option unless we are prepared to accept increasing problems of homelessness, affordability and social division, decline in standards of public service delivery and increasing the costs of doing business in the UK hampering our economic success.
- 5.52 These issues are clearly still as relevant in 2016 with the LPEG Report stating that "for decades the planning system has failed to deliver the scale of housing necessary to meet national needs. The scale of the national housing shortage needs no elaboration here, although the urgency of the situation is reinforced by an understanding of the lack of affordability that has arisen from chronic under-provision and an extreme shortage of supply" (LPEG Report paras 2.2 and 2.3).
- 5.53 Based on our calculations, the OAN in Adur should be no less than **324** dwellings per annum, which equates to **6,480** dwellings over the 20 year plan period 2011 to 2031. Based on the approach proposed by LPEG the OAN could be up to 371 dwellings per annum which equates to a total requirement of 7,420 dwellings over 20 years.

<sup>&</sup>lt;sup>13</sup> Review of Housing Supply Final Report – Recommendations. Kate Barker 2004

- 5.54 It is recognised that this is an increase compared to past housing delivery and population projections, which are themselves reflective of past trends of low delivery; however the avowed intention of the NPPF is to significantly boost the supply of housing.
- 5.55 The next stage of our assessment is to compare these figures with economic forecasts and the need for affordable housing to determine how they align.

Table 13 - Comparison of GL Hearn and Boyer OAN following market signal adjustments

| GL Hearn dpa | Boyer dpa |
|--------------|-----------|
| 287          | 324       |

# **6. ECONOMIC CONSIDERATIONS**

- 6.1 The NPPF states that "the government is committed to ensuring that the planning system does everything it can to support sustainable economic growth. Planning should operate to encourage and not act as an impediment to sustainable growth. Therefore significant weight should be placed on the need to support economic growth through the planning system" (NPPF paragraph 19).
- 6.2 The NPPG requires that when assessing housing need, plan makers should make an assessment of the likely change in job numbers based on past trends and/or economic forecasts as appropriate and also have regard to the growth of the working age population in the housing market area.
- 6.3 The Adur OAN considers the forecast of workplace jobs used in the 2014 Employment Land Review<sup>14</sup> which is based on 2013 Experian Forecasts. These forecasts predict an annual average growth in employment of 265 jobs per annum.
- 6.4 The report then calculates the level of housing that might be required to support the level of job growth identified in the Experian 2013 forecast. It includes 2 slightly different scenarios based on the Experian forecasts relating to commuting and double jobbing assumptions.
  - Commuting Assumptions: It is assumed that the commuting ratio remains at the same level as shown by the 2011 census. This means that is expected to be a higher increase in working residents for a given number of jobs (as there is net out-commuting from the District). This represents a policy off approach which is in line with the guidance in the NPPG.
  - Double Jobbing Assumption: this takes into consideration that some people have more than one job and is calculated as the number of people working in the district divided by the number of jobs.
- 6.5 The resulting dwelling requirements from these scenarios are shown in the table below. This gives a dwelling requirement of between 307 and 362 dwellings per year which is somewhat higher than the demographic projections.

|  | Dwellings 2011-<br>2031 | Dwellings per<br>annum |
|--|-------------------------|------------------------|
| Experian with commuting and double jobbing assumptions | 7,234                   | 362                    |
| Experian with double jobbing assumption only           | 6,141                   | 307                    |

Table 14 – Projected dwelling growth of jobs-growth scenarios (page 52 of Adur OAN Assessment)

<sup>&</sup>lt;sup>14</sup> GL Hearn 2014 <u>http://www.adur-worthing.gov.uk/media/media,127604,en.pdf</u>

- 6.6 GL Hearn state that these forecasts should be treated with a degree of caution and argue that 10 and 15 year past trend projections may be a more realistic basis for projecting future economic growth. GL Hearn state that they consider it unlikely that the population (and workforce) will grow as strongly as is projected in the Experian forecasts principally due to the geography of the district and the limited land availability.
- 6.7 Consequently, they use a mid-point between the 10 and 15 year trend based projection of employment to provide a more realistic and likely assessment of future jobs growth in Adur. This mid-point forecast results in a housing need of 281 dwellings per annum if the assumptions on current commuting remaining at current levels are applied and 246 dwellings per annum assuming no growth in net commuting.
- 6.8 Following some analysis of commuter flows in Adur and the surrounding local authorities, the consultants conclude that assuming "self-containment" of commuting flows is unrealistic in Adur and therefore assume that commuting flows will remain at current levels which results in a dwelling need of 281 dwellings per annum. This is 5 dwellings higher than GL Hearn's demographic projection (UPC adjusted scenario) of 276 dwellings per year and they therefore suggest a 5 dwelling per annum uplift of the demographic projection to 281 per annum to meet economic growth.
- 6.9 However, we believe there are several issues with the approach to economic forecasts taken here; the first being that the economic forecasts have been constrained due to the availability of employment land in the district.
- 6.10 The NPPG states that supply of land should and other constraints should not be taken into account when assessing needs but should be subsequently considered as part of the plan making process.

"The assessment of development needs is an objective assessment of need based on facts and unbiased evidence. Plan makers should not apply constraints to the overall assessment of need, such as limitations imposed by the supply of land for new development, historic under performance, viability, infrastructure or environmental constraints. However, these considerations will need to be addressed when bringing evidence bases together to identify specific policies within development plans." (NPPG Paragraph: 004 Reference ID: 2a-004-20140306).

6.11 Boyer considers that just because there is a difference between past jobs trends in the district and the jobs forecast, this should not automatically mean that the forecast is not reliable, especially when objectively assessing need which should not apply constraints. As quoted at the start of this section, the NPPF requires that the planning system does everything it can to support sustainable economic growth, and emphasises that planning should operate to encourage and not act as an impediment to sustainable growth. On this basis it is clear that the past economic performance of the district should not limit the potential of the district to achieve accelerated economic growth in the future, in line with the NPPF.

- 6.12 The 2013 Experian projections forecast a higher level of job growth than past trends, however there are potential issues with the 2013 forecasts as they are now several years out of date.
- 6.13 The economic outlook has continued to improve since 2013 and although we have not analysed any updated forecasts for Adur at this stage, it is likely that the 2015 forecasts would show even more optimistic growth. There are also other nationally recognised economic projections which could be considered and compared with the Experian forecasts if there is doubt over their reliability.
- 6.14 It is also important to consider that economic growth is forecast in other areas in the HMA which are not able to meet their need for housing, meaning that even if economic growth is limited within Adur itself, there is likely to be unmet need from other areas.
- 6.15 As an example, the Brighton and Hove SHMA states that there is need for 1,112 dwellings per annum based purely on their economic growth scenario. This is also based on 2013 Experian Forecasts, which were considered to be reliable by GL Hearn in this instance<sup>15</sup>. However, their housing target is just 660 dwellings per year, meaning that if the Experian forecasts are accurate there will be an undersupply of around 452 dwellings per year based on the economic. This will clearly impact housing need in Adur which has a strong commuting relationship with Brighton and Hove, with around 40% of Adur's out commuters travelling to Brighton and Hove to work.
- 6.16 In summary, we believe that the economic scenarios taken forward by GL Hearn in the Adur OAN are constrained by past trends and perceptions on land availability which is contrary to the NPPF and NPPG. In the absence of any more up to date economic projections, we believe that the Experian 2013 projections should be used as in Brighton and Hove. This results in a dwelling requirement for around 362 per annum if a 'policy off' approach is taken and existing levels of commuting and double jobbing are assumed to remain.
- 6.17 This is very close to the LPEG suggested methodology (with adjusted household formation for 25-34 year olds and 25% market signals uplift) of 371 dwellings per annum although does not take into consideration the unmet need from the rest of the HMA. This demonstrates that an OAN of 291 is likely to supress potential economic growth in Adur based on the 2013 Experian forecasts and that a target of 180 would severely supress potential economic growth.

<sup>&</sup>lt;sup>15</sup> Final OAN was assessed to be 1,506 per annum

# 7. AFFORDABLE HOUSING NEED

- 7.1 The NPPG requires plan makers to assess the needs of both market and affordable housing. Paragraph 022 states that plan makers working with relevant colleagues within their local authority (eg housing, health and social care departments) will need to estimate the number of households and projected households who lack their own housing or live in unsuitable housing and who cannot afford to meet their housing needs in the market.
- 7.2 It goes on to state that this calculation involves adding together the current unmet housing need and the projected future housing need and then subtracting this from the current supply of affordable housing stock.
- 7.3 The 2012 Coastal West Sussex SHMA assessed affordable housing need across the whole HMA and the Adur 2015 OAN Report states that it undertakes a selective update to the affordable housing needs model, taking account of more recent information including the demographic projections.
- 7.4 The model considers the need arising from households who cannot afford market housing without some form of subsidy or support and compares this against the supply arising from existing affordable housing and that within the development pipeline.

### Methodology Review

7.5 The OAN Report identifies a new annual need for 233 dwellings per annum in Adur. A summary of the GL Hearn's affordable need calculation is provided in the table below:

|   |   | Dwellings |
|---|---|-----------|
| А | Current Gross Affordable Need (2015)                          | 536       |
| В | Committed Supply of Affordable Housing                        | 102       |
| С | Total Net Current Affordable Need (A-B)                       | 434       |
| D | Total Net Current Affordable Need per annum to 2031 (C/16)    | 27        |
| Е | Annual Need from Newly-Forming Households                     | 253       |
| F | Annual Need from Existing Households Falling into Need        | 65        |
| G | Total Annual Gross Newly-Arising Need (E +F)                  | 318       |
| Н | Annual Supply from Relets of Social & Affordable Rented Homes | 108       |
| I | Annual Supply from Relets of Intermediate Housing             | 4         |
| J | Total Future Annual Supply from Re-Lets (H+I)                 | 112       |
| K | Annual Net Need for Affordable Housing (D + G – J)            | 233       |

Table 15 – GL Hearn's Affordable Housing Need Calculation

7.6 We do not have access to the underlying figures on affordable housing need such as council waiting lists and affordable housing relets per annum. This information should be provided in the form of background appendices as it is not possible to examine the calculations in detail and determine whether an appropriate assessment of affordable need has been made.

- 7.7 However, despite the lack of background data we have still outlined a number of concerns with the methodology used in the table above that require further clarification from the consultants:
- 7.8 **A. (Current Gross Affordable Need) –** this section does not provide a breakdown of the type of need that these households are in (i.e. homeless, overcrowded, in unfit accommodation, with particular social needs etc) as outlined in the NPPG paragraph 023.
- 7.9 Also of concern in this calculation is the fact that an affordability test has been applied to the level of need, taking it from 644 identified as 'on register and in need' to 536 as it is assumed that 83.3% of these households are unable to afford market housing. We consider that the fact that these households have been identified as 'in need' on the register means that they have a definite need for affordable housing for one of the reasons outlined above. This issue may become clearer if a breakdown of the types of need were included however this appears to be artificially reducing the current level of identified need and therefore is unreliable.
- 7.10 **D. (Total current affordable need per annum).** This has been divided over the entire plan period however; it would be unreasonable to make people who are in current need wait 16 for their needs to be met. It is recognised that this is a numerical exercise rather than an exercise dealing with individuals in need, however this is creating an instant backlog as there will be new need arising each year.
- 7.11 E. (Annual Need from Newly-Forming Households) this section is based on the consultants preferred demographic scenario which adjusts the SNPP 2012 for UPC. As outlined in the previous sections we believe this to be incorrect and therefore this figure should be re-calculated to reflect this. Whilst this might only make a small difference to the annual requirement figure over time it would have a significant impact.
- 7.12 The consultants then state that of the newly forming households in E, it is estimated that 53% will not be able to afford entry level market housing without support. The report does not supply any figures or supporting evidence for this assumption and therefore it is considered to be unreliable.
- 7.13 Also of note is the estimate of newly forming affordable need identified in the Adur 2015 OAN Report (253 per annum) which is below the need figure identified in the 2012 SHMA (336 per annum). The consultants state that this is largely due to a change from the income threshold from 25% to 30% used for the affordability test, however even at 25% the 2015 estimate only increases to 288 per annum and the remainder of the difference is not explained. Given the overall OAN figure for Adur is higher than in the 2012 report (165 per annum) and that affordability has worsened, this difference needs further explanation as it currently appears to be unreliable.

### Households already living in Adur

- 7.14 Following the identification of a net affordable housing need figure, of 233 per annum the 2015 OAN Report takes into consideration that a proportion of those included will already be living in housing (albeit not housing that is suitable for them for some reason). If these households were to move to an affordable home then their current dwelling would become available for another household and there would not be a net need for an additional dwelling.
- 7.15 The OAN Report states that the net need for affordable homes in the district is therefore 141 per annum (which is E-J in the table above). This is the annual need from newly forming households minus the annual supply from re-lets.
- 7.16 However, this appears to be flawed as net need for affordable housing (K) has already been discounted to take the annual supply from re-lets into consideration (D+G-J). Those in E (newly forming households) are by definition 'newly forming' and therefore are not already occupying a dwelling in the district.
- 7.17 Without any further explanation of the assumptions made here, we consider the consultant's calculations to be wholly unreliable and that net affordable need is at least 233 dwellings per annum rather than 141 and possibly even higher based on our concerns with the other aspects of the methodology outlined above.

Implications for overall OAN

7.18 The NPPG states that:

"The total affordable housing need should then be considered in the context of its likely delivery as a proportion of mixed market and affordable housing developments, given the probable percentage of affordable housing to be delivered by market housing led developments. An increase in the total housing figures included in the local plan should be considered where it could help deliver the required number of affordable homes." (Paragraph: 029 Reference ID: 2a-029-20140306)

7.19 Notwithstanding our concerns outlined above, if there is a requirement to build 233 affordable dwellings per annum this would require an overall dwelling provision of 776 dwellings per annum if an affordable proportion of 30% is assumed. It is not suggested that the OAN should be increased to 776 dwellings per annum; however it is clear that the potential targets suggested by the demographic analysis would not be anywhere near sufficient to deliver close to the appropriate level of affordable housing.

- 7.20 The OAN Report however states that whilst there is a shortfall in the need and supply of affordable housing it does not necessarily point to a need to increase overall housing provision. It states that the additional 10 dwellings per year as a result of adjusting household formation rates for 25-34 year olds would support an improvement in affordability. As outlined previously, this takes the total OAN figure from 281 (demographic projection plus 5 for economic growth) to 291 dwellings per annum.
- 7.21 We would disagree that these additional 10-15 dwellings would achieve any significant improvement in affordability at all. A target of 291 dwellings per annum would achieve affordable provision of only around 87 units per year (if 30% provision is assumed) and is unlikely to relieve the considerable affordability pressures in Adur. The table below shows the potential affordable housing delivery of the different OAN scenarios discussed throughout this report. Even the highest OAN of 371 based on the LPEG methodology would result in a significant affordable housing shortfall.

| Target per annum      | Affordable<br>Dwellings<br>at 30% per<br>annum | Shortfall of affordable<br>housing compared to<br>net need of 141 pa<br>(shortfall over 20 yr<br>plan period) | Shortfall of affordable<br>housing compared to<br>net need of 233<br>(shortfall over 20 yr<br>plan period) |  |
|-----------------------|--|---|--|--|
| 180 (proposed target) | 54   | -87 (-1,740)  | -179 (-3,580)  |  |
| 291 (GL Hearn OAN)    | 87   | -54 (-1,074)  | -146 (-2,914)  |  |
| 324 (Boyer OAN)       | 97   | -44 (-876)  | -136 (-2,716)  |  |
| 371 (LPEG OAN)        | 111  | -30 (-594)  | -122 (-2,434)  |  |

| Tahla 16_ | - Potential | affordahla | housing  | dolivon  | at 20% | 6 of tota | I hasod i | on nronoser | tarnots |
|-----------|-------------|------------|----------|----------|--------|-----------|-----------|-------------|---------|
| rubic ro  | i otoritiai | unoraubio  | nouoling | achivery | ur 00/ | o or tota | i buobu u |             | rungolo |

7.22 For this reason, and the others outlined above, we believe that an OAN of <u>at least</u> 324 dwellings per annum is required and although this will not completely meet affordable need, it will deliver a greater amount of affordable housing compared to the consultants OAN of 291 and the proposed target of 180.

# 8. WIDER HMA NEED & THE DUTY TO COOPERATE

- 8.1 The NPPF states that public bodies have a duty to cooperate on planning issues that cross administrative boundaries, particularly those which relate to strategic priorities such as the amount homes and jobs needed in the area.
- 8.2 It also states that local planning authorities should work collaboratively with other bodies to ensure that strategic priorities across local boundaries are properly coordinated and clearly reflected in individual Local Plans. Joint working should enable local planning authorities to work together to meet development requirements which cannot wholly be met within their own areas for instance, because of a lack of physical capacity or because to do so would cause significant harm to the principles and policies of this Framework.
- 8.3 As outlined in Chapter 3, many of the other districts in the HMA have already adopted their Local Plans with targets that fall well below their OANs. At present, there is a shortfall of at least 1,696 per annum in the HMA which includes Adur at 324 per annum and does not include Arun at all.

| District        | Latest OAN<br>(per annum) | Adopted/<br>Proposed Target | Difference between<br>OAN and target |
|-----------------|---------------------------|-----------------------------|--------------------------------------|
| Adur            | 324                       | 180                         | -144                                 |
| Chichester      | 505                       | 410                         | -95                                  |
| Arun            | 758                       | TBC                         | TBC                                  |
| Worthing        | 636                       | 200 (Core Strategy          | -436                                 |
|                 |                           | 2011)                       |                                      |
| Brighton & Hove | 1,506                     | 660                         | -846                                 |
| Lewes           | 520                       | 345                         | -175                                 |
| Total           | 3,491*                    | 1,595*                      | -1,696*                              |

Table 17 – HMA OAN compared to adopted/proposed targets

\*Does not include Arun

- 8.4 These areas all have rapidly rising house prices and worsening affordability, which is only going to increase pressure in Adur further.
- 8.5 Therefore the determination of a target for Adur must not be based solely on the need identified in Adur but must consider the context of the wider HMA and the significant levels of unmet need. This means that all opportunities to deliver housing, particularly affordable housing, need to be fully explored.

### 9. SUMMARY AND CONCLUSIONS

- 9.1 In summary, we believe that the OAN of 291 dwellings per annum identified in the Adur 2015 OAN Report does not adequately reflect the full scale of housing need in the district. This is due to a number of reasons, which are summarised below:
  - The 'starting point' identified by the demographic analysis has been adjusted downwards to take UPC into account. This approach is not supported by ONS who state that improvements to the estimates in recent years mean that this is not required. In addition, the 2013 and 2014 mid-year population estimates are actually showing that the population is growing faster than the 2012 SNPP suggested which is another reason not to reduce the projections further.
  - Household formation has been supressed in the 25-34 age groups in the 2012 CLG household projections due the impact of the recession. This has been recognised in the OAN Report but has been included as an uplift of 4% (equivalent to around10 dwellings per annum) as part of the market signals adjustment. We believe this approach to be flawed and not in line with the NPPG which requires adjustments to be made to the demographic projections based on "factors affecting local demography and household formation rates which are not captured in past trends" (paragraph 015). It then goes on to state that the starting point should be adjusted to reflect appropriate market signals, which we believe should be a separate step in the calculation.
  - We believe that a further uplift from the suggested 4% (or 10 dwellings) is required as such a small adjustment is unlikely to make any significant contribution to the affordability of housing and the supply of affordable housing in a district that has clear affordability issues. The GL Hearn analysis found that the affordability ratio in Adur 9.6 which is higher than Coastal West Sussex as a whole at 8.9 and considerably above the national average of 6.5. Our analysis has shown that affordability in Adur has since worsened even further.
  - The NPPG does not provide guidance on how to apply a market signals adjustment but does state that in areas where an upward adjustment is required, plan makers should set this adjustment at a level that is reasonable. It states that the more significant the affordability constraints (as reflected in rising prices and rents, and worsening affordability ratio) the larger the improvement in affordability needed and, therefore, the larger the additional supply response should be. We have used an approach with required a further 9% uplift which takes the requirement to 324 dwellings per year. We have also examined the approach set out by the Local Plans Expert Group who state that a 25% increase should be applied where affordability ratios are above 8.7. This would the OAN to 371 dwellings per annum, an increase of 80 dwellings from the 291 dwellings per annum identified by GL Hearn.

- The figure 371 is also much closer to the 362 dwellings per annum figure which was identified by the 'policy off' Experian 2013 economic projection. This figure was rejected by the consultants as it was felt that is was not realistic due to the land constraints in Adur. The NPPG states that the assessment of development needs is an objective assessment of need based on facts and unbiased evidence. Plan makers should not apply constraints to the overall assessment of need, such as limitations imposed by the supply of land for new development, historic under performance, viability, infrastructure or environmental constraints.
- There is a requirement for at least 233 net additional affordable dwellings per annum in Adur. Based on a proportion of 30% affordable this would require 776 dwellings overall to be built each year. It is not suggested that this should form the basis of the target; however a target of around 324 per annum would provide a much greater contribution of this affordable housing need.
- 9.2 To conclude, we believe that the OAN should be a minimum **324** dwellings per annum, which is **6,480** dwellings over the period 2011 to 2031, as this is a truer reflection of housing need in Adur based on the aspirations of the NPPF to boost significantly the supply of housing and to build a strong and competitive economy and subsequent methodology set out in the NPPG.
- 9.3 The OAN could be as high as 371 dwellings per annum if the recommendations put forward by the Local Plans Expert Group are adopted. There is still some debate over this methodology, however there is no doubt it would go further in boosting the supply of housing as required by the NPPF. In Adur's case, this methodology would bring the OAN much closer to the unconstrained economic scenario of 362 dwellings per annum and would deliver more much needed affordable housing.
- 9.4 It is recognised that this is considerably higher than previous targets and that the resulting population would be above that seen in past trends, however the past population trends will have been influenced by the lack of new housing being built in Adur.
- 9.5 As discussed in the market signals chapter, since 2011 (which is the starting point of the OAN assessment), only 531 dwellings have been completed with a further 35 dwellings anticipated in 2015/16, resulting in an average of 113 per year (including 2015/16). This is clearly well below even the lower OAN figure of 291 suggested by the Adur 2015 OAN Report and therefore there is already likely to be significant unmet need. As outlined in the HMA chapter, there is also likely to be significant unmet need across many (if not all) of the other districts in the HMA which is going to have an impact on the need in Adur.

9.6 It is recognised that Adur and the wider HMA is highly constrained by South Downs National Park and the sea and this report has not sought to take that into consideration. However it is clear that Adur must seek every opportunity to try meet as much of their own OAN on suitable sites as possible and even potentially some of the unmet need from the other districts in the HMA as failure to do so will lead to worsening affordability and will restrict economic growth in the area.





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### APPENDIX 2 – NEW SALTS FARM ILLUSTRATIVE MASTERPLAN



# **APPENDIX 3 – BADGER SURVEY**



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15th April 2016

#### Re: New Salts Farm and Badger Sett

Please accept this letter as confirmation of my meeting with Tony Slow, Field Officer for the Badger Trust, Sussex. The meeting was held on site on the 15<sup>th</sup> April 2016. The meeting was held to identify the extent of badger use of the wider site and to resurvey the badger sett that was identified in the preliminary ecological appraisal which was undertaken in July 2015.

In July 2015, one single hole was located within the red line boundary. A spoil heap and badger guard hairs were recorded within the spoil. No other badger setts were located within the red line boundary and no other evidence, such a snuffle holes or latrines were recorded.

On the 15<sup>th</sup> April 2016, the hole was re surveyed for evidence of 'current use' by badgers. The hole did not appear to be active, with no fresh spoil present and no hairs. Furthermore, there were no paw prints or scratch marks around the hole or any fresh evidence such as snuffle holes or latrines or dung pits located within the immediate area.

The site was walked to assess the potential presence of bay new setts within the red line boundary. No further setts were located within the area which was walked, and no other evidence such as dung



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pits or latrines were noted. However, mammal paths were recorded within the fields. Some potential snuffle holes were located on the edge of the site to the western field edge, where there is a small pocket of scrub and woodland. This habitat is located outside the red line boundary of the site and was therefore not fully surveyed during this site visit. However, no setts were clearly visible.

Tony identified that there are several badger setts within the wider landscape, with a main badger sett located within the Dogs Trust Land. The sett which was located on site may have resulted from a badger being forced out of the main sett to the east of the site and seeking new territory. However, this can not be confirmed.

Badgers receive protection under The Protection of Badgers Act 1992, which consolidates the previous Badger Acts of 1973 and 1991. The Act makes it an offence to:

- Wilfully kill, injure, take, or attempt to kill, injure or take a badger;
- Cruelly ill-treat a badger, including use of tongs and digging;
- Possess or control a dead badger or any part thereof;
- Intentionally or recklessly damage, destroy or obstruct access to a badger sett<sup>1</sup> or any part thereof;
- Intentionally or recklessly disturb a badger when it is occupying a badger sett;
- Intentionally or recklessly cause a dog to enter a badger sett;
- Sell or offer for sale, possess or have under his control, a live badger.

It must be noted that badger foraging habitat and corridors are not legally protected, although should be considered within any development.

<sup>&</sup>lt;sup>1</sup> A badger sett is defined in the legislation as "any structure or place which displays signs indicating current use by a badger". This includes seasonally used setts. Latest guidance from Natural England a sett is defined as such (and thus is protected) as long as signs indicate "current use". Additionally, Natural England state that "the maximum lapse of time between last occupation by badgers and the inspection of a sett for it to be considered in "current use" is how long it takes the signs to disappear, or more precisely, to appear so old as to not indicate "current use"" (Natural England, June 2009).



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A Development Licence would be required from Natural England for any development works that are likely to affect an active badger sett, or disturb badgers whilst in a sett. However, Natural England states that *"badgers are relatively tolerant to moderate levels of noise and activity around their setts and that low to moderate levels of apparent disturbance at or near to badger setts do not necessarily disturb the badgers occupying those setts"* and therefore such disturbance around setts does not always require a licence (Natural England, 2009).

Currently the location of the sett identified within the red line boundary does not conflict with the proposals for phase 1 of the site's redevelopment, as it is of sufficient distance from the development boundary. If the remainder of the site is to be developed, the sett would require a period of monitoring to inform whether the sett was active and if active, if the sett had developed to become more then an outlier in occasional use. If the sett levels of activity have altered in the intervening period, then a robust mitigation strategy would be required in order to ensure that no harm to badgers occurs through development and that they are able to move across the landscape, accessing their foraging territories as well as their setts.

Currently, however, the sett is not considered to be a constraint to the redevelopment of the phase 1 section of the site.

As badgers are known to be present in the wider landscape, it is considered that the use of green corridors in the masterplan of the wider site, should be incorporated. This will allow the movement of badgers across the site as well as provide some habitat for badgers in terms of foraging opportunities.



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It is recommended that badger activity on site is monitored during the construction phase of the initial development. Furthermore, there are a number of best practice guidelines, which should be followed when working in the vicinity of known badger setts.

- Any trenches or excavations on site should be either covered over at night or a plank of wood placed in so as to allow any mammals to escape if the badgers were to accidentally fall in.
- Any open pipes or conduits laid should be blocked off each night to prevent badgers from entering them.
- Construction work should only take place between dawn and dusk with no late evening work. This will reduce possible disturbance to badgers as they emerge to forage and also reduce the risk of traffic casualties from late working site traffic.
- All site workers will be informed of the known badger sett. Site workers must be informed that, by law, they must not:
  - Interfere with setts;
  - Dump equipment or litter in badger holes;
  - Have fires next to badger holes;
  - Damage or destroy the setts.

I consider that the development of phase 1 of the site will not adversely impact the movement of badgers across the landscape. The loss of some of the grassland habitat, is not considered to be significant in terms of badger territory. Access to the wider site will remain unimpeded.

Enhancements, such as tree planting of species which are berry bearing or fruiting (apple trees for example), maintaining green corridors and grassland habitats for foraging, will ensure that the developments for the wider site will retain suitable opportunities for badgers.



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If you have any queries then please do not hesitate to contact me.

I look forward to hearing from you,

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# APPENDIX 4 – TRANSPORT APPRAISAL ADDENDUM

Technical Note 2: Addendum to the Transport Appraisal Report – March 2016 rm

| Project:     | New Salts Farm |
|--------------|----------------|
| Prepared by: | Lianne Brook   |
| Approved by: | Damian Tungatt |
| Date:        | 06/04/2016     |
|              |                |



WC2N 41F

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- 1.1 This Note has been prepared by Motion as an addendum to the Transport Appraisal Report dated 17<sup>th</sup> March 2016. The Transport Appraisal Note provided highways advice for a proposed strategic development of 500 residential units on land to the west of New Salts Farm, Shoreham. The Report was prepared to accompany a Vision Document setting out the aspirations for the site and demonstrating that the New Salts Farm site would be deliverable and accessible in transport terms.
- 1.2 This Note has been prepared following the February 2016 addendum to the Adur Core Strategy and Shoreham Harbour Transport Study 2011. This note provides a review of the transport study addendum to establish if any further information would impact on conclusions reached within the Transport Appraisal Report.
- 1.3 The addendum note is broadly consistent with the earlier work undertaken in 2014 however the addendum also refers to a further study (scenario C) which looks at the transport impact of the committed developments and TEMPRO (background growth) up to the year 2031. The key changes relate to the quantum of development at the preferred sites and a resultant lower level of overall impact, a revised access arrangement and revisits highway improvements identified by the main report.
- The note includes traffic data from committed developments, Local Plan sites, and includes a TEMPRO 1.4 factor; producing a very robust assessment. The mitigation measures at the Ropetackle Roundabout are shown to accommodate the preferred sites, with the junction just reaching capacity in the morning peak and operating with reserve capacity in the evening peak. This is a slight betterment to the previous scenario.
- 1.5 It is therefore considered that work undertaken to date to support the call for sites have had regard to all the latest evidence from the Council. Findings within the Adur Local Plan Second Addendum, Transport Study (February 2016) are not considered to have an impact on the work undertaken to date, or materially change our conclusions based on the earlier work.
## **KINGFISHER MEADOWS** VISION DOCUMENT

WIDER SITE - MARCH 2016





## THE VISION

To create high quality new homes in a sustainable location; sensitively designed that integrates with the existing surroundings and will stand the test of time.



## THE TEAM

Hyde New Homes have been building high quality new homes since 1967. We are committed to working closely with our carefully selected professional team and the local community to deliver exemplar new homes at Kingfisher Meadows. We are determined to deliver new homes which will stand the test of time and leave a legacy of quality for the local community. The project includes new public space, ecological and landscape enhancements and will provide new homes for local people.



# THE DOCUMENT



**INTRODUCTION** 

1.1 Overview



#### **NEW SALTS FARM**

- 2.1 Location
- 2.2 Connections
- 2.3 Movement Network
- 2.4 Facilities
- 2.5 Urban Grain Analysis

#### **OPPORTUNITIES & CONSTRAINTS**

3

- 3.1 Opportunities & Constraints
- 3.2 Flooding
- 3.3 Ecology
- 3.4 Landscape
- 3.5 Transport & Highways
- 3.6 Illustrative Masterplan





#### **1.1 OVERVIEW**

New Salts Farm presents an opportunity to create attractive high quality new homes in a sustainable location set within an established residential area to the east of Lancing and close to Shoreham by Sea.

This document will demonstrate that the site can accommodate much needed homes as part of a high quality, sustainable development with good access to existing facilities. The site is suitable, available and achievable and is being actively promoted by the landowner, an established developer with a track record of implementation, and therefore the site should be allocated in the Emerging Adur Local Plan.

The site can provide significant benefits to existing and future residents and is the best option for allocating land in the area to meet the demonstrable unmet housing need.

The benefits to allocating the site include:

- New homes close to the town centre;
- Access to new public open space to meet local needs;
- Landscape and ecological enhancements;
- Integration with existing public rights of way;

The potential constraints to development have been considered, as well as how these can be mitigated, through a series of technical studies. Based on the technical evidence undertaken and considering the character of the area, the site has capacity to accommodate around 455 new homes. this document provides a framework to show how the site could be laid out to illustrate the potential of the site.



View from Brighton Road

#### **INTRODUCTION**



#### **2.1 LOCATION**



Location Plan



#### **2.2 CONNECTIONS**

New Salts Farm is well connected to Shoreham by Sea and Lancing. It is to the east of Lancing and wraps around the existing West Beach Estate to the south west. The prominent Brighton Road is to the south of the site, with a railway line to the north and Shoreham Airport beyond. The site is within walking distance of Shoreham by Sea approximately 1km to the east and Lancing to the west.



Rd Edburton Rd STEYNING Bramber Botolphs A283 Coombes Will Hill Fitch Hill **A27 TO BOGNOR** Lancing College 🕤 REGIS SHOREHAM AIRPORT Brighton City RAILWAY West St LANCING Sompting

Diagrammatic network of area

Diagrammatic network of area





#### **2.3 MOVEMENT NETWORK**

The site is well located with respect to accessibility to a range of transport modes with bus stops close by on Brighton Road and



Transport Plan





#### **2.4 FACILITIES**

The site has accessibility to a wide range of facilities within walking distance in Shoreham town centre, including



**Facilities Plan** 



#### **2.5 URBAN GRAIN ANALYSIS**

The urban grain analysis drawing shows the built form surrounding the farmland, demonstrating the potential to link fluidly between existing and new homes and connect into the existing network.



Urban grain analysis / Figure Ground



#### **3.1 OPPORTUNITIES & CONSTRAINTS**



#### **OPPORTUNITIES & CONSTRAINTS**



#### **3.1 OPPORTUNITIES & CONSTRAINTS**

#### General

The site area is c.28 hectares wrapping around the existing West Beach Estate. The boundaries are defined by the South Coast Railway Line to the north with the airport beyond, Brighton Road to the south, New Salts Farm Road to the East. The western boundary is constrained by the existing water course and tree band.

Access to the site will come from Brighton Road with further potential vehicular links from Boundary Road, George V Avenue and Bristol Avenue. Potential pedestrian and Cycle links could be introduced throughout the site.

The site has a very gentle slope from north to south.

#### Vegetation

The site has a number of mature hedgerows running along the boundaries including to the playing fields off Orient Road and the allotments. There is a cluster of trees to the north west boundary, adjoining the existing north barn kennels & cattery.

The majority of the site is open grassland with limited planting interest. There is opportunity to create buffer zones and planting in the form or native hedgerows and trees along the site extremities, encouraging and improving upon the existing ecology.

#### Noise

The airport and railway to the north are potentially a noise issue. This itself generates opportunity for a planted buffer to mitigate the noise pollution

#### Drainage

There are several important drainage ditches that cross the site. These are indicated on the drawing and are an important constraint to be retained for ecology and water run off.

#### Flooding

The site is within Flood Zones 3a and 3b.

A Sequential and Exceptions Test by Boyer has been carried out for the site and both have been passed, therefore the site can be considered appropriate for development. A site specific Flood Risk Assessment by Tully De'Ath demonstrates how flood risk at the site would be managed and mitigated to demonstrate that development would be safe for its lifetime and not increase flood risk elsewhere.

#### Ecology

The site contains BAP habitats and NERC habitats and supports a number of protected species. By maintaining and enhancing the ditch network and incorporating unmanaged open space there are opportunities to accommodate and enhance areas of higher ecological interest within the scheme.

#### Transport

The site is well located and provides an opportunity to encourage the use of more sustainable modes of transport given the close proximity of bus routes and potential to integrate with existing pedestrian and cycle networks. The development can be accommodated on the existing transport network with no adverse effect.

#### Landscape

The site is a greenfield site which has been assessed as having medium and medium-high overall landscape sensitivity. There is scope to accommodate a sensitively designed development which incorporates a landscape strategy to address key landscape and visual sensitivities. Residential development could be accommodated which would minimise any harmful landscape and visual effects through careful landscape design whilst safeguarding the qualities of the strategic gap and the countryside.



#### **3.2 FLOODING**

A Flood Risk Assessment and Sequential and Exceptions Test has been carried out for the site (see appendix)

The Sequential Test demonstrates that there are no other available sites within the Adur district which could deliver the proposed development and fall into a lower probability of flooding, and is therefore passed. The Exception Test demonstrates that the site offers wider sustainability benefits to the community that outweigh flood risk and that the development can be designed to incorporate measures to manage and mitigate flood risk at the site to keep it safe for its lifetime, whilst not increasing flood risk elsewhere.

The Flood Risk Assessment identifies current and future flood risk at the site and has demonstrated how this could be managed and mitigated over its lifetime. A number of measures are proposed to be introduced including the use of Sustainable Drainage (SuDS) in the form of green roofs and geocellular roof attenuation, permeable paving and introduction of swales, infiltration ditches and basins. The detailed design of the scheme would also mitigate against flood risk by setting all habitable accommodation at first floor level, 300mm above the 1 in 200+CC tidal event level and incorporation of a suitable flood evacuation plan.

The Shoreham Adur Tidal Walls scheme has planning permission in place, funding committed and is due to commence in summer this year and take around 2.5 years to complete. The proposed works include improvements to flood defences along the River Adur which would partly address tidal and fluvial flooding at New Salts Farm and redesignate those parts of the site within Flood Zone 3b as Flood Zone 3a meaning residential development would be acceptable subject to an Exception test.

It is considered that the proposed development can be appropriately designed and delivered sequentially so as to manage and mitigate flood risk at the site for its lifetime and not increase flood risk elsewhere.

> NB – FOR MORE DETAILED INFORMATION, REFER TO THE FLOOD RISK **ASSESSMENT** by 'Tully De'Ath'

#### **3.3 ECOLOGY**

A Preliminary Ecological Appraisal (PEA) reptiles survey and invertebrates, water voles and GCN assessment have been undertaken of the whole site (see appendix). A further letter has also been provided by The Ecology Partnership to summarise the ecological technical findings from these surveys (see appendix). The survey identified the following aspects:

•the site was dominated by semi-improved grassland and also supported drainage ditches which are BAP Habitats and NERC habitats.

•reptile surveys identified a good population of slow worms and common lizards and low population of grass snakes.

no evidence of water voles was found.

•invertebrates were found in one of the ditches on the site although the remaining ditches did not support invertebrates of great diversity.

•some notable species were found within the grassland habitat and ruderal habitats on site.

•no GCN's were found on site.

•Cettis Warbler and Kingfisher were recorded using the ditch network.

The existing ditch network would be maintained in the scheme including a buffer zone in order to maintain the existing water features and supporting habitats. There is also an opportunity to enhance the network by removing invasive species. The wider site illustrative masterplan includes areas of open space and there is potential for these to be left as unmanaged space to maintain some of the grazing floodplain habitat and ensure reptiles can be retained.

It is considered that areas of higher ecological interest can be accommodated within the scheme, maintained and in some areas enhanced and there is great potential to provide real ecological benefits on the site.

> **NB – FOR MORE DETAILED INFORMATION, REFER TO THE ECOLOGY REPORT** by 'The Ecology Partnership'

#### **OPPORTUNITIES & CONSTRAINTS**



#### **3.4 LANDSCAPE**

A Landscape and Visual Statement has been prepared for the site (see appendix).

The sites have been assessed as having medium / medium-high overall landscape sensitivity in studies carried out on behalf of Adur District Council.

A landscape strategy for the proposed illustrative masterplan has sought to integrate the development into the existing landscape.

This includes:

•introduction of soft boundary treatments and tree planting to create a more robust and softer interface between the urban edge and the countryside, which is a positive enhancement compared to the existing hard edge.

•Retention of an open boundary treatment to the eastern and northern boundaries to retain a sense of open landscape in these areas.

•inclusion of informal amenity space with a natural appearance and incorporating the existing ditches and new SUDS.

•incorporation of appropriate planting to soften the appearance of the development with planting of local provenance to benefit wildlife and aesthetic appeal.

Whilst the development would result in the loss of a greenfield site the proposed illustrative layout along with landscape measures proposed has the potential to respond to the sensitivities of the local landscape character and safeguard the qualities of the strategic gap and provide a number of positive landscape enhancements.



#### **3.5 TRANSPORT & HIGHWAYS**

Motion have prepared a preliminary transport appraisal for the site (see appendix) which assesses how the site can be served by the local road network. Their conclusions are that the site can provide direct access onto Brighton Road and an appropriate junction can be designed which demonstrates that there would be no adverse disruption to the free flow of traffic on the local highway network.

The site is well located close to sustainable modes of transport including bus routes and has the potential to connect to existing pedestrian and cycle routes.

The development could be fully integrated with the highway, pedestrian, cycle and public transport networks whilst bringing forward benefits to the wider area.





#### **OPPORTUNITIES & CONSTRAINTS**

#### **3.6 NEW SALTS FARM – ILLUSTRATIVE MASTERPLAN**

000 ⇐००⇒ 4

Site Boundary Sustainable New Homes Spine Road New Pedestrian Links New & Enhanced Planting to existing boundaries Existing Ditch Network retained and enhanced New Accessible Open Spaces formed Potential New Access Points Main Access from Brighton Road



### **OPPORTUNITIES & CONSTRAINTS**



## APPENDICIES

FLOOD RISK ASSESSMENT – Tully De'Ath
ECOLOGY REPORT – The Ecology Partnership
LANDSCAPE ASSESSMENT – David Huskinsson Associates
TRANSPORT ASSESSMENT – Motion

All the above listed Appendices are reports and documents that help to support this Vision Statement and the proposed Masterplan for the development of New Salts Farm, and should be referred to.



#### **FINAL**



landscape architecture **■** urban design expert witness **■** environmental planning

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#### LANDSCAPE REPORT

#### TO ACCOMPANY REPRESENTATIONS TO THE AMENDMENTS TO THE PROPOSED SUBMISSION ADUR LOCAL PLAN 2016

on behalf of

HYDE NEW HOMES

April 2016

Date of Issue: 11/05/16 Status/Revision: FINAL File ref: 734/DHA /REPORTS /CURRENT /Capacity and Gap/Landscape Reps Report FINAL Checked and Approved: NB/DH/MB

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| APPENDIX A: | DHA Comparative Landscape Sensitivity and Capacity Assessment of the Proposed |
|-------------|---|
|             | Adur District Local Green Gap   |

APPENDIX B: DHA Landscape Strategy overlaid on Illustrative Masterplan by HGP Architects

#### 1 INTRODUCTION

- 1.1 David Huskisson Associates (DHA) is a firm of Chartered Landscape Architects, established in 1987 and registered since then with the Landscape Institute. DHA has been a member of the Institute of Environmental Management and Assessment since 1992. The practice is Quality Assured to BS EN ISO 9001:2008. Both directors of the practice are Chartered Members of the Landscape Institute.
- 1.2 DHA has undertaken a range of environmental planning and landscape and visual assessment and design work for many clients including public bodies, private companies and individuals on projects including commercial, industrial, retail, recreational, healthcare, agricultural, infrastructure and residential schemes. The practice has undertaken assessment work in Conservation Areas, in National Parks and in Areas of Outstanding Natural Beauty and other environmentally sensitive areas. The practice has also given extensive development control advice to Local Planning Authorities on a wide range of projects and has significant experience in presenting landscape and visual evidence at planning appeals. DHA is also a member of the professional working group providing advice to Natural England on the replacement of Topic Paper 6 relating to Landscape Sensitivity and Capacity Assessment.
- 1.3 DHA is now retained by Hyde New Homes to provide landscape consultancy in connection with their site at New Salts Farm in Shoreham-by-Sea in which they have a freehold interest.
- 1.4 This report has been prepared to support representations made by Boyer Planning on behalf of Hyde New Homes to the Amendments to the Proposed Submission Adur Local Plan 2016 (APSALP). It provides a critique of the evidence base to the APSALP, in respect of the landscaperelated documents, these primarily being:
  - Urban Fringe Study 2006;
  - Landscape and ecological surveys of key sites within the Adur District, Sheils Flyn for Adur DC, November 2012;
  - Adur Landscape Study Update Local Green Gap & Built-Up Area Boundary policy checks for the emerging Adur Local Plan, Sheils Flynn for Adur DC, January 2016;
  - Assessment of landscape sensitivity Adur Local Plan area, Sheils Flynn for Adur DC, January 2016.
- 1.5 DHA has undertaken a comparative landscape sensitivity and capacity assessment of the landscape within the two proposed Local Green Gaps (currently Strategic Gaps) which is provided at **Appendix A**. The findings of this are summarised in this report. A landscape review of the effectiveness of the proposed Local Green Gap in fulfilling their planning policy functions is also provided. This report then compares the findings of the DHA work with those of the evidence base studies. It draws upon these findings to make recommendations as to whether

the New Salts Farm site could accommodate residential development together with indicating potential landscape and visual implications of achieving this and identifying a suitable landscape strategy for mitigating potential impacts.

- 1.6 Where relevant, comparison is drawn between the New Salts Farm site and other areas of the Green Gap, including the strategic allocation sites proposed in the APSALP.
- 1.7 This work has been informed by desktop studies and site visits carried out by two chartered landscape architects during February, March and April 2016 in a variety of weather conditions.
- 1.8 The following documents and sources are considered to be the primary ones of relevance to the landscape and visual context of the area.
  - National Planning Policy Framework, March 2012;
  - National Planning Practice Guidance;
  - National Character Area Profiles 126 and 120, Natural England, first published by the Countryside Commission inv1999 and now extensively updated;
  - A Strategy for the West Sussex landscape, West Sussex County Council, October 2005;
  - The Landscape Character Assessment of West Sussex, Chris Blandford Associates for West Sussex County Council, 2003;
  - Local Distinctiveness Study of West Sussex, West Sussex County Council;
  - Adur District Local Plan 1996;
  - Proposed Submission Adur Local Plan 2014 and Amendments to the Proposed Submission Adur Local Plan 2016;
  - Landscape and ecological surveys of key sites within the Adur District, Sheils Flyn for Adur DC, November 2012;
  - Adur Landscape Study Update Local Green Gap & Built-Up Area Boundary policy checks for the emerging Adur Local Plan, Sheils Flyn for Adur DC, January 2016;
  - Assessment of landscape sensitivity Adur Local Plan area, Sheils Flyn for Adur DC, January 2016;
  - Urban Fringe Study, 2006;
  - Adur Characterisation Study, Tibbalds, 2009;
  - MAGIC website;
  - English Heritage website;
  - Google maps and Google Earth;

- An Approach to Landscape Character Assessment, Natural England, October 2014;
- Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA3) published in April 2013 by the Landscape Institute and the Institute of Environmental Management and Assessment;
- Topic Paper 6: Techniques and Criteria for Judging Capacity and Sensitivity, 2002, The Countryside Agency and SNH.

#### 2 REVIEW OF LANDSCAPE RELATED EVIDENCE BASE

- 2.1 Adur District Council (Adur DC) has commissioned several landscape related studies which form part of the evidence base to the emerging Local Plan:
  - Urban Fringe Study, Baker Associates & Enderby Associates for Adur DC, 2006;
  - Landscape and ecological surveys of key sites within the Adur District, Sheils Flyn for Adur DC, November 2012;
  - Adur Landscape Study Update Local Green Gap & Built-Up Area Boundary policy checks for the emerging Adur Local Plan, Sheils Flyn for Adur DC, January 2016;
  - Assessment of landscape sensitivity Adur Local Plan area, Sheils Flyn for Adur DC, January 2016.
- 2.2 The 2006 Urban Fringe Study provides the starting point for the subsequent Adur Landscape Studies in 2012 and updates in 2016, the later studies stating that they use the local landscape character areas identified in the Urban Fringe Study (alongside an additional area to the south of Mill Hill which was not addressed in the Urban Fringe Study) as the basis for their assessments.
- 2.3 The above reports are all included as evidence base documents and none are stated as replacing or superseding the earlier work.

#### Amendments to the Proposed Submission Adur Local Plan 2016

- 2.4 The main landscape related policies within the emerging Local Plan are Policies 13 and 14.
- 2.5 Policy 13 relates to "Adur's Countryside and Coast Outside of the Built Up Area Boundary" stating that "The landscape character of Adur and other areas of countryside, the coast, river, and settlement pattern will be protected and where possible enhanced. Any development or activities within the countryside must respect and where appropriate reinforce the distinctiveness and sense of place of the above areas, taking into account the various elements which contribute to their distinctiveness such as geology and landform, biodiversity, scenic quality, strategic views, tree cover, settlement patterns, heritage and local vernacular, and land use. The setting of the South Downs National Park must be respected".
- 2.6 Policy 14 relates to "Local Green Gaps", stating that:
  - Local Green Gaps between the settlements of Lancing/ Sompting Worthing, and Lancing/Shoreham-by-Sea will be protected in order to retain the separate identities and character of these settlements. Within these areas any development permitted must be consistent with other policies of this plan, and must not (individually or cumulatively) lead to the coalescence of settlements.

- 2.7 Land which lies outside of the defined Built Up Areas is considered to be countryside for the purposes of planning policy. Amendments to the Built Up Area Boundary (BUAB) are proposed in the emerging Local Plan to include strategic sites allocations for housing and other land uses. The majority of the countryside affected by the emerging Local Plan lies within the open areas between Worthing Lancing/Sompting and Lancing Shoreham-by-Sea that is also proposed to be designated as Local Green Gap (replacing the currently designated Strategic Gaps).
- 2.8 The APSALP states at paragraph 3.45 that land identified as Local Green Gap has the following characteristics:
  - The open and undeveloped character of the land (this does not relate to landscape quality although some areas of gaps may happen to be of good quality)
  - they form a visual break between settlements actual and perceived (from physical development or level of activity)
  - they create a sense of travelling between settlements
  - their boundaries follow physical features on the ground, taking account of the need to accommodate development requirements of the Plan
  - Only land necessary to secure the objectives of gaps on a long term basis has been included in these gaps.

#### Urban Fringe Study of Adur District (2006), Baker Associates & Enderby Associates for Adur DC

2.9 The intention of this report is to provide Adur DC with a number of choices on where residential and employment development could be located outside of the existing urban areas. The methodology at Section 4 of the Urban Fringe Study states that it "considers areas of land on the urban fringe in terms of their general openness and aims of the Strategic Gap through landscape character assessment", stating that the study will:

"3. use landscape character assessment to identify potential development opportunity areas

4. assess site capacity and viability, primarily by establishing ease of access, and consultation

5. investigate development proposals based on a range of criteria including accessibility, and the character of the surrounding urban area

6. explore implications for the LDF and positive management of the urban fringe."

2.10 Section 6 of the Urban Fringe Study states that "a more detailed study of the two main gap areas (the Lancing Gap and the Sompting Gap) has been undertaken as part of this study. This identifies local variations in landscape character". The landscape character assessment divides the Lancing – Shoreham Gap into 8 different landscape character areas (LCA) and the Worthing - Sompting Gap into 7 LCA. The New Salts Farm Site lies within LCA 6 and LCA 7 of the Lancing-Shoreham Gap. These are illustrated on Map 8 and Map 9 of the Urban Fringe Study, reproduced below:



Figure DHA 1 - Map 8 from the Urban Fringe Study



Figure DHA 2 - Map 9 from the Urban Fringe Study

2.11 The Urban Fringe Study describes the features of each LCA and draws a conclusion about its landscape capacity and potential development opportunities and provides an assessment ranking for "Contribution to Landscape" and "Importance to the Strategic Gap". The assessment rankings and conclusions for all of the LCA within the Gap are set out in **Table 1** below, the LCAs within which the New Salts Farm site lies being highlighted in yellow:

| LCA   | Conclusions  | Contribution<br>to Landscape | Importance to<br>Strategic Gap |
|-------|--|------------------------------|--------------------------------|
| Lanci | ng Gap   |                              | ·                              |
| 1     | The west of the site contributes little to the overall integrity of the  | Medium-low                   | Medium-low                     |
|       | Strategic Gap north to south given the development to the north,         |                              |                                |
|       | removing parts of the east of the area would mean encroachment in        |                              |                                |
|       | the Gap from east to west, but this could mitigated. The west of the     |                              |                                |
|       | site makes an important contribution in Gap terms and landscape,         |                              |                                |
|       | with its drains and foliage.   |                              |                                |
| 2     | Makes a significant contribution to the Strategic Gap, and is one of     | Medium                       | High                           |
|       | the few undeveloped sections in the eastern part of the District.        |                              |                                |
| 3     | Land in use, with plans to continue use, however the employment          | Low                          | High                           |
|       | land to the south of the site could possibly be considered for further   |                              |                                |
|       | development if space can be found.                                       |                              |                                |
| 4     | A key 'gateway site'. Currently of low landscape value, could be         | Low                          | Low                            |
|       | considered for another use.  |                              |                                |
| 5     | There may be scope for some development in only one part of area.        | Medium-low                   | Low                            |
| 6     | The area makes a significant contribution to the Strategic Gap both in   | Medium                       | High                           |
|       | northsouth and east-west views and can be seen from atar as a            |                              |                                |
|       | prominent teature contributing to the setting of the nearby settlements. |                              |                                |
| /     | The area is screened from long distance views and is west of the         | Medium-low                   | Low                            |
|       | caravan park which extrudes north of South Lancing meaning it            |                              |                                |
|       | makes little contribution to the east – west gap. The site holds some    |                              |                                |
| 0     |  | 1                            | 1                              |
| 0     | As well as its secluded halore, long distance views to the site are      | LOW                          | LOW                            |
|       | obstructed by the railway. This results in the site making line          |                              |                                |
|       | kept and does not make much of a contribution to landscape               |                              |                                |
| Som   | ting Gap   |                              |                                |
| 1     | Makes an important overall contribution to the strategic gap. There      | Low                          | High                           |
|       | may be some scope for small scale developments on the western            | 2011                         | riigii                         |
|       | edge of Sompting and Lancing, which would not have an overall            |                              |                                |
|       | negative effect on the function of the Gap.                              |                              |                                |
| 2     | The south of the area is designated as an SNCI and so should be          | Low                          | Low                            |
|       | protected. There is some scope for development in the north of the       |                              |                                |
|       | area, which would not have significant negative effects on the integrity |                              |                                |
|       | of the Gap.  |                              |                                |
| 3     | Although the area is by no means 'tranquil' it has an important role in  | High                         | High                           |
|       | maintaining the integrity of the Strategic Gap and landscape terms       | -                            | _                              |
|       | and should be protected from development.                                |                              |                                |
| 4     | The area contributes significantly to the character of Sompting Village  | Medium                       | High                           |
|       | and the perception of the Gap.   |                              |                                |
| 5     | The area contributes significantly to the character of Sompting Village  | High                         | High                           |
|       | and the perception of the Gap especially to those travelling through     |                              |                                |
|       | on the A27.  |                              |                                |
| 6     | The area contributes significantly to the character of Sompting Village  | High                         | High                           |
|       | and the perception of the Gap, most of the area is within the            |                              |                                |

| TABLE 1 | - URBAN | FRINGE ST | UDY CO | NCLUSIONS |
|---------|---------|-----------|--------|-----------|

| LCA | Conclusions   | Contribution<br>to Landscape | Importance to<br>Strategic Gap |
|-----|---|------------------------------|--------------------------------|
|     | proposed National Park boundary.                                    |                              |                                |
| 7   | Land lies within National Park, and will not be considered further. | High                         | Low                            |

- 2.12 LCA 4 and LCA 8 of the Lancing-Shoreham Gap and LCA 2 of the Worthing-Sompting Gap are ranked 'low' and therefore are considered in the Urban Fringe Study to make the least contribution to landscape and the least importance to the Gap of the character areas assessed. Only areas (LCA 3, 5 and 6) within the Worthing-Sompting Gap are considered to make a high 'contribution to landscape', with those areas also being assessed as having high 'importance to the strategic gap'. Within the Lancing-Shoreham Gap, LCA 2 and LCA 6 rank highest in terms of their 'contribution to landscape', being assessed as medium and both also considered by the Study to have high 'importance to the strategic gap'.
- 2.13 The Urban Fringe Study uses the landscape character assessment to identify ten land parcels which it considers to have potential as development sites. Site summary tables are provided for each of the land parcels which outline their potential for development as well as what sort of development would be most suitable. The site summary tables use a number of categories in order to assess these sites, including 'Landscape' which addresses the landscape impact of developing the site and the contribution the site makes to landscape.
- 2.14 The Urban Fringe Study concludes that there are a number of sites that are "lower impact" being "unconstrained by complicating factors, and would have less impact on the landscape character of the District and the integrity of the Strategic Gap" (paragraph 8.9), citing site ref 2 and 3 (which fall within LCA 1 of the Sompting-Worthing Gap and now form very small components of the southern part of the proposed Strategic Site Allocation (Policy 6) at West Sompting) and site ref 7 (which forms LCA 4 of the Lancing-Shoreham Gap), which is considered in the Study to be "best suited to employment uses rather than residential, but would do little to damage the integrity of the Strategic Gap"
- 2.15 The remaining sites are considered to be more constrained. Site ref 5 (which falls within LCA 1 of the Lancing-Shoreham Gap and now forms part of the proposed Strategic Allocation Site at New Monks Farm (Policy 5)) and Site ref 6 (which spans LCA 7 and 8 of the Lancing-Shoreham Gap, including the western half of the New Salts Farm site) are both considered In Section 8 of the Study to "potentially offer a very large number of dwellings and a great deal of employment land within an urban extension".

#### DHA Critique of the Urban Fringe Study

2.16 Section 4 of the study is titled 'Methodology' and whilst it outlines the broad process followed, no information is provided to define the factors that have contributed to the assessments nor to explain the application or weighting of any criteria used. No definitions are provided for the assessment scores/rankings used. The methodology is at best flimsy and lacks transparency in terms of demonstrating that a thorough, systematic and consistent approach has been applied. It therefore does not reflect best practice.

- 2.17 Notwithstanding the fact that the Urban Fringe Study is now ten years old, it makes no reference to the good practice guidance and methodology available at that time for landscape character assessment<sup>12</sup>.
- 2.18 The landscape character areas in the Urban Fringe Study do not extend across all urban fringe areas or indeed the full extent of the Strategic Gap. Whilst it is stated that the Study excludes land that is designated, such as Sites of Special Scientific Interest (SSSI) or Scheduled Ancient Monuments (SAM) from its areas of search, other areas also appear to have been excluded with no explanation, for example, land around the A27/A283 junction, land to the south of Mill Hill and land immediately south of the A27 east of Manor Close, Lancing. This is a flawed starting point for identifying and describing the variation in the landscape character of Adur's urban fringe, both in terms of geographic coverage and completeness and in terms of incorporating a partial judgement of 'value' into a Landscape Character Assessment. In this regard, it should be noted that landscape character is defined as:

"A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, <u>rather than better or worse</u>" <sup>3</sup>(DHA emphasis)

- 2.19 Considerations of value (such as denoted by designation including SSSI and SAMs) should not form part of considering the landscape character of an area. The fact that such designated landscape was excluded from the study area is a significant error. This, alongside the other missing sites noted above, means that the character of considerable parts of the urban fringe landscape was clearly not assessed in the Urban Fringe Study. This is important as these Landscape Character Areas provide the basis for the subsequent Landscape Studies taken forward by Sheils Flynn on behalf of Adur Council in 2012 and 2016. This is discussed further in the critique of those documents provided below.
- 2.20 Taking into account the purported detailed assessment undertaken as part of the Urban Fringe Study, the extent and location of boundaries for some of the landscape character areas is somewhat broad-brush, notably in the Lancing-Shoreham Gap. Here, LCA 1 is described as having landscape characteristics that differ across the area, with large fields of open arable land to the east and smaller fields with scrubby hedgerows to the west. It is therefore unclear why these two quite distinctly different landscape patterns were included in the same landscape

<sup>&</sup>lt;sup>1</sup> Landscape Character Assessment: Guidance for England and Scotland (CAX 84) the Countryside Commission and Scottish Natural Heritage, April 2002 (now superseded).

<sup>&</sup>lt;sup>2</sup> Topic Paper 6: Techniques and Criteria for Judging Capacity and Sensitivity, 2002, The Countryside Agency and Scottish Natural Heritage (2002).

<sup>&</sup>lt;sup>3</sup> The Countryside Commission and Scottish Natural Heritage (2002) Landscape Character Assessment: Guidance for England and Scotland (CAX 84), the Countryside Commission and Scottish Natural Heritage, April 2002.

character area rather than being split into two character areas. To the east, the adjoining LCA 2 would appear to share many characteristics with the eastern part of LCA 1 and it is therefore not clear why LCA 2 didn't include the eastern side of LCA 1.

- 2.21 There appear to be several anomalies between the features described in the character area assessments and the rankings assigned for 'Contribution to landscape' and 'Importance to the Strategic Gap', for example, the conclusion for Lancing-Shoreham Gap LCA 1 (New Monks Farm) states that "The west of the site contributes little to the overall integrity of the Strategic Gap north to south given the development to the north, removing parts of the east of the area would mean encroachment in the Gap from east to west, but this could mitigated. The west of the site makes an important contribution in Gap terms and landscape, with its drains and foliage" (our emphasis). Whilst this conclusion is in itself contradictory (and presumably partly incorrect), the resulting assessment ranking for LCA 1 is Medium-Low which would seem somewhat peculiar given the important contribution cited in the text.
- 2.22 It is notable that the proposed Strategic Site Allocations in the emerging APSALP conflict with and seemingly ignore the landscape character assessment findings of the Urban Fringe Study. The Urban Fringe Study considers that only LCA 3, 5 and 6 within the Worthing-Sompting Gap make a high 'contribution to landscape', with those areas also being assessed as having high 'importance to the strategic gap'. No potential development sites are therefore considered in this area in the Urban Fringe Study. The APSALP however, proposes a Strategic Site Allocation at West Sompting (Policy 6) which extends across LCA 3 of the Worthing-Sompting Gap, this being ranked in the Urban Fringe Study as one of the three highest importance sites in landscape and Gap terms. Comparatively, LCA 4 and LCA 8 of the Lancing-Shoreham Gap and LCA 2 of the Worthing-Sompting Gap are ranked 'low' and therefore are considered in the Urban Fringe Study to make both the least contribution to landscape and the least importance to the Gap of the character areas assessed and are considered as potential development sites. The APSALP does not propose any Strategic Site Allocation in these areas.
- 2.23 Nothwithstanding the above limitations, the findings of the Study demonstrate that advice to Adur DC at that time was that even if an overall Landscape Character Area made a relatively high contribution to landscape character or to the Strategic Gap, it did not necessarily mean the LCA could not accommodate development. For example, LCA 1 in the Sompting Gap is assessed as having High importance to the Strategic Gap but was still considered to have some scope for small scale development.
- 2.24 The Urban Fringe Study is not the main landscape evidence to the APSALP, it is nonetheless lodged as background evidence and forms the basis of the subsequent 2012 and 2016 Landscape Studies. The above shortcomings and inconsistencies result in an evidence document that lacks transparency and in particular, is not considered to provide a robust character assessment upon which to base subsequent landscape sensitivity assessment.

#### Adur Landscape Studies

- 2.25 The 'Landscape and ecological surveys of key sites within the Adur District Report November 2012' (Landscape Study 2012) prepared by Sheils Flynn and The Ecology Consultancy for Adur DC builds upon the earlier work of the Urban Fringe Study and provides landscape and ecological assessments using the landscape character areas identified in the Urban Fringe Study. It draws upon those findings to provide indicative development principles for six potential allocation sites and assess the potential resulting impacts on the landscape and ecology of the Strategic Gaps to inform decisions on site allocations. Technical Annex A provides an 'Assessment of overall landscape sensitivity'.
- 2.26 Two updates have recently been published to the Landscape Study 2012, these being the 'Adur Landscape Study Update Local Green Gap & Built-Up Area Boundary policy checks for the emerging Adur Local Plan' January 2016 (Landscape Study Update 2016) and the 'Assessment of landscape sensitivity Adur Local Plan area', January 2016. Whilst both of the 2016 reports are recorded as updates to the 2012 study, the objectives and specific tasks for the Landscape Study Update 2016 relate to focusing the assessment upon areas within the Adur Local Plan area and providing policy-based checks rather than updating or seemingly replacing the full content of the 2012 study (for example, the Landscape Study Update 2016 provides no update to the indicative development principles). Both the 2012 and 2016 landscape studies are lodged as background evidence to the APSALP and are referenced interchangeably within the preamble to the policies within the APSALP (albeit the 2016 Study is referenced in APSALP as 2015). Reference is therefore made to both studies in the commentary below, with any notable differences between the two studies highlighted.
- 2.27 In order to draw comparison between the two Adur Landscape Studies, where contents of the Studies are quoted below, text which has been added to the Landscape Study Update 2016 is shown in <u>bold and underlined</u> whilst text that was included in the Landscape Study 2012 and subsequently deleted from the Landscape Study Update 2016 is shown as <del>struck through</del>.

#### DHA Critique of the Adur Landscape Studies

#### Methodology

2.28 The Adur Landscape Studies do not include any detailed information on the methodology used. The same single matrix is provided at page 2 of the 2012 studys' Technical Annex and at page 4 of the 2016 'Assessment of landscape sensitivity' and shows how landscape character sensitivity rankings and visual sensitivity rankings are combined to determine Overall Landscape Sensitivity. No detail is provided on the criteria used to feed into the individual assessments of Landscape Character Sensitivity and Visual Sensitivity nor any explanation or demonstration provided as to how those criteria have been applied in a systematic and consistent way to reach transparent judgements on Landscape Character Sensitivity and Visual Sensitivity. This is a serious shortcoming of both Landscape Studies and therefore whilst some of the observations made within them might be valid, there is a lack of transparency in terms of how any judgements or assessment rankings have been made.

#### Sensitivity and Capacity

- 2.29 The Adur Landscape Studies are based upon an assessment of inherent sensitivity of the landscape. National Planning Policy Framework requires at paragraph 170 that "Where appropriate, landscape character assessments should also be prepared, integrated with assessment of historic landscape character, and for areas where there are major expansion options assessments of landscape sensitivity" (DHA emphasis). However, it is surprising given the purpose of the Studies to inform the emerging Local Plan and potential Strategic Site Allocations, that the Studies do not consider either the sensitivity of the landscape to a particular type of development/change or extend their consideration to address landscape capacity. Whilst the 2012 Landscape Study goes some way to addressing this through incorporating 'Indicative Development Principles' for potential allocations sites (including amongst others the New Salts Farm site) which "explore the opportunities and constraints for development..." and "...take account of the findings of the wider landscape sensitivity assessment", this work is not based upon landscape capacity assessment.
- 2.30 Topic Paper 6 considers that both inherent sensitivity and sensitivity to a specific source are valid considerations (paragraph 3.2), however, more recent Guidelines for Landscape and Visual Impact Assessment (Third Edition 2013) by the Landscape Institute and Institute for Environmental Assessment and Management, essentially dismiss their usefulness to the EIA process, stating that such inherent sensitivity assessments "may provide preliminary background information" and that they "cannot reliably inform assessment" (Paragraphs 5.41 5.42).
- 2.31 Further, whilst it is debateable whether an assessment of inherent landscape sensitivity is a reasonable approach to informing strategic decision making, clearly there is scope for different judgements to be made when sensitivity is assessed in relation to a particular type of development or indeed a specific development proposal.
- 2.32 It is also important to note that landscapes with high sensitivity do not automatically have no or low capacity to accommodate change, and landscapes of low sensitivity do not automatically have high capacity to accept change. Capacity is all a question of the interaction between the sensitivity of the landscape, the type and amount of change, and the way that the landscape is valued. In landscape planning terms therefore, a landscape that is assessed as having high inherent landscape sensitivity should not automatically be discounted from consideration as a location for development.

#### Visual Sensitivity

- 2.33 Both Landscape Studies consider 15 viewpoints that they consider to "represent the most important views of the landscapes within the Lancing and Sompting Strategic Gaps" (paragraph A3.1, Technical Annex, Landscape Study 2012). These are stated as being views that have high sensitivity receptors in relation to EIA process. The visual analysis within the Landscape Studies does not focus on landscape character areas so a separate assessment is then carried out which also takes into account the scope to mitigate visual effects. As with the assessment of landscape sensitivity, no detailed methodology is provided to demonstrate how the criteria contributing to visual sensitivity are weighed against each other to draw balanced and transparent assessment rankings.
- 2.34 EIA process would clearly only apply when change is being considered in relation specifically to development. Likewise, in making judgements about mitigation, the nature or type of development/specific change needs to be considered for example, a proposed change due to development of commercial buildings would require different treatment to a change from agricultural land use to recreational. The Landscape Studies however, do not provide an assessment in relation to specific types of development it is therefore difficult to understand how judgements about mitigation were made or why EIA process was followed. Topic Paper 6 indeed notes that "in practice, visual sensitivity can be difficult to judge without reference to a specific form of change and development..." (paragraph 4.6). Both Landscape Study's development-led approach to assessing visual sensitivity would seem somewhat at odds with the consideration of "inherent" sensitivity used for the rest of the assessment.
- 2.35 Whilst the Adur Landscape Studies focus on views from the South Downs National Park and footpath along the river Adur as they are considered by the authors to be the most sensitive, little consideration is given to other public views from rights of way within Adur, open spaces, roads and footways. This is surprising given that the Landscape Study Update 2016 Policy Update report discusses that the open views looking generally north from the A259 make an important contribution to the perception of the Gap and that the views from the A27 bridge over the River Adur provides a gateway view to Lancing and Shoreham. It would therefore strike odd that no photographs are provided to illustrate such views and the opportunity wasn't taken to update the landscape sensitivity assessment in 2016 to incorporate or properly consider them.
- 2.36 The 2016 Landscape Study Update again includes 15 views selected because they represent the most important views. These however differ from the 15 views considered in 2012 study. The 2012 Viewpoint 8 from the public footpath west of Lancing Ring towards Cross Dyke and Steep Down looking towards the Lancing Gap, is no longer considered to be one of the most important views in 2016, although no justification is provided. Instead, the view from Adur Ferry Bridge looking west is now included as Viewpoint 15 in the 2016 Landscape Study

Update. Presumably either the authors only wanted to consider a fixed number of 15 viewpoints or the 2012 viewpoint 8 is no longer important, however no reason is provided. Either way, this is confusing and adds to a lack of clarity to the visual assessment.

#### Consideration of potential development sites

2.37 The Landscape Study 2012 states at paragraph 1.1 that the study objective is to "prepare landscape and ecological assessments of greenfield sites in Adur District which have been identified as having the potential to provide new housing and other development". Six potential allocation sites are identified on Figure 1 of the study, reproduced below for reference:



#### Figure DHA 3 – Figure 1 from the Landscape Study 2012

- 2.38 No information is provided to explain where or how these sites were identified and their selection does not appear to reflect any landscape-led advice, as they do not reflect the "Sites for further investigation" identified in the Urban Fringe Study 2006 (Adur DC's earlier landscape evidence).
- 2.39 The 2012 Landscape Study subsequently provides Indicative Development Principles for each of the six potential allocation sites. These are stated as taking account of the findings of the wider landscape sensitivity assessment alongside ecological assessments (paragraph 5.1). As noted above, this is not based upon any consideration of landscape sensitivity to a specific form or type of development and neither do the indicative development principles stem from a

structured landscape capacity assessment. Whilst a range of "landscape and visual issues" are recorded for each potential site, importantly, the value of the landscape is given no clear consideration. Landscape value is an essential component in considering the capacity of a landscape to accommodate development and a fundamental part of any landscape and visual impact assessment of development. This is a significant omission and adds to the lack of robustness to the study.

- 2.40 It is also peculiar that this part of the 2012 Study is not referenced in the 2016 Update, given that the objective of the 2016 Landscape Study Update was to check and update the evidence in relation to proposed Policy 13 and 14 and the 2012 Study illustrates potential development of six locations within the proposed Local Green Gap, protected under Policy 14.
- 2.41 An assessment of resulting landscape and visual impacts of development on the six potential allocation sites is made within Section 5 of the 2012 Landscape Study. This is based upon an assumption of development in accordance with the illustrated indicative development principles. Although described as an 'assessment', it does not appear to be based upon any formal Landscape and Visual Impact Assessment process that reflects current best practice and can only therefore be considered as broad-brush observations.
- 2.42 Accepting the coarseness of the impact 'assessment' and the noted limitations of the underlying sensitivity assessment already noted, in general landscape and visual terms, the Landscape Study 2012 advises Adur DC that development could be incorporated in the following locations within the Green Gap:
  - Sompting North (in part of LCA 3 in the Sompting Gap)
  - Sompting Fringe (in part of LCA 1 and 2 in the Sompting Gap)
  - New Monk's Farm (in part of LCA 1 and 2 in the Lancing-Shoreham Gap)
  - Land NW of Hasler Estate (spanning LCA 7 and 8 in the Lancing-Shoreham Gap)
  - Land NE of Hasler Fringe (spanning LCA6 in the Lancing-Shoreham Gap )
  - Shoreham Airport (in part of LCA 3 in the Lancing-Shoreham Gap)
- 2.43 Of the six development sites considered in the Landscape Study 2012, only two (Land NW of Hasler Estate and Land NE of Hasler Fringe), both of which span parts of the New Salts Farm site owned by our client, do not form part of the area taken forward as a proposed Strategic Allocation site in APSALP. Whilst noting that other factors must be taken into account when making judgements about the suitability of the sites for development, it is not clear how Adur DC have taken the recommendation of the 2012 Landscape Study on board in their strategic site allocations. This is discussed further in Section 5 below.

#### Landscape Character Areas

- 2.44 The Adur Landscape Study sensitivity assessments are made against landscape character areas that were essentially established in the 2006 Urban Fringe Study and concerns have been raised above about the approach taken by the Urban Fringe Study.
- 2.45 Paragraph 1.3 of the 2012 Landscape Study describes a "four step process" that is followed in the study, step 1 being an "assessment of the overall landscape sensitivity of the urban fringe landscapes within the Lancing and Sompting Strategic Gaps, building on the assessment carried out as part of the 2006 Urban Fringe Study". The study therefore does not include a review of the landscape character area boundaries but adopts those used in the Urban Fringe Study. Paragraph 3.1 describes that the Urban Fringe Study itself was not considered "sufficiently detailed enough" for a landscape sensitivity assessment. Following such an admission, it is therefore surprising that the Landscape Study 2012 doesn't review or question the landscape character traits within individual character areas. Whilst a degree of "averaging out" might be expected across a wide character area study, at a more local level and for the "detailed assessment" claimed, a finer grain of study might reasonably be expected. For example:
  - Lancing Shoreham Gap LCA 1 and LCA 2 the Landscape Study 2012 notes that a proportion of the field to the south and east of the area have been lost to the construction of a golf course in LCA 2. LCA 2 being described as a 'moonscape' landform caused by extensive tipping of aggregates as part of a new golf course development. Indeed, Mash Barn Lane which divides these areas of difference is described as a "natural landscape edge". This begs the obvious question; why isn't this part of LCA 1 therefore within LCA 2?
  - Lancing Shoreham Gap LCA 6 the landscape is described as flat, relatively open farmland however, to the east of New Salts Farm Road a more distinctive and irregular historic field pattern is described, with sinuous watercourses and a slightly scruffy estuary-edge character. Clearly, two different characters are being described?
- 2.46 In both cases, the Landscape Study 2012 adopts the LCA boundaries perpetuated from the Urban Fringe Study rather than adjusting them to reflect its own findings. In addition to character area boundary issues, concerns have been raised above about the approach to the character assessment in the Urban Fringe Study, both in terms of geographic coverage and in terms of the exclusion of some areas on the basis of quality.
- 2.47 The Landscape Study Update 2016 subsequently updates the LCAs to "include all parts of the Lancing-Shoreham and Worthing-Sompting Gaps so that they can be used as evidence to support planning policy for the emerging Local Plan..."4 It is notable however that the 2016 study also updates LCA1 and LCA2 within the Lancing – Shoreham Gap, significantly adjusting the character area boundary. One might expect the LCA1 boundary to have been adjusted to follow Mash Barn Lane on its eastern boundary, based upon the noted observation in both 2012 and 2016 of the lane forming a landscape edge and the marked difference between the 'moonscape' landscape of the now unused golf course to its east (typified by LCA 2) and the arable fields and uniform pattern to its west. Instead the Landscape Study Update 2016 extends the boundary to LCA 1 even further east so that it no longer follows Mash Barn Lane at all, encompassing a part of the unused golf course to the east, the boundary not following a natural or physical feature. This newly acquired part of LCA 1 (to the east of Mash Barn Lane) is not described in the key characteristics or indeed the remaining supporting text in the 2016 landscape sensitivity assessment, but it is apparent even from the aerial photographs provided in the study that it shares few characteristics with the rest of LCA 1. This change to the character area boundary is unsubstantiated and conflicts with the key characteristics noted. It is particularly pertinent as this change results in a considerable area of land 'moving' into an area assessed as having low overall landscape character sensitivity, this land subsequently also being proposed as the New Monk's Farm (Proposed Policy 5) Strategic Allocation Site, the LCA 1 boundary seemingly forming the 'Indicative Built Up Area Boundary" and suggesting that the location of the LCA boundary was informed by the policy.
- 2.48 Figure DHA 4 below shows the evolving boundary to LCA 1:



--- Yellow dash = eastern extent of LCA 1 boundary in the Urban Fringe Study and Landscape Study 2012 and 2016 Adur Studies

Red dash = eastern extent of LCA
boundary in the Landscape Study
Update 2016

Orange dash = eastern extent of LCA 1 boundary in DHA Comparative Landscape Sensitivity and Capacity Assessment

Figure DHA 4 - LCA 1 (Lancing-Shoreham Gap) boundaries

<sup>&</sup>lt;sup>4</sup> Assessment of landscape sensitivity Adur Local Plan area, paragraph 2.1

2.49 Again, the 2016 Landscape Study Update records the same differences in character across LCA 6 in the Lancing – Shoreham Gap as noted in the Landscape Study 2012, although conspicuously removes reference to the farmland to the east of New Salts Farm Road having "a more distinctive, irregular (historic) pattern..." – this is peculiar as clearly this aspect has not changed in the intervening period. Reference is also made within the 2016 study to the open fields within the LCA contributing to the landscape setting of the Shoreham Airport terminal building (Grade II\* listed building) "which is a striking local landmark in northward views from the A259". As can be seen from the photographs supporting the 2016 study, such northward views are mostly from the A259 east of New Salts Farm Road and do not look across the majority of the land west of New Salts Farm Road. Whilst the assessment process followed in the Landscape Study 2016 is not clear, it is obvious that the author considers the landscape features to differ either side of New Salts Farm Lane.

# Consistency of landscape advice to Adur DC

- 2.50 Chapter 3 of the Landscape Study 2012 describes that it provides a "detailed assessment that builds upon the assessment carried out as part of the 2006 Urban Fringe Study", whilst the 2016 Landscape Study Updates is described as updating the 2012 study in terms of geographic coverage and checking and updating evidence in relation to the proposed draft policies 13 and 14 in APSALP. It is apparent however that the Landscape Studies draw considerably different judgments to those in the Urban Fringe Study about the different Landscape Character Areas and the contribution they make to the Gap. Only one LCA (LCA 4 in the Worthing-Sompting Gap) appears to have had any consistent evaluation in terms of the landscape character assessment rankings.
- 2.51 Table 2 below highlights how the assessment rankings for "Contribution to Landscape" in the Urban Fringe Study 2006 compare to the assessment rankings for "landscape character sensitivity" in the Landscape Study 2012 and Landscape Study Update 2016.

| LCA           | Contribution to<br>Landscape (2006) | Landscape Character<br>Sensitivity (2012) | Landscape Character<br>Sensitivity (2016) |  |  |  |  |
|---------------|-------------------------------------|---|---|--|--|--|--|
| Lancing – Sho | Lancing – Shoreham Gap              |   |   |  |  |  |  |
| 1             | Medium - Iow                        | Low                                       | Low                                       |  |  |  |  |
| 2             | Medium                              | Medium-low                                | Medium-low                                |  |  |  |  |
| 3             | Low                                 | Medium-high                               | Medium-high                               |  |  |  |  |
| 4             | Low                                 | Medium-low                                | Medium                                    |  |  |  |  |
| 5             | Medium - Iow                        | Low                                       | Medium-high                               |  |  |  |  |
| 6             | Medium                              | Medium-high                               | Medium-high                               |  |  |  |  |
| 7             | Medium - Iow                        | Medium                                    | Medium                                    |  |  |  |  |
| 8             | Low                                 | Medium-low                                | Medium-low                                |  |  |  |  |
| 9             | n/a                                 | Medium-high                               | Medium-high                               |  |  |  |  |

TABLE 2 – COMPARISON OF ASSESSMENT RANKINGS – ADUR URBAN FRINGE STUDY AND ADUR LANDSCAPE STUDIES

| LCA           | Contribution to<br>Landscape (2006) | Landscape Character<br>Sensitivity (2012) | Landscape Character<br>Sensitivity (2016) |  |  |  |
|---------------|-------------------------------------|---|---|--|--|--|
| Worthing – So | Worthing – Sompting Gap             |   |   |  |  |  |
| 1             | Low                                 | Medium                                    | Medium                                    |  |  |  |
| 2             | Low                                 | Medium-high                               | Medium-high                               |  |  |  |
| 3             | High                                | Medium                                    | Medium                                    |  |  |  |
| 4             | Medium                              | Medium                                    | Medium                                    |  |  |  |
| 5             | High                                | Medium                                    | Medium                                    |  |  |  |
| 6             | High                                | Medium-high                               | Medium-high                               |  |  |  |

Red = assessment rankings that increased between 2006, 2012 and 2016 Adur Studies Green = assessment rankings that decreased between 2006, 2012 and 2016 Adur Studies

- 2.52 No detailed methodology is provided in any of the studies, so it is therefore difficult to understand the criteria that contribute to the assessment rankings and draw direct comparisons between them. However, the broad change of professional judgement about some of the landscape character areas is striking. In particular given the underlying premise that all three studies are based on landscape character assessment, allied to the relatively limited amount of physical change within the landscape and the limited change to the landscape planning policy underscoring these studies.
- 2.53 LCA 5 in the Lancing-Shoreham Gap shows a marked increase from Low to Medium-high landscape character sensitivity between the 2012 and 2016 studies, the character area being extended in the 2016 study to include the Adur estuary, designated as SSSI, and the area around the Ricardo Shoreham Technical Centre, which were omitted from the earlier studies.
- 2.54 **Table 3** below provides a summary comparison of the individual assessment rankings concluded in the Landscape Study 2012 and the Landscape Study Update 2016.

|                         | Landscape Character Sensitivity |                   | Visual Sensitivity |                   | Overall Landscape Sensitivity |                   |
|-------------------------|---------------------------------|-------------------|--------------------|-------------------|-------------------------------|-------------------|
| LCA                     | LS 2012                         | LS Update<br>2016 | LS 2012            | LS Update<br>2016 | LS 2012                       | LS Update<br>2016 |
| Sompting – Worthing Gap |                                 |                   |                    |                   |                               |                   |
| SG1                     | Medium                          | Medium            | High               | High              | Medium-high                   | Medium-high       |
| SG2                     | Medium-high                     | Medium-high       | Medium-high        | Medium-high       | Medium-high                   | Medium-high       |
| SG3                     | Medium                          | Medium            | Medium             | Medium            | Medium                        | Medium            |
| SG4                     | Medium                          | Medium            | Medium-low         | Medium-low        | Medium                        | Medium            |
| SG5                     | Medium                          | Medium            | Medium             | Medium            | Medium                        | Medium            |
| SG6                     | Medium-high                     | Medium-high       | Medium             | Medium            | Medium-high                   | Medium-high       |

TABLE 3 – COMPARISON OF ASSESSMENT RANKINGS: ADUR LANDSCAPE STUDIES 2012 AND 2016

|              | Landscape Character Sensitivity |                      | Visual Sensitivity |                   | Overall Landscape Sensitivity |                   |
|--------------|---------------------------------|----------------------|--------------------|-------------------|-------------------------------|-------------------|
| LCA          | LS 2012                         | LS Update<br>2016    | LS 2012            | LS Update<br>2016 | LS 2012                       | LS Update<br>2016 |
| SG7          | Excluded as nov                 | w lies within the So | outh Downs Natio   | onal Park         |                               |                   |
| Lancing – Sh | oreham Gap                      |                      |                    |                   |                               |                   |
| LG1          | Low                             | Low                  | Medium             | Medium            | Medium-low                    | Medium-low        |
| LG2          | Medium-low                      | Medium-low           | Medium             | Medium            | Medium                        | Medium            |
| LG3          | Medium-high                     | Medium-high          | High               | High              | High                          | High              |
| LG4          | Medium-low                      | Medium               | Medium-low         | Medium-high       | Medium-low                    | Medium-high       |
| LG5          | Low                             | Medium-high          | Medium             | Medium-high       | Medium-low                    | Medium-high       |
| LG6          | Medium-high                     | Medium-high          | Medium             | Medium-high       | Medium-low                    | Medium-high       |
| LG7          | Medium                          | Medium               | Medium-low         | Medium-low        | Medium                        | Medium            |
| LG8          | Medium-low                      | Medium-low           | Low                | Low               | Medium-low                    | Medium-low        |
| LG9          | Medium-high                     | Medium-high          | High               | High              | High                          | High              |

**Red** = assessment rankings that have increased between 2012 and 2016 Adur Landscape Studies Blue = areas where boundary of character area has changed between 2012 and 2016

Blue = areas where boundary of character area has changed between 2012 and 2016 landscape studies

2.55 As can be noted from the table, the differences between the two Landscape Studies that result in a change to the assessment rankings, relate to landscape character areas 4, 5 and 6 within the Lancing-Shoreham Gap, all resulting in an increased visual sensitivity ranking and overall assessment ranking. With regard to LCA 4 and 5, these cover a wider area in the Landscape Study 2016, extending across the Adur estuary and therefore including features such as public footpaths and the SSSI of the estuary itself. One might therefore reasonably expect the sensitivity to have increased due to the inevitable 'averaging out' of the assessment rankings across the wider area. The increased ranking of both visual sensitivity and overall landscape sensitivity of LCA6 is however, less obvious and no explanation is provided. It is noted that by reference to the single methodology matrix provided for the Landscape Studies that a Mediumhigh ranking of overall landscape sensitivity should possibly have been applied in the 2012 assessment (taking into account the ranking of Medium-high landscape character sensitivity and Medium visual sensitivity). Without a detailed methodology, it is difficult to understand the judgements made and therefore whether this was an error in applying the two landscape character and visual sensitivity rankings, or an error in an individual ranking or just down to professional judgement. The increased visual sensitivity ranking also appears to be unjustified.

## Consideration of the New Salts Farm Site in the Adur Landscape Studies

- 2.56 The New Salts Farm site falls within parts of 'Lancing-Shoreham Gap LCA 6 New Salts Farm' and 'Lancing-Shoreham Gap LCA 7 Hasler Fringe' in the Adur Landscape Studies. As noted above, our assessment splits LCA 6 into two sub-areas either side of New Salts Farm Road, reflecting the different and sometimes contrasting landscape features noted in the Landscape Study findings and our own baseline studies.
- 2.57 Vulnerability to change for LCA6 is recorded as:

"The historic field patterns and sinuous watercourses within the pastures to the east of New Salts Farm Road and the alignment of this road, are historic landscape elements which are vulnerable to change. The winding marshy field ditches and scrapes are also sensitive to change, as is the slightly scruffy, estuary-edge character of this eastern area and its relationship to the buildings of New Salts Farm. The open fields within this LCA contribute to the landscape setting of the Shoreham Airport terminal building (Grade II\* listed building) which is a striking local landmark in northward views from the A259."

- 2.58 It is notable that the majority of features noted in this analysis lie to the east of New salts Farm Road. The open fields that contribute to the setting of the listed terminal building lie predominantly to the east of New Salts Farm Road although, there is also some intervisibility across the eastern edge of the land west of the road.
- 2.59 Vulnerability to change for LCA7 is identified as:

"The natural, irregular patterns and richly textured character of the scrub and grassland mosaic contrasts with adjacent urban areas and this 'wild' quality is vulnerable to change. The relatively enclosed 'wooded' character of the area is distinctive and also sensitive - it contributes a contrast in character to other parts of the Gap. Other <u>specific</u> landscape elements and features that are sensitive to change are the groups of mature trees, the winding, open channel of the ditch/stream, contrasting patterns of enclosure and the framed views to the Downs, but all these characteristics could be integrated within a planned programme of change, which could bring benefits in the form of an enhanced urban/ landscape interface, public access and sustainable landscape management."

2.60 Perhaps unsurprisingly, the earlier recommendation of the 2012 Landscape Study that benefits could be achieved from a planned programme of change in LCA 7 is deleted from the 2016 Landscape Study Update. Whilst this clearly reflects the fact that no site allocation is proposed in the APSALP for LCA 7, it is of relevance that the previous landscape advice to Adur DC was supportive of development in this area. It would also suggest that the evidence provided by the Landscape Study 2016 is inappropriately policy-led.

2.61 Landscape quality and condition is recorded in the Landscape Studies as:

LCA6:

"Scrubby, textured farmland, with partial hedgerows. Its scruffy condition is an inherent part of local landscape character. However the interface between the farmland and the A259 and Hasler estate is exceptionally poor quality and some landscape boundaries, particularly the conifer belt along the edge of the Adur Recreation Ground, seem anomalous"

LCA7:

- "An unkempt, transitional landscape, which appears to have been left unmanaged. There is an ongoing transition from grassland to woodland in some parts of the area which is creating an urban edge landscape which could be perceived as unsafe".
- 2.62 The LCA7 assessment is amended in the Landscape Study Update 2016 to: "The east part of the area is open fields; the west part is an area of regenerating scrub and woodland. The whole area has an unkempt character". Despite the relative lack of change across the LCA (save for vegetation growth) between 2012 and 2016, it is interesting to note that by 2016 the urban edge landscape is no longer perceived by Adur DC as being unsafe.
- 2.63 We agree that the built interface between LCA6 and the A259 and existing housing is exceptionally poor quality.
- 2.64 In relation to LCA6, 'Contribution to landscape setting' is described in the Landscape Study Update 2016 as:
  - "The fields on either side of New Salts Farm Road provide a strategically important open greenspace which maintains a sense of separation between the buildings of Shoreham Airport and Shoreham (the neighbourhood north of Shoreham Beach). Views across this area also make a strong contribution to the sense of 'openness' and 'greenness' in the Lancing-Shoreham Gap, particularly in southward views from Lancing Ring, in which the gap appears to extend almost to the sea, and in northward views from the A259, in which the gap is the foreground to views to the Downs. The fields also contribute to the setting of the River Adur and form part of the gateway western approach to Shoreham-by-Sea.
  - This is the only part of the Lancing-Shoreham Gap where there are direct views across open green fields from the A259, which runs along the southern fringes of the historic terminal building of Shoreham Airport are local landmarks in these views.
- 2.65 LCA 7 is assessed as making the following 'Contribution to landscape setting' in the Landscape Study Update 2016:

"This landscape has an odd relationship with the adjacent Hasler estate. There is no public access, but there are views from the ends of streets deadending onto the fields across the greenspaces to the wider landscape context of the Downs to the north. This area is an inaccessible backland, which makes minimal contribution to the amenity of the Hasler estate. However the LCA appears to be well wooded in views to the Lancing-Shoreham Gap from the Downs, across the Gap from the north and east and from trains crossing the Gap. It provides a striking contrast to the more open landscapes elsewhere in the Lancing-Shoreham Gap. This well treed character contributes to the distinctive landscape setting of Lancing"

- 2.66 Landscape character sensitivity is assessed as Medium-high for LCA6 and Medium for LCA7 and overall landscape sensitivity (which combines judgements of landscape character sensitivity and visual sensitivity) is assessed as Medium-high for LCA6 and Medium for LCA7 in the Landscape Study Update 2016. The 2012 Landscape Study concludes similar rankings for LCA7 but assesses a lower 'Medium-low' overall landscape sensitivity for LCA6, albeit character sensitivity and visual sensitivity are the same rankings as assessed in 2016.
- 2.67 Notwithstanding the concerns raised about the methodology/process of assessment used for the Landscape Studies, it is significant that the Landscape Study 2012 identified Indicative Development Principles for both LCA6 and LCA7, indicating potential development areas as well as new public greenspaces, planting and SUDs opportunities within the site. Potential landscape and ecological impacts were assessed (albeit in a rather broad-brush manner) based on the Indicative Development Principles. Resulting landscape impacts for LCA6 (referenced as Land NE of Hasler Estate) were considered by the Landscape Study 2012 to be:

"This development would be highly visible from local roads (A259 and New Salts Farm Road) and is in a relatively open landscape towards the fringes of the Adur Estuary. It would result in a change to the inherent landscape character, <u>but with positive benefits</u> <u>in terms of public access and the development of an enhanced built/landscape</u> <u>interface in this part of South Lancing. There are not predicted to be detrimental</u> <u>impacts on key views across the Lancing Gap. Development here could provide the</u> <u>catalyst for the sustainable management of land to the east of New Salts Farm Road</u> for public access and nature conservation purposes, with further scope for enhancements to the adjacent Adur Recreation Ground and the footpaths on the edge of the Estuary". (DHA emphasis)

2.68 Resulting landscape impacts for LCA7 (referenced as land NW of Hasler Estate) were considered by the Landscape Study 2012 as:

"Development on this site could be accommodated without detriment to the landscape and visual character of this relatively enclosed part of the Lancing Gap. Development

areas could be 'slotted' between areas of retained woodland/scrub and new belts of woodland would screen views to housing while conserving landscape character. <u>There</u> would be opportunities to provide an excellent multi-functional GI corridor, with much <u>needed public access</u>". (DHA emphasis)

- 2.69 The Landscape Study 2012 and Landscape Study Update 2016 assess the Landscape Character Sensitivity as *Medium-high* for LCA6 (including the eastern side of the site) and *Medium* for LCA7 (including the western side of the site).
- 2.70 In terms of visual sensitivity, the Landscape Study 2012 assesses LCA6 as having Medium visual sensitivity and LCA7 as having Medium low visual sensitivity. The Landscape Study Update 2016 considers LCA6 to have an increased visual sensitivity, assessed as Medium high with LCA7 assessment of visual sensitivity remaining as Medium low. No clear justification is provided for this increase.
- 2.71 The visual sensitivity of LCA6 is assessed in the Landscape Studies as:

"This farmland is highly visible in local views from roads. The open character of the landscape contributes to its overall visibility. In long distance views from the Downs (eg View 8) and give a sense of depth to the north-south views across the Gap. The open fields provide a valuable 'slice of green' separating the urban areas to the south from the buildings of Shoreham Airport.

Limited potential for to [sic] mitigate the effects of development in views across the gap in which these fields provide a valuable separation between existing urban areas. <u>Good</u> <u>potential for planting to improve the existing landscape structure, reinforcing the local</u> <u>landscape pattern and helping to integrate the adjacent poor quality built edges.</u>

Visual sensitivity Medium high" (DHA emphasis)

## 2.72 The visual sensitivity of LCA7 is assessed as:

"Relatively enclosed landscape character, with trees and scrub along railway, woodland on fringes of Hasler estate and trees within field boundaries providing a sense of enclosure. The relatively enclosed 'wooded' character of the area is distinctive and also sensitive - it contributes a contrast in character to other parts of the Lancing-Shoreham Gap. Visibility is moderate-low, but more visible in sensitive views from Downs to the north. These high sensitive views show the LCA in the distance and the 'layers' of field and vegetation contribute to the sense of an extensive gap.

<u>Good potential for mitigation, with additional planting providing potential to improve</u> <u>interface between housing in South Lancing (Hasler estate) and adjacent landscape to</u> <u>north. Scope to soften the poor quality edge of these urban edges in the sensitive views</u> from Lancing Ring with additional planting along northern edges of LCA.

#### Visual sensitivity: **Medium low**" (DHA emphasis)

2.73 Landscape character sensitivity is then combined with visual sensitivity to give an assessment of overall landscape sensitivity. This is assessed as *Medium-low* for LCA6 and *Medium* for LCA7 in the Landscape Study 2012. The Landscape Study Update 2016 shows an increased *Medium-high* overall landscape sensitivity for LCA6 but as noted above provides no explanation for this.

#### **Conclusions**

- 2.74 The Adur Landscape Studies do not include any detailed information on the methodology used. A single matrix is provided, extracted from the 2004 Topic Paper 6 by the then Country Agency, this being a broad discussion document that does not advocate an agreed or particularly current methodology for evaluating either landscape sensitivity or capacity. The single matrix shows how landscape character sensitivity rankings and visual sensitivity rankings are combined to determine Overall Landscape Sensitivity. No definitions are provided of the assessment rankings used, nor description provided of the criteria used to actually assess Landscape Character and Visual Sensitivity nor demonstration or explanation given as to how any criteria have been applied in a systematic and consistent way to reach judgements on Landscape Studies which therefore do not reflect best practice and lack transparency in terms of the judgements made.
- 2.75 The Adur Landscape Studies are based upon an assessment of inherent sensitivity of the landscape. Acknowledging that National Planning Policy Framework requires at paragraph 170 that "Where appropriate, landscape character assessments should also be prepared, integrated with assessment of historic landscape character, and for areas where there are major expansion options assessments of landscape sensitivity" (our emphasis), it is surprising given the purpose of the Studies to inform the emerging Local Plan and potential Strategic Site Allocations, that the Studies do not consider either the sensitivity of the landscape to a particular type of development/change or extend their consideration to address landscape capacity. Whilst the 2012 Landscape Study goes some way to addressing this through incorporating 'Indicative Development Principles' for potential allocations sites (including amongst others the New Salts Farm site) which "explore the opportunities and constraints for development..." and "...take account of the findings of the wider landscape sensitivity assessment", this work is not carried forward in the 2016 Update.
- 2.76 Topic Paper 6 considers that both inherent sensitivity and sensitivity to a specific source are valid considerations (paragraph 3.2), however, more recent Guidelines for Landscape and Visual Impact Assessment (Third Edition 2013) by the Landscape Institute and Institute for Environmental Assessment and Management, essentially dismiss their usefulness to the EIA

process, stating that such inherent sensitivity assessments "may provide preliminary background information" and that they "cannot reliably inform assessment" (Paragraphs 5.41 – 5.42).

- 2.77 Whilst it is debateable whether an assessment of inherent landscape sensitivity is a reasonable approach to informing strategic decision making, clearly there is scope for different judgements to be made when sensitivity is assessed in relation to a particular type of development or indeed a specific development proposal.
- 2.78 It is also important to note that "landscapes with high sensitivity do not automatically have no or low capacity to accommodate change, and landscapes of low sensitivity do not automatically have high capacity to accept change. Capacity is all a question of the interaction between the sensitivity of the landscape, the type and amount of change, and the way that the landscape is valued." (Topic Paper 6, paragraph 6.5). In landscape planning terms therefore, a landscape that is assessed as having high inherent landscape sensitivity should therefore not automatically be discounted from consideration as a location for development.
- 2.79 The Adur Landscape Study Assessments are made against landscape character areas that were essentially established in the 2006 Urban Fringe Study and in some locations (such as in the Lancing-Shoreham Gap, LCA 6) extend across an area with varying characteristics and therefore there is an inevitable 'averaging out' of assessment rankings across each area. This is pertinent in relation to the New Salts Farm site where there is a distinct difference in character to the east and west of New Salts Farm Road. Indeed, many of the features noted in the Adur Landscape Studies as contributing to the sensitivity of LCA 6, lie to the east of New Salts Farm Road and fall outside of the New Salts Farm site itself.
- 2.80 Concern is also raised about the extent of character area LCA 1 in the Lancing Shoreham Gap and the basis for its location which seemingly reflects the proposed Policy 5 Strategic Allocation Site rather than following any physical features on the ground or relating to the key characteristics noted in the sensitivity assessment.
- 2.81 The 2012 Landscape Study seemingly includes errors relating to the combination of sensitivity rankings for LG LCA 6 but without a detailed methodology, it is difficult to understand where the error occurs and whether these are errors or merely professional judgements allowing diversion from the standard matrix provided. These issues again, highlight the lack of transparency and inadequacy of the Studies.
- 2.82 Considered overall, the landscape evidence base studies do not appear to provide a transparent or robust basis to support the APSALP Strategic Allocations sites or proposed policy 14.

# 3 LANDSCAPE SENSITIVITY AND CAPACITY ASSESSMENT

- 3.1 In order to address the issues raised in our critique of the landscape evidence base studies, a comparative landscape sensitivity and capacity assessment has been prepared for the landscape within the two proposed Local Green Gaps. The full comparative assessment is provided at Appendix A.
- 3.2 The main areas of difference between our comparative landscape sensitivity and capacity assessment and the Adur Landscape Studies are:
  - Methodology a full methodology is provided in the report at Appendix A, the intention being to provide a transparent basis for the assessment, explaining the criteria used to determine sensitivity and capacity and demonstrating a systematic and consistent approach to applying the criteria.
  - Character area boundaries have been adjusted for LCA 1, LCA 2 and LCA 6 within the Lancing – Shoreham Gap to accommodate the issues noted in the critique above. Boundaries are based upon physical features and noted differences in character rather than Strategic Allocation boundaries.
  - Our assessment considers landscape sensitivity to development rather than inherent sensitivity. It also extends the consideration of landscape sensitivity to address the landscape capacity of the landscape character areas to accommodate residential development. This is based upon a consideration of landscape sensitivity in conjunction with landscape value.
- 3.3 The main findings of our assessment are outlined below, with comparisons drawn to the findings of the Adur Landscape Studies where appropriate.

## Landscape Sensitivity

3.4 For ease of reference, the sensitivity assessment rankings made in our comparative assessment are compared to the assessment rankings of the two Adur Landscape Studies in Table 4 below. The LCA within which the New Salts Farm site lies are highlighted in yellow (LCA 6 and LCA 7 within the Lancing – Shoreham Gap), with differences between the three studies marked using the following colour coding:

**Red** = assessment rankings that have increased between 2012 and 2016 Adur Landscape Studies or between the Adur Landscape Study 2016 and DHA assessment

**Green** = assessment rankings that have increased between 2012 and 2016 Adur Landscape Studies or between the Adur Landscape Study 2016 and DHA assessment

**Blue** = LCA where boundary of character area has changed between 2012 and 2016 landscape studies

# TABLE 4: COMPARISON OF DHA LANDSCAPE SENSITIVITY ASSESSMENT RANKINGS WITH THE ADUR LANDSCAPE STUDIES

|     | Landscape Character Sensitivity                           |                   | Visual Sensitivity       |                 | Landscape Sensitivity |                   |                 |                   |                          |
|-----|---|-------------------|--------------------------|-----------------|-----------------------|-------------------|-----------------|-------------------|--------------------------|
| LCA | LS 2012   | LS Update<br>2016 | DHA                      | LS 2012         | LS Update<br>2016     | DHA               | LS 2012         | LS Update<br>2016 | DHA                      |
| SG1 | Medium  | Medium            | Moderate                 | High            | High                  | Moderate          | Medium-<br>high | Medium-<br>high   | Moderate                 |
| SG2 | Medium-<br>high   | Medium-<br>high   | Moderate-<br>high        | Medium-<br>high | Medium-<br>high       | Moderate          | Medium-<br>high | Medium-<br>high   | Moderate-<br>high        |
| SG3 | Medium  | Medium            | Moderate                 | Medium          | Medium                | Moderate          | Medium          | Medium            | Moderate                 |
| SG4 | Medium  | Medium            | Moderate                 | Medium-<br>Iow  | Medium-<br>Iow        | Low-<br>moderate  | Medium          | Medium            | Moderate                 |
| SG5 | Medium  | Medium            | High                     | Medium          | Medium                | Moderate-<br>high | Medium          | Medium            | High                     |
| SG6 | Medium-<br>high   | Medium-<br>high   | Moderate-<br>high        | Medium          | Medium                | Low-<br>moderate  | Medium-<br>high | Medium-<br>high   | Moderate-<br>high        |
| SG7 | Excluded as now lies within the South Downs National Park |                   |                          |                 |                       |                   |                 |                   |                          |
| LG1 | Low   | Low               | Low                      | Medium          | Medium                | Moderate          | Medium-<br>Iow  | Medium-<br>Iow    | Moderate                 |
| LG2 | Medium-<br>Iow  | Medium-<br>Iow    | Low-<br>moderate         | Medium          | Medium                | Moderate-<br>high | Medium          | Medium            | Moderate-<br>high        |
| LG3 | Medium-<br>high   | Medium-<br>high   | Moderate-<br>high        | High            | High                  | High              | High            | High              | High                     |
| LG4 | Medium-<br>Iow  | Medium            | Moderate                 | Medium-<br>Iow  | Medium-<br>high       | Moderate-<br>high | Medium-<br>Iow  | Medium-<br>high   | Moderate-<br>high        |
| LG5 | Low   | Medium-<br>high   | Moderate                 | Medium          | Medium-<br>high       | Moderate-<br>high | Medium-<br>Iow  | Medium-<br>high   | Moderate-<br>high        |
| LG6 | Medium-<br>high   | Medium-<br>high   | 6A: Low-<br>moderate     | Medium          | Medium-<br>high       | 6A:<br>Moderate   | Medium-<br>Iow  | Medium-<br>high   | 6A:<br>Moderate          |
|     |   |                   | 6B:<br>Moderate-<br>high |                 |                       | 6B:<br>Moderate   |                 |                   | 6B:<br>Moderate-<br>high |
| LG7 | Medium  | Medium            | Low-<br>moderate         | Medium-<br>Iow  | Medium-<br>Iow        | Low-<br>moderate  | Medium          | Medium            | Low-<br>moderate         |
| LG8 | Medium-<br>Iow  | Medium-<br>Iow    | Low-<br>moderate         | Low             | Low                   | Low               | Medium-<br>Iow  | Medium-<br>Iow    | Low -<br>moderate        |
| LG9 | Medium-<br>high   | Medium-<br>high   | Low-<br>moderate         | High            | High                  | Moderate-<br>high | High            | High              | Moderate-<br>high        |

3.5 Our assessment rankings relating to landscape sensitivity are illustrated on the map below, with the equivalent mapping from the Landscape Study 2016 also reproduced for reference:







Note: landscape sensitivity classification only shown on land, although the River Adur is part of LCAs 3,4 and 5  $\,$ 



# Landscape Capacity

3.6 Our landscape sensitivity assessment has been extended to also consider the landscape value of each of the LCA within the Local Green Gaps, using the criteria defined in our assessment at Appendix A. This when considered alongside landscape sensitivity and the type/nature of development proposed has informed our assessment of landscape capacity. Our assessment rankings for landscape sensitivity, landscape value and landscape capacity are summarised in Table 5 below, which should be read in conjunction with the landscape capacity statements in the assessment at **Appendix A**:

| LCA                    | Landscape Sensitivity | Landscape Value | Landscape Capacity |  |  |  |
|------------------------|-----------------------|-----------------|--------------------|--|--|--|
| Lancing – Shoreham Gap |                       |                 |                    |  |  |  |
| DHA LG 1               | Moderate              | Low - moderate  | Moderate           |  |  |  |
| LG 2                   | Moderate – high       | Moderate        | Low - moderate     |  |  |  |
| LG 3                   | High                  | Moderate - high | Negligible / low   |  |  |  |
| LG 4                   | Moderate – high       | Moderate - high | Negligible / low   |  |  |  |
| LG 5                   | Moderate – high       | Moderate - high | Negligible /low    |  |  |  |
| DHA LG 6A              | Moderate              | Low             | Moderate - high    |  |  |  |
| DHA LG 6B              | Moderate – high       | Moderate        | Low - moderate     |  |  |  |
| LG 7                   | Low – moderate        | Low - moderate  | Moderate - high    |  |  |  |
| LG 8                   | Low - moderate        | Low - moderate  | Moderate - high    |  |  |  |
| LG 9                   | Moderate - high       | Low - moderate  | Low - moderate     |  |  |  |
| Worthing – So          | mpting Gap            |                 |                    |  |  |  |
| SG 1                   | Moderate              | Moderate        | Moderate           |  |  |  |
| SG 2                   | Moderate – high       | High            | Negligible/low     |  |  |  |
| SG 3                   | Moderate              | Moderate        | Moderate           |  |  |  |
| SG 4                   | Moderate              | Moderate        | Moderate           |  |  |  |
| SG 5                   | High                  | Moderate        | Negligible/low     |  |  |  |
| SG 6                   | Moderate - high       | Moderate        | Low-moderate       |  |  |  |

| TABLE 5 - | DHA LANDSCAPE | SENSIVITY, VALUE | AND CAPACITY | ASSESSMENT RANKINGS |
|-----------|---------------|------------------|--------------|---------------------|
|           |               |                  |              |                     |

3.7 Our assessment rankings relating to landscape capacity are illustrated on the maps below:



### 4 Strategic Gap /Local Green Gap Consideration

4.1 An overview of the consideration of the proposed Local Green Gap in the APSALP landscape evidence base is provided below. Further consideration is given to this in our comparative landscape sensitivity and landscape capacity assessment (Appendix A) which provides an appraisal of the current contribution made by the Local Green Gaps as a whole and by the constituent landscape character areas to preventing settlement coalescence and to protecting the separate character and identities of Adur's settlements. It then goes onto to test the extent to which each the proposed Local Green Gaps (a local designation) would fulfil their intended planning policy functions, and whether or not they would be undermined by the proposed development (strategic allocations) at their edges. Consideration is also given to the Proposed Strategic Allocation Sites within the APSALP and their potential Gap impacts.

#### Consideration of the Local Green Gap (and Strategic Gap) in the Adur Landscape Studies

- 4.2 Local Plan policy AC4 of the adopted Adur Local Plan 1996 states that the purpose of the currently designated Strategic Gaps is "to prevent coalescence and to retain the separate identities and amenities of the settlements". The Strategic Gaps were protected by the now defunct West Sussex County Structure Plan, with their boundaries defined and policy also included in the local plan.
- 4.3 The adopted Local Plan 1996 was the current development plan with Policy AC4 therefore underpinning the work of both the Urban Fringe Study 2006 and the Landscape Study 2012. The Urban Fringe Study 2006 states at paragraph 4.4 that it "considers areas of land on the urban fringe in terms of their contribution to the general openness and aims of the Strategic Gap through landscape assessment." The Landscape Study 2012 states that it provides "additional layers of information" to the Urban Fringe Study, noting at paragraph 3.2.1 (3<sup>rd</sup> bullet) that the "contribution to landscape setting of the settlements surrounding the strategic gaps" is considered as part of its' assessment of landscape character sensitivity.
- 4.4 Adur DC propose to retain the Strategic Gaps as 'Local Green Gaps', under Policy 14, the wording of which is recorded in Section 2 above.
- 4.5 The Landscape Study Update 2016 notes, that one of the specific tasks of the update is to "consider the findings of the overall landscape sensitivity study in relation to the specific policies 13 and 14" (Section 1.2, page 8). With regard to proposed policy 14, there is little difference in the wording of policy AC4 and proposed policy 14 in terms of the current purpose of the Strategic Gaps and the proposed purpose of the Local Green Gaps. Given also that the earlier Urban Fringe Study and Landscape Study 2012 both consider that they also addressed the contribution to the strategic gap it is somewhat surprising and would seem a duplication of assessment and therefore evidence for the Landscape Study Update 2016 to again consider the 2012 findings against proposed policy 14 (ie. reviewing findings against proposed Policy

14 that already state they take into account the intention/purpose of proposed policy 14 in their assessment). This allied to the lack of a thorough methodology leads to confusion about the content and findings of both Landscape Studies and raises concern about the potential duplication of criteria in so far as it relates to the Local Green Gaps.

- 4.6 The supporting explanatory text to Policy 14 set out in paragraphs 3.44-3.50 explains that the open areas of countryside located within the gaps are 'particularly important given the compact nature of Adur and its location within the wider Brighton conurbation'. It also notes that 'travelling along the south coast there are few breaks in development between Brighton-Chichester; those in Adur are particularly fragile due to their small size and narrowness.'
- 4.7 The preamble to proposed Policy 14 sets out the defining criteria for the Local Green Gaps (Paragraph 3.45):

"These areas have the following characteristics:

- The open and undeveloped character of the land (this does not relate to landscape quality although some areas of gaps may happen to be of good quality)
- they form a visual break between settlements actual and perceived (from physical development or level of activity)
- they create a sense of travelling between settlements
- their boundaries follow physical features on the ground, taking account of the need to accommodate development requirements of the Plan
- Only land necessary to secure the objectives of gaps on a long term basis has been included in these gaps."
- 4.8 At paragraph 3.45a of APSALP, it is emphasized 'these gaps form a critically important component of the landscape setting of Sompting, Lancing and Shoreham-By-Sea, and contribute to their individual character and local identity'
- 4.9 Paragraph 3.46 recognises that in order to meet the identified development needs of Adur "some land on the periphery of the gaps will be used for strategic developments (identified in part 2 of the plan). However this development will be carefully managed and designed so as to minimise landscape impact, protect important views and respect the character of the countryside. These developments will also provide opportunities to enhance green infrastructure".
- 4.10 At paragraphs 3.48 and 3.49, it is advised that the countryside in the gaps would be "generally unsuitable for active recreation or leisure uses requiring permanent built facilities. However quiet informal recreation utilising the natural environment (such as walking or cycling)

may be permitted if any associated buildings are within the Built up Area, or use existing buildings in the countryside".

- 4.11 Finally at paragraphs 3.51 and 3.52, the important role of the Ricardo Shoreham Technical Centre and Shoreham Airport in the local economy and regeneration is identified, so that, although both these sites are located within the proposed designated Local Green Gap between Shoreham and Lancing, some development is proposed within this part of it. This is set out in Policy 4 in respect of the Ricardo Shoreham Technical Centre, "subject to there being no adverse impact on the countryside and the Local Green Gap", and in Policy 7 in respect of Shoreham Airport, with a proposed strategic allocation of approximately 15,000m<sup>2</sup> of floorspace on a part of the airport site, and a requirement to "minimise its impact on the landscape, as well as the open nature of the local green gap. Key views will be retained." The green coloration used on the policy allocation maps to denote the Local Green Gap area 'washes' over the entire red line area that defines the extent of this strategic allocation and over the existing Ricardo site.
- 4.12 Adur's evidence base for defining the Local Green Gaps is set out principally in the Proposed Submission Draft Local Plan 2014 Background Evidence Document, in which pages 16-25 are concerned with 'Defining Green Gaps'. The Adur Urban Fringe Study 2006 and the Adur Landscape Studies (2012 and 2016) which both predate and postdate the 2014 Background Evidence Document, are also of some relevance.
- 4.13 Of the landscape evidence base document, the Urban Fringe Study is the only study that analyses the landscape of the Gap in relation to both policy functions of providing separation of settlements / preventing coalescence and contributing to the landscape setting of settlements and draws assessment conclusions about the role of different character areas in achieving these functions. Whilst we raise some concern about the detailed methodology and approach to character assessment in the Urban Fringe Study, it is notable that neither the 2012 or 2016 Landscape Study provide a similar analysis.
- 4.14 The 2014 Background Evidence document advises that the Urban Fringe Study identified "the opportunities and constraints in landscape terms for development in the urban fringe" and that "the contribution of specific areas within the gaps to the landscape and its importance to the gap was assessed. The primary consideration was not whether the Gaps should remain but whether there are parts which are not fulfilling their function and could be developed without damaging their integrity". It goes onto advise that "a number of sites were identified with development potential" and that both the Urban Fringe Study 2006 and the Landscape and Ecology Study 2012 "were used to help inform the boundaries of the proposed strategic allocations".

# <u>Summary of DHA Gap Analysis and APSALP Landscape Background Evidence Gap</u> <u>Considerations</u>

# Sompting- Worthing (SW) Gap

- 4.15 The SW Gap within the Adur district covers six distinctive landscape character areas, first identified in the Urban Fringe 2006 and in subsequent Sheils Flynn landscape sensitivity studies in 2012 and 2016. Within the SW Gap, these character areas are ones which we have broadly concurred with in terms of their character and boundaries, although the Urban Fringe Study did not separate Sompting Village from the pasture land to the south.
- 4.16 Our assessment rankings for the contribution made to physical/visual settlement separation and contribution to the landscape setting of the settlements criteria are summarised for each landscape character area in the table below:

TABLE 6 DHA ASSESSMENT OF SW GAP CONTRIBUTION TO SETTING AND SETTLEMENT SEPARATION

| SW GAP LANDSCAPE<br>CHARACTER AREA | LANDSCAPE SETTING<br>CONTRIBUTION                     | SETTLEMENT SEPARATION<br>CONTRIBUTION                                    |
|------------------------------------|---|--|
| LCA 1 Loose Lane Fields            | Moderate contribution<br>(Moderate sensitivity)       | Important contribution<br>(Moderate-high sensitivity)                    |
| LCA2 Lower Cokeham Fen             | Important contribution<br>(Moderate-high sensitivity) | Partial contribution<br>(low-moderate sensitivity)                       |
| LCA3 North West Sompting<br>Fringe | Important contribution<br>(Moderate-high sensitivity) | Important contribution<br>(Moderate-high sensitivity)                    |
| LCA 4 Sompting Village<br>Pastures | Important contribution<br>(Moderate-high sensitivity) | Provides some of a wider area of<br>separation<br>(Moderate sensitivity) |
| LCA 5 Broadwater Fringe            | Important contribution<br>(Moderate-high sensitivity) | Provides the entire extent of<br>separation<br>(High sensitivity)        |
| LCA 6 Sompting Village             | Important contribution<br>(Moderate-high sensitivity) | Provides some of a wider area of<br>separation<br>(Moderate sensitivity) |

4.17 Notwithstanding our concerns about the methodologies used for the background evidence studies, our conclusions above are broadly similar to those reached in the Urban Fringe Study (paragraph 2.9). It is noted however, that this study downplays the contribution made by the Loose Lane Fields area and Lower Cokeham Fen area in respect of their contribution to landscape. Our assessment rankings for the contribution made to the landscape setting of settlements are also broadly comparable to the 2012 and 2016 Sheils Flynn landscape sensitivity studies overall Landscape Sensitivity rankings.

- 4.18 Indeed both the Urban Fringe Study and our Landscape Sensitivity and Capacity Assessment identify some opportunities/capacity for small scale developments within a few, limited areas of the SW Gap, within the framework of strict landscape and visual mitigation criteria.
- 4.19 Neither the 2012 Nor 2016 Landscape Studies, specifically analyse the importance of the SW Gap as a whole or the importance of each of its constituent individual Landscape Character Areas to maintaining physical and visual separation and preventing settlement coalescence. The studies focus primarily on the contribution made to landscape setting. The only reference to the contribution to settlement separation is a generalised statement in paragraph 5 on page 26 in the 2016 Policy checks document. This lack of analysis is surprising, particularly in view of the identification of Indicative Development Principles in the 2012 Landscape Study for potential development allocations at 'Sompting North and Sompting Fringe' and given the subsequent proposed local plan strategic allocation Policy 6 for land at West Sompting which covers both of the above areas considered in 2012, albeit the extent of the proposed development area was modified somewhat. Indeed, this would suggest it all-the-more important to fully consider the function of the wider area proposed by Policy 6 in terms of its contribution to achieving all of the Gap functions. This lack of completeness brings into question the soundness of the evidence base for this policy.
- 4.20 The Urban Fringe Study emphasized that, in relation to the visual sensitivity of the SW Gap "Whilst there are clear views across the gap, hedgerows and tree belts either side of the gap assist in screening views of the housing on the east, and industrial buildings to the west (although these are readily visible through vegetation in winter). As a consequence of the limited width of the gap and its primarily open character, there are few opportunities to accommodate development without eroding the visual separation that the gap currently provides."
- 4.21 It is also noted that the conclusion to the Urban Fringe study advises at paragraph 6.42 that:

"Due to its smaller size and open nature, the Sompting Gap, offers even fewer opportunities to accommodate development without compromising gap function and agricultural viability ( and hence land management)'"

4.22 However, in paragraph 6.43 advises, in line with our precis above:

"..some limited development within the small sites at the edges of the gap (within Landscape Character areas 1 –Loose Lane Fields and 2- Lower Cokeham Fen) if buildings are restricted in height. Existing screening vegetation could be retained and reinforced to enhance the perception of visual separation. Such sites provide an opportunity to bring forward local environmental enhancements."

4.23 Concerns are raised in our Comparative Landscape Sensitivity and Capacity Assessment about the proposed West Sompting Strategic Allocation (proposed Policy 6) in terms of how this has been informed by the relevant APSALP landscape background evidence with regard to consideration of the SW Gap. Notably the following concerns:

- The Policy 6 allocation site spans SG LCA 1 (Loose Lane Fields) and SG LCA 3 (NW Sompting Fringe). Our assessment considers that both of these LCA have a moderate landscape capacity to accommodate an urban extension without significant adverse effects, taking account of appropriate mitigation and taking into account all of the landscape sensitivity factors, including the overall moderate landscape value of the land.
- the extension of the proposed BUAB to the west (north of West Street) significantly reduces the Gap to just 0.15 km in width near West Street, as compared with the current 0.21 km width. In the south western corner of Sompting and the north eastern corner of Worthing, the Gap would be almost halved in width from the current 0.40km to just 0.22km (approximately). This is in a location where industrial buildings are fairly close to the proposed BUAB on the Worthing side and already visually narrow the perception of the Gap somewhat;
- no landscape buffer is proposed, and yet this area was clearly identified on Adur's evidence base Urban Fringe Study (Map 9) as having "a narrow visual connection" between areas of open farmland and being "a narrow vulnerable area between settlements";
- there would appear to be no protection provided in the proposed APSALP to retain the existing sports field shown within the BUAB at the north east corner;
- considerable concern is also raised as to whether the proposed "approximately 480 homes" are achievable within the overall identified West Sompting development area, taking account of the required provision for open space including playing fields, SuDS and other development needs as well. No concept masterplan has been provided with the policy or in the evidence base to demonstrate this, nor is there any indication of the envisaged development densities that might be appropriate in a sensitive location next to the Gap. The not-to-scale policies map does not enlighten in this regard and the original 2012 indicative development principles proposed did not identify an appropriate dwelling number that would be achievable. Furthermore it is not clear how their proposal for mitigating tree clump islands would be achieved.
- The Landscape Study Update 2016 policy update study states at paragraph 5 of page 26 "While the Worthing –Sompting Gap clearly does provide a critically important visual break between these settlements, the overlaps between the landscape settings of the three settlements suggests that the Worthing –Somting Gap is already critically narrow. There is a risk that further development, in addition to that allocated in the Proposed

Submission Adur Local Plan, within the gap, would contribute to the coalescence of Worthing, Sompting Village and the urban area of Sompting/Worthing." A key question however that must be asked in respect of this statement is, where is the robust supporting evidence that justifies that the proposed West Sompting allocation itself will not have significant adverse effects on settlement separation? It is considered that this evidence has not been provided.

- 4.24 As a result of the above landscape concerns relating to Policy 6, including those in respect of reduced proposed separation distances between the settlements, it is considered the Policy 6 allocation is in itself inconsistent and at odds with both the Policy 13 and Policy 14 requirements and the evidence base documents. Our more detailed Gap Analysis at Appendix A considers that the Policy 6 strategic allocation would both erode the current contribution made by undeveloped open land to the physical and visual separation of West Sompting and Sompting village and that between West Sompting and Worthing, and undermine the ability to maintain their landscape settings. It is considered there would be a high likelihood associated with the proposed Policy 6 West Sompting allocation of a perception of visual coalescence between Sompting and Sompting village and between Sompting and Worthing, (albeit actual physical coalescence would not occur) and of harm to their current landscape settings.
- 4.25 Whilst we would agree in landscape terms that the Policy 6 strategic allocation provides a potential opportunity to improve the quality of an existing, abrupt poor quality settlement edge adjoining the Loose Lane Fields LCA, we question the extent and scale of the proposed allocation. As a result of the proposed configuration of the Policy 6 allocation, this acknowledged "critically narrow" part of the Gap between the western corner of Sompting and the north eastern corner of Worthing would be almost halved in width.

## Shoreham- Lancing (SL) Gap

- 4.26 The SL Gap covers nine distinctive Landscape Character Areas identified in the Urban Fringe 2006 and the 2012 and 2016 Landscape Studies. Our Landscape Sensitivity and Capacity Assessment disagrees with the eastern boundary of LCA 1 Monks Farm (and therefore the western boundary of LCA2), and considers that LCA 6 New Salts Farm should be split into two separate, distinctive areas; LCAs 6A and 6B.
- 4.27 Our assessment rankings for the contribution made to physical/visual settlement separation and contribution to the landscape setting of the settlements criteria are summarised for each landscape character area in **Table 7** below. The character areas within which the New Salts Farm site is located are highlighted in yellow:

TABLE 7 DHA ASSESSMENT OF SL GAP CONTRIBUTION TO SETTING AND SETTLEMENT SEPARATION

| SL GAP LANDSCAPE CHARACTER<br>AREA | LANDSCAPE SETTING<br>CONTRIBUTION                        | SETTLEMENT SEPARATION<br>CONTRIBUTION                                    |
|------------------------------------|--|--|
| LCA 1 Monks Farm                   | Partial/minor contribution<br>(Low-moderate sensitivity) | Partial contribution<br>(Low-moderate sensitivity)                       |
| LCA2 Salt Works                    | Important contribution<br>(Moderate-high sensitivity)    | Important contribution<br>(Moderate-high sensitivity)                    |
| LCA3 Shoreham Airport              | Substantial contribution<br>(High sensitivity)           | Important contribution<br>(Moderate-high sensitivity)                    |
| LCA 4 Adur Gateway                 | Important contribution<br>(Moderate-high sensitivity)    | Partial contribution<br>(Low-moderate sensitivity)                       |
| LCA 5 Lower Adur Marshes           | Important contribution<br>(Moderate-high sensitivity)    | Provides the entire extent of<br>separation<br>(High sensitivity)        |
| LCA 6A West New Salts Farm         | Partial/minor contribution<br>(Low-moderate sensitivity) | Provides some of a wider area of<br>separation<br>(Moderate sensitivity) |
| LCA6B East New Salts Farm          | Important contribution<br>(Moderate-high sensitivity)    | Provides some of a wider area of<br>separation<br>(Moderate sensitivity) |
| LCA7 Hasler Fringe                 | Partial/minor contribution<br>(Low-moderate sensitivity) | Partial contribution<br>(Low-moderate sensitivity)                       |
| LCA8 Old Salts Farm                | Moderate contribution<br>(Moderate sensitivity)          | Provides some of a wider area of<br>separation<br>(Moderate sensitivity) |
| LCA9 Mill Hill Slopes              | Moderate contribution<br>(Moderate sensitivity)          | No separation function<br>(Low sensitivity)                              |

4.28 With the proviso about the detailed methodology used and the locations of boundaries to character areas set out above, our conclusions in respect of the LCA's contribution to settlement separation are broadly similar to those reached in the Urban Fringe Study. The main differences relating to the part of the Gap lying immediately north of the A259, where LCA 6 is ranked in the Urban Fringe Study as 'High 'Importance to the Strategic Gap'. We split this character area and consider both area LCA 6A to the west and LCA6B to the east of New Salts Farm Road to make 'some contribution to the wider area of the Gap' and therefore rank moderate in terms of settlement separation. In terms of their contribution to landscape setting, LCA6A (west of New Salts Farm), is considered to make a partial/minor contribution and is therefore ranked low-moderate against this criteria, whilst LCA6B to the east of New Salts Farm Road is considered to make an important contribution (ranked Moderate-High) to the landscape setting of the settlements.

- 4.29 One character area, LCA 9 Mill Hill Slopes was not assessed in the Urban Fringe Study, and although at the edge of the currently designated Strategic Gap, is considered not to make any contribution to settlement separation, due to the relatively small size of the area and it being largely enclosed by existing built development on two sides.
- 4.30 Both the Urban Fringe Study and our Landscape Sensitivity and Capacity Assessment consider whether there could be some opportunities for development without harming gap functions and in that regard we would not disagree with the potential opportunities identified in the Urban Fringe Study respect of sites referenced #5, #6, #7,#8 and #9, albeit, as advised above, the Urban Fringe Study does not constitute a proper Landscape Capacity Study.
- 4.31 In addition, similar to our comments above in respect of the Worthing –Sompting Gap, neither the 2012 or 2016 Landscape Studies specifically assess the importance of the Gap as a whole or of its constituent individual Landscape Character Areas to maintaining physical and visual settlement separation. There are brief mentions of separation in the 'Contribution to Landscape Setting' paragraphs of the 2012 study for the Saltworks LCA 2 and in the revised 2016 Saltworks LCA 2 and New Salts Farm LCA 6 but no comparable analysis across the Gap. Again, this is surprising, both in view of the identification of Indicative Development Principles in the 2012 study for potential development allocations at Land NW of the Hasler Estate-Old Salts Farm, for Land NE of the Hasler Estate –Off New Salts Farm Road, for Monks Farm and for Shoreham Airport, as well as in view of the subsequent proposed local plan strategic allocations for several of these sites.
- 4.32 Concerns are raised in our Comparative Landscape Sensitivity and Capacity Assessment about the proposed strategic allocation sites within the SL Gap, these being: New Monks Farm (proposed Policy 5) and Shoreham Airport (proposed Policy 7), in terms of how they has been informed by the relevant APSALP landscape background evidence with regard to consideration of the SL Gap. Notably the following concerns:

#### Policy 5 New Monks Farm Strategic Allocation

- The Policy 5 allocation site spans LG LCA 1 (New Monks Farm) and LG LCA 2 (Saltworks) in our Landscape Sensitivity and Capacity Assessment. Our assessment considers that LCA 1 has a moderate landscape capacity to accommodate an urban extension without significant adverse effects, taking account of appropriate mitigation and taking into account all of the landscape sensitivity factors, including the overall low-moderate landscape value of the land. LCA 2 is assessed as having a Low-Moderate landscape capacity to accommodate an urban extension without significant adverse effects, taking account of appropriate mitigation adverse effects, taking account of appropriate mitigation without significant adverse effects, taking account of appropriate mitigation and all of the landscape sensitivity factors and allowing for its overall moderate landscape value.
- It is considered that the part of the development area lying to the west of Mash Barn

Lane (which is an existing clear green edge and could have provided an appropriate defensible development boundary, subject to appropriate reinforcement), if considered in isolation, would be unlikely to have a harmful impact on the separation function of that part of the gap or the overall integrity of the Lancing–Shoreham Gap.

- The proposal to extend the BUAB approximately up to 300m further east of Mash Barn Lane, together with a new, major roundabout junction on the A27 indicated approximately 500m further east, together with associated principal access roads, into the open Gap landscape, would be likely to be significantly harmful to that part of the existing Gap (which covers the Saltings LCA2 as defined in our Landscape Sensitivity and Capacity Assessment), and to the overall integrity of the Gap.
- This development allocation lies in an area which is described by the 2012 Landscape Study (page 17) as: "The central part of the Lancing strategic gap makes an important contribution to the strategic gap because of its open, green, natural character and its lack of development. The views to open green landscape from the A27 are valuable and contribute to the perception of the gap and the separation between Shoreham and Lancing." This is not carried forward in the 2016 Landscape Study Update, although it is not apparent why not. Whilst the football academy is now a feature of the adjoining LCA 1, this lies in a different character area. To further complicate matters, the 2016 Landscape Study Update, revises the character area boundary between New Monks Farm LCA1 and the Saltworks LCA2 to incorporate the entire New Monks Farm development allocation a change that seems to run contrary to the 2016 Study's own findings and is not justified. Our comments on this are provided above.
- On the basis of the above and in terms of Gap consideration, the strength of the evidence base for the Monks Farm strategic allocation has noticeable inconsistencies within in it.
- With a lack of a concept masterplan or any supporting evidence there can be no certainty that 600 dwellings, 10000m2 of employment land and all the other identified development requirements can be accommodated within the proposed BUABs without potential further extension into the Gap.

#### Policy 7 Shoreham Airport Strategic Allocation

- The Policy 7 allocation site spans LG LCA 3 (Shoreham Airport). Our assessment considers that LCA 3 has a negligible/low landscape capacity to accommodate development without significant adverse effects, taking account of appropriate mitigation and taking into account all of the landscape sensitivity factors, including the overall moderate-high landscape value of the land.
- No defined BUAB boundaries are identified. The allocation is identified in an area in

which both the Urban Fringe Study and our Landscape Sensitivity and Capacity Assessment consider to be of moderate-high importance to the Green Gap and considered by our own assessment and the 2012/2016 Landscape Studies to make a high contribution to Landscape Setting.

- Whilst the allocation is indicated to only occupy a very small proportion of the existing SL Gap, with a fairly large area of open land shown to be maintained between the development area and the existing buildings of Shoreham Airport (which run parallel with the railway to the south) concern must be expressed that this development could represent a significant intrusion on the green gap. There is a risk of damaging the perception of the current open, green qualities in this location, particularly as perceived in very close views both from the River Adur riverside paths and from the historic listed toll bridge, that would erode the overall visual integrity of this part of the SL Gap. This is of all the more concern when the likely cumulative adverse effect of the allocation on the Gap is considered in combination with the Monks Farm allocation, and bearing in mind the impact the Football Academy has already had on the Gap.
- Again, no concept masterplan is associated with this policy or included in the evidence base to demonstrate how and whether 15000m2 of floorspace is achievable within the area, together with any landscape mitigation measures.
- There is a lack of identified detailed landscape mitigation measures included in the policy.
- This is further exacerbated in a context where storage/hanger buildings are proposed which are likely to be tall buildings and there is no restriction on the building height of the B1 use.
- Taking these issues into account, it is therefore not at all clear how the impact on the openness of the green gap could be minimised.

## Consideration of the potential New Salts Farm allocation site in relation to the Local Green Gap

- 4.33 Our comparative landscape sensitivity and capacity assessment (**Appendix A**) considers the Local Green Gap in connection with the potential development of the New Salts Farm site that is being promoted by our client. Our main findings are summarised below.
- 4.34 The New Salts Farm site lies in part within the Hasler Fringe LCA7 and in part within Land East of New Salts Farm Road LCA6A identified within our Landscape Sensitivity and Capacity Study.
- 4.35 The landscape contribution made by these areas both to the landscape setting of the settlement and to settlement separation in the Gap was assessed as minor/ partial in our assessment of landscape character sensitivity. It is considered that the existing Green Gap is already compromised in its physical and visual separation functions by the particular configuration and

character of existing development adjoining to the east, south and north. It is noted, that the New Salts Farm site forms part of the southern edge of the SL Gap that has close distance views across it from the nearby A259, looking across the Gap to the backdrop of the South Downs. The extent of the Gap visible in views from the A259 varies, with the railway line and airport buildings being perceived as an east-west linear strip of development across the Gap generally preventing views of the more open northern area of the Gap from the eastern extent of the A259.

- 4.36 The SL Gap adjoins the A259 for a distance of just over 1km on its northern side. The proposed New Salts Farm allocation would extend development no more than 200m into the eastern side of this (depending upon highways requirements). Although this would clearly result in a loss of part of the green gap, we would be keen to work with Adur Council to minimise the extent of this (in line with highways design requirements) and mitigate any impact through the design of strong landscape boundaries and a green frontage treatment that would replace the existing harsh built edges.
- 4.37 By comparison, the Landscape Study Update 2016 assesses only 'Contribution to landscape setting' in terms of Green Gap function, noting:

LCA6:

- "The fields on either side of New Salts Farm Road provide a strategically important open greenspace which maintains a sense of separation between the buildings of Shoreham Airport and Shoreham (the neighbourhood north of Shoreham Beach). Views across this area also make a strong contribution to the sense of 'openness' and 'greenness' in the Lancing-Shoreham Gap, particularly in southward views from Lancing Ring, in which the gap appears to extend almost to the sea, and in northward views from the A259, in which the gap is the foreground to views to the Downs. The fields also contribute to the setting of the River Adur and form part of the gateway western approach to Shoreham-by-Sea.
- This is the only part of the Lancing-Shoreham Gap where there are direct views across open green fields from the A259, which runs along the southern fringes of the historic terminal building of Shoreham Airport are local landmarks in these views.

#### LCA 7:

"This landscape has an odd relationship with the adjacent Hasler estate. There is no public access, but there are views from the ends of streets deadending onto the fields across the greenspaces to the wider landscape context of the Downs to the north. This area is an inaccessible backland, which makes minimal contribution to the amenity of the Hasler estate. However the LCA appears to be well wooded in views to the Lancing-Shoreham Gap from the Downs, across the Gap from the north and east and from

trains crossing the Gap. It provides a striking contrast to the more open landscapes elsewhere in the Lancing-Shoreham Gap. This well treed character contributes to the distinctive landscape setting of Lancing"

- 4.38 The Landscape Studies give no consideration to the policy function of the Green Gap in providing settlement separation and preventing settlement coalescence. This is a serious shortcoming of the Landscape Studies.
- 4.39 Our assessment considers that both the Hasler Fringe LCA7 and the West New Salts Farm LCA6A have a moderate-high landscape capacity to accommodate an urban extension without significant adverse effects, taking account of appropriate mitigation and taking into account all of the landscape sensitivity factors, including the low landscape value of the land.
- 4.40 Both the Urban Fringe Study and the Landscape Study 2012 Indicative Development Principles previously contemplated the possibility of some development within this part of the Gap and specifically on our proposed allocation site (although the Urban Fringe study site did not extend into LCA6A).
- 4.41 Our landscape capacity judgements for the two LCAs within our site contrasts strongly with that for our LCA6B Land to the east of New Salts Farm Road which was judged to have an overall moderate-high landscape sensitivity, a moderate value and therefore to have only a low-moderate capacity to accommodate development. It is also emphasized in particular that this LCA was judged to make an important (moderate-high) contribution to landscape setting, as well as providing some of a wider area of separation (moderate contribution). It is therefore suggested that this LCA would be the most logical and sensible area to be retained undeveloped in the southern part of the SL Gap, combined with some smaller areas retained immediately west of New Salts Farm Road and in the Adur Recreation ground within LCA 5 Lower Adur Marshes.
- 4.42 A concept masterplan and landscape strategy is provided (**Appendix B**) to demonstrate how development could be accommodated on the New Salts Farm site. This also draws upon the Indicative Development Principles in the 2012 Landscape Study. The proposed development areas illustrated on the concept masterplan are based upon a realistic calculation of the number of dwellings that could be achieved taking account of the likely space required for highways, open space provision, SUDs, and key landscape and ecological mitigation measures etc, providing Adur DC with a sound evidence base for a potential additional policy allocation.
- 4.43 Whilst our proposed BUABs would not in all cases follow existing physical features, they are visually strongly related to the existing railway line and the existing groups of dwellings along New Salts Farm Road, with generous planting buffers proposed between them. We have been critical in respect of the proposed West Sompting and Monks Farm allocations because of the failure to follow existing defensible boundaries, however it should be emphasized in the case of

our site, that the BUABs would be located in a much less open landscape in comparison with both of the above sites. The overall lengths of proposed BUAB that do not follow existing physical features are also considerably less for our site.

4.44 The area of Local Green Gap that would remain should the New Salts Farm Site also be allocated for development is indicated on Figure 7 below. This demonstrates that there would still be significant area of the Gap remaining that would continue to physically separate Lancing and Shoreham and contribute to the setting of the settlements.



## Figure DHA 8 - Potential extent of Green Gap remaining after Adur Strategic Site Allocations and proposed New Salts Farm development

- 4.45 In terms of the overall impact of a potential allocation on that part of the SL Gap lying to the south of the railway, this is considered to constitute only relatively minor erosion in Gap terms and there will be no physical coalescence of settlements as a result of the allocation (unlike in the case of the land immediately to the south).
- 4.46 Furthermore, in terms of the sequence of the closest views of the green gap moving east to west or west to east, looking northwards from the A259 it is considered, on balance, that development as suggested would only affect any existing impression of green gap openness to a very minor degree. The combination of the development and our new proposed strong green edge would have the effect of masking the existing views across the gap at this point which, despite these views extending to the Downs in the distance, are already intruded upon in the

foreground by an existing clutter of varied fences, overhead lines and the existing commercial buildings of Shoreham. Moving past or towards the proposed improved green development edge, associated with the proposed site allocation, the impression of more attractive open northward views associated with LCA6b would be reinforced. At this point it is considered that the views towards the landmarks of the airport terminal building, Lancing Chapel are better appreciated with a less cluttered foreground landscape. As a result of the above it is not considered that any perception of visual coalescence would be created.

4.47 Indeed bearing in mind the poor quality of the existing urban edge, in the vicinity of the New Salts Farm site, there is a clear opportunity for a substantial enhancement of the quality of this edge through this allocation, both in urban design and landscape terms including provision of much a stronger long term soft green edge to an amended green gap area. These were also considered by the Landscape Study 2012 to be potential positive impacts of developing the New Salts Farm Site.

# 5 LANDSCAPE AND VISUAL COMMENTS ON THE AMENDED ADUR LOCAL PLAN 2016 STRATEGIC SITE ALLOCATIONS

- 5.1 The following landscape comments are raised in connection with the proposed Strategic Allocation Site at New Monks Farm. These should be considered in conjunction with the comments relating to the consideration of the Gap in Section 4 above.
- 5.2 In the context of the landscape evidence base studies that Adur DC is basing Strategic Allocation Sites, particularly in light of the proposed Indicative Development Principles on six sites in the 2012 Landscape Study, it is surprising that no consideration has been given to or consultation out on the potential allocation of land at New Salts Farm or indeed land at Old Salts Farm that was also considered to offer potential for development.

## New Monks Farm (Policy 5) in the Lancing-Shoreham Gap

- 5.3 This site is proposed to accommodate "a mix of uses, including employment-generating floorspace (approximately 10,000 sqm), an informal country park and a community hub (which could potentially provide a small local retail facility and/or community meeting space). The site also provides the opportunity for the provision of land for a new primary school to meet needs from the local area, with potential for expansion in the future. The site could potentially accommodate 600 dwellings and will need to address landscape, drainage and biodiversity issues as indicated below. Development at this site will require a new access onto the A27 which would also help unlock further development at Shoreham Airport (see Policy 7)".
- 5.4 This has been subtly reworded from the previously proposed Policy 5 preamble which stated that "The level of residential development will be dependent on landscape and biodiversity issues". This is significant in landscape and green gap terms as it suggest that whilst landscape and biodiversity issues need to be addressed, they would no longer be the guiding factor in determining the amount of residential development on the site. Whilst clearly other factors also need to be taken into consideration, this is of concern on a site in the Local Green Gap where any potential extension of development required to the east could reduce the depth of any landscape buffers and push housing into an area of higher landscape sensitivity.
- 5.5 600 homes are now proposed (rather than the previously proposed 450-600), Adur DC considering that the higher amount is likely to be required to make the development viable and on the basis that Adur also has a significant need for new homes. No information or concept plan is provided in the landscape evidence base documents to demonstrate how 600 homes and the required employment land, school, infrastructure, open spaces, structure planting and other development requirements could fit onto the site without significant detriment to the Local Green Gap. It is of particular concern that the eastern extent of the proposed built up area to the New Monks Farm site is shown as an indicative boundary in the APSALP that is not based on any existing defensible boundary. Furthermore, the indicative nature of this within the

policy, would allow for a degree of movement into the higher sensitivity landscapes to the east (see below). Whilst the Landscape Study Update 2016 locates the eastern part of the proposed development area of the Strategic Allocation Site within a landscape character area with low overall sensitivity, this was not the case for the earlier 2012 study (where it was in the adjacent LCA 2 assessed as medium overall landscape sensitivity) or our own transparent assessment which also places it in LCA 2 with a moderate-high overall landscape sensitivity.

- 5.6 The proposed development of the New Monks Farm site would require significant offsite engineering works to create a new vehicular roundabout access from the A27. Whilst this may offer other economic benefits, from a landscape and visual perspective the potential impacts of a new junction could be significant and have not been considered in any of the evidence base landscape studies. The Landscape Study 2012 study notes that "The location of the principal vehicular access from the A27 is not yet agreed and this junction (which would be shared with a future Shoreham Airport development) would require careful landscape design so that the 'green' landscape character of the Strategic Gap is retained and enhanced".
- 5.7 The fact that the proposed roundabout location is indicative and not confirmed in the APSALP also raises concern about the potential scale and final location of any actual junction required.
- 5.8 Accepting that the location is indicative, the general locality in which the junction would lie is in the central foreground of the Lancing-Shoreham Gap when appreciated in views from the South Downs National Park to the north and immediately south of Lancing College and it's Grade I listed chapel. It also lies approximately 60m from the Shoreham Airfield Dome Trainer Scheduled Ancient Monument. Given the comparatively higher landscape sensitivity landscape character area that the indicative roundabout lies within, (located at the edge of Lancing-Shoreham Gap LCA 2 and LCA 3 considered to have moderate to high and high sensitivity in the Adur Landscape Studies and moderate-high and high landscape sensitivity by DHA) in comparison to the main New Monks Farm development site (LCA 1 considered to have medium-low landscape sensitivity in the Adur Landscape Studies and a moderate landscape sensitivity by DHA), the lack of firmness over the location and lack of proper consideration in landscape and visual terms is of concern.

#### Conclusion regarding APSALP allocated Strategic Sites

5.9 Whilst some concern is raised about the allocated strategic sites in landscape and visual terms, their inclusion in the APSALP means that Adur DC have accepted the likely level of landscape, visual and Gap effects likely to result from them. On this basis, it is considered that the New salts Farm Site would require far less extensive infrastructure requirements than for example New Monks Farm and would result in less far reaching landscape and visual effects.

### 6 DEVELOPMENT POTENTIAL OF THE NEW SALTS FARM SITE

6.1 The New Salts Farm site lies in a landscape assessed by DHA as having a moderate and lowmoderate overall landscape sensitivity and a moderate – high capacity to accommodate residential development. With reference to the methodology tables provided in our Comparative Landscape Sensitivity and Capacity Assessment, this equates to a situation where

> "Few of the key characteristics of the landscape are vulnerable to change. The landscape is likely to be able to accommodate development with only minor-moderate adverse change in character taking account of appropriate mitigation. May be suitable for urban extensions, but potentially a need to take account of/to ensure care with locating development in relation to specific characteristics/factors eg. settlement separation/settings."

- 6.2 This compares to the Adur Landscape Studies assessment of medium and medium-low overall landscape sensitivity in 2012 and medium and medium-high overall landscape sensitivity in 2016 and no consideration of landscape capacity in either of the Adur Landscape Studies.
- 6.3 An Illustrative Masterplan has been prepared to demonstrate how one possible arrangement of development could be accommodated on the site. This is presented as a concept diagram at this stage overlaid with a proposed Landscape Strategy.
- 6.4 The Illustrative Masterplan has sought to integrate landscape and other environmental mitigation as a driver of the scheme design; through developing an illustrative layout that seeks to avoid then reduce potential adverse impacts, in particular addressing the sensitivities identified in our landscape sensitivity and capacity assessment and where appropriate, the Adur Landscape Studies.
- 6.5 The Illustrative Masterplan accommodates 455 residential units located across the site and broadly reflects the 'Indicative Development Principles' for LCA6 and LCA7 presented at Figure 14f and 15f of the Adur Landscape Study 2012, with some amendments to accommodate our own site findings. The Indicative Development Principles are copied below for ease of reference:





Figure 14f - Land NW Hasler Estate/Old Salt's Farm: Indicative development principles

## Figure DHA 9 - Figure 14f Indicative Development Principles from the Landscape Study 2012





## Figure DHA 10 - Figure 15F Indicative Development Principles from the Landscape Study 2012

- 6.6 Notably the Illustrative Masterplan incorporates the following green infrastructure and development principles that were recommended in the Landscape Study 2012:
  - "The network of ditches and riparian habitats across the site is retained as a GI corridor, connecting the urban fringe with habitats along the railway embankments and

beyond. This corridor also provides extensive opportunities for SUDs, which will be essential on this low lying site." This has been incorporated through the retention of the existing ditch network with a minimum 8m buffer retained as an undisturbed wildlife corridor on either side of the ditch. These would link to areas of retained woodland and scrub and a new open space corridor with tree planting along the northern boundary linking to a wet meadow SUDs area and open space buffers to the eastern boundary.

- "There may be potential opportunities for pedestrian connections between the development areas and the existing adjacent residential areas, as well as for circular walks along the GI corridor". This has been incorporated through providing pedestrian routes with footbridge across the ditch corridors to link between the parts of the site lying in LCA6 and those lying in LCA7 and through providing pedestrian routes linking to the A259, New Salts Farm Road and the currently dead-end roads in West Beach.
- "The existing isolated wetland area in the fields to the west of New Salts Farm Road is incorporated as part of a chain of new wetlands along the road, which provide a distinctive landscape setting for the new development and a functional SUDS". This has been incorporated through linking to a wet meadow SUDs area and the retained network of drainage ditches and their buffer zones. An undeveloped corridor of open space and landscaping is proposed along the eastern boundary with New Salts Farm Road.
- "By keeping the development edge to the west of New Salts Farm Road, the historic outer edge of the floodplain is legible in the wider landscape and the fields which form the gateway to the Adur Estuary are retained as a key part of the landscape setting of Lancing and Shoreham. This area of 'trapped' estuary land also retains its distinctive and sensitive historic field pattern, with traces of former water channels/flood embankments visible within the fields". This is achieved as the site does not include land to the east of New Salts Farm Road.
- "The new wetlands alongside New Salts Farm Road create a distinctive entrance to the development, appropriate to its edge of estuary site. New Salts Farm Road would be perceived as a 'causeway', with wetlands on either side, giving prominence to the landmark building." Fields to the south-east of New Salts Farm Road are excluded from the site. An undeveloped corridor of open space and landscaping is proposed along the eastern boundary with New Salts Farm Road.
- "The farmland to the east of New Salts Farm Road is particularly visible in longer views (eg from Lancing Ring) and this will be retained, but the smaller area of greenspace to the NW of New Salts Farm Road will be perceived (in long views from the north) as an
extension of this 'slice' of greenspace, retaining the sense that there is a depth of greenspace beyond the railway/airport buildings and preventing a perceived coalescence of development". Farmland to the east is excluded from the site. This is otherwise achieved through the creation of an open space and landscape corridor along the northern and western boundaries of the site, expanding out in the north east corner to create a sense of retaining a depth to the Gap.

- "New woodland planting along the railway embankment screens and integrates the new housing edge, extending the existing chain of woodland/scrub habitats along the railway." This is achieved planting within the proposed open space corridor along the northern site boundary. Planting would need to be arranged to allow the retention of key views to Lancing College and the Downs and also agreed with Network Rail.
- "New housing to the north of Broadway Park could link to (and/or form part of) new development off Old Salts Farm Road (Land NW of Hasler Estate)". This is achieved through the site encompassing part of LCA6 and LCA7(Land NW of the Hasler Estate also recorded as Hasler fringe)
- 6.7 The following design principles have also been incorporated into the Illustrative Masterplan and within an overall Landscape Strategy to address the site-specific sensitivities and issues noted in our own landscape sensitivity and capacity assessment:
  - Provision of a network of a corridor of green and public open spaces to the northern and eastern edges of the site to act as a buffer to the development and help to retain the perception of a visual break between settlements and prevent a perceived coalescence of built development between the airport buildings, West Beach and South Lancing and Shoreham Beach. This would also retain an area of green space south of the railway line in views of the Gap from the Lancing Ring.
  - The site does not extend east of New Salts Farm Road and also excludes two fields in the south-east corner of LCA6 adjoining the A259 roundabout. A wide landscape buffer would also be created within the site 'red line boundary' on this edge where the long-term management and retention of planting could be secured through legal agreement of a long-term landscape management plan. Subject also to the respective adjoining landowner continuing with existing land management practices, a green edge to the settlement would be established and existing views would be retained from the A259 across open fields of the Gap to the listed terminal building at the airport and the backdrop of the South Downs. This, alongside the open spaces east of New Salts Farm Road, the recreation ground and Adur estuary would continue to contribute to the sense of travelling between settlements on the northern side of the A259 coastal road. This also assists with retaining the perception of New Salts Farm Road as a line

within an open landscape.

- Creation of public open space to the north of Bristol Avenue in West Beach which would provide public access from existing residential areas and link to the wider areas of open space on the site with potential for linkages to be created to the wider countryside beyond the site. This space, in tandem with the public open space at the northern edge of the site, would allow opportunities to retain key views to the South Downs and Lancing College through the careful positioning of tree planting at the detailed design stage.
- Provision of public access between the site and the East Lancing recreation ground.
- Extension of the current dead-end roads in West Beach to link to the proposed development, creating a more appropriate street and development pattern and providing increased access, permeability and a sense of completion.
- Potential, associated with any new development, to soften and significantly enhance the
  existing poor quality South Lancing urban edge with robust, strategic buffer planting,
  located outside private curtilages within open space/ communally managed land,
  thereby contributing to an enhanced landscape setting to the edge of the settlement in
  this vicinity.

#### Landscape Strategy

- 6.8 The proposed landscape strategy is overlaid on the Illustrative Masterplan (at **Appendix B**) and set out in the text below. This draws upon the findings of our Landscape Sensitivity and Capacity Assessment, specifically the 'mitigation issues and opportunities for enhancement' identified as part of the capacity assessment.
- 6.9 The overarching objective of the landscape strategy is to integrate the proposed development into the existing landscape and to ensure the proposed development provides a more appropriate treatment to the rural/urban edge. The landscape strategy outlines a number of landscape recommendation to achieve this:
  - Soft boundary treatments to be incorporated including hedgerows and tree planting to create a more robust and softer interface between the urban edge and the countryside and mitigate the visual impacts of adjoining housing. A more open boundary treatment should be incorporated to locations on the eastern boundary with New Salts Park Farm Road and to the northern boundary open space to retain a sense of an open landscape in these areas.
  - Planting to the site boundaries and other structural planting should lie outside of private curtilages to ensure retention and ongoing management in the longer term.
  - Open spaces to provide informal amenity space with a natural appearance, including

Landscape Report on behalf of Hyde New Homes Amendments to the Proposed Submission Adur Local Plan 2016 David Huskisson Associates – April 2016 incorporating existing ditches/streams and new SUDs wet meadow areas.

- The open space on the northern boundary should incorporate increased tree planting to help mitigate the visual impacts of the railway whilst still allowing for views into and out of the development. The detailed design of this area should allow for retaining key views to the South Downs and Lancing College.
- Road frontage to A259 would include a wide landscape verge to provide habitat linkage and create a perception of approaching open green space when traveling east towards Shoreham. Careful consideration should be given to the extent that new development would address the A259 to ensure a feeling a settlement separation is retained on its northern side and that views across the Gap, in particular to the listed buildings are retained.
- There is limited existing vegetation on the site, but existing ditches, trees to the railway
  embankment and the wooded stream and woodland/scrub blocks in the western part
  of the site would be retained and augmented with additional native planting.
- Formal hedge planting and small-medium size trees to private front gardens along the main access roads through the site to soften its appearance and provide structure, defining private front garden frontages. Open grass verges onto public realm areas addressing the access roads to retain a feeling of openness.
- All planting to be of local provenance, with an emphasis upon native and maritime species and selected for its interest and benefit to wildlife and aesthetic appeal as well as suitability to the microclimate.
- Play facilities to be incorporated into the open space corridors to meet Adur DC requirements but with an overall natural appearance such as using natural play features and timber furniture.
- Consideration should be given to the density and height of built development associated with a new settlement edge, to assist in providing a transition to the retained Green Gap land to the east and north, whilst also taking account of flood constraints and existing heights of development in the vicinity.
- The use of green/blue flat roofs should also be considered to allow increased storey heights whilst minimising overall building heights. This would also assist in visually relating the built development to the retained green gap and the to the sea beyond, as seen in more elevated, longer distance views from the Downs as well as providing biodiversity and SUDS/water management value.
- The use of block paving should be considered to provide permeable surfacing and soften the impact of hard surfaced areas.

- The use of local materials and features would also assist in integrating any development into the local landscape. In this respect the West Sussex Local Distinctiveness Study could be an appropriate basis from which to develop architectural detail design proposals.
- 6.10 All of the above would be set within a long term Landscape and Ecological Management Plan (LEMP), secured by legal agreement. The LEMP would address the appropriate maintenance and management of the landscape features of the site such as the open spaces, wet meadow, ditches and boundary treatments and other structural landscape including trees and woodland, grassland, hedgerows and SUDs areas.

#### Potential landscape and visual impacts

- 6.11 Although not based upon formal assessment, the 2012 Landscape Study broadly summarises the potential landscape and ecological impacts of the Illustrative Development Principles with the resulting landscape impacts being noted as:
  - "LCA6: This development would be highly visible from local roads (A259 and New Salts Farm Road) and is in a relatively open landscape towards the fringes of the Adur Estuary. It would result in a change to the inherent landscape character, but with positive benefits in terms of public access and the development of an enhanced built/landscape interface in this part of South Lancing. There are not predicted to be detrimental impacts on key views across the Lancing Gap. Development here could provide the catalyst for the sustainable management of land to the east of New Salts Farm Road for public access and nature conservation purposes, with further scope for enhancements to the adjacent Adur Recreation Ground and the footpaths on the edge of the Estuary.

And:

- LCA7: Development on this site could be accommodated without detriment to the landscape and visual character of this relatively enclosed part of the Lancing Gap. Development areas could be 'slotted' between areas of retained woodland/scrub and new belts of woodland would screen views to housing while conserving landscape character. There would be opportunities to provide an excellent multi-functional GI corridor, with much needed public access."
- 6.12 It is considered that the Illustrative Masterplan scheme now presented alongside appropriate landscape measures as defined in the landscape strategy would be likely to result in similar potential landscape effects, including the noted positive enhancements of providing public access (where none currently exists) and the creation of an enhanced built/landscape interface.

- 6.13 Whilst development of the site would clearly result in a direct loss of the landscape resource, simply by taking green fields for development, (as would be the case for any greenfield development), the layout shown on the Illustrative Masterplan and described in the landscape strategy has been developed to respond to the sensitivities of the local landscape character and distinctive qualities of this part of the Gap. Whilst the built up area boundary to Lancing would be extended further east into an area of land which currently allows views of a part of the Local Green Gap, this would be to a limited extent (in the context of the extent of road from which views out would still remain available) and key views to the listed buildings at Shoreham Airport and Lancing College chapel would be retained, notably across the land to the east of New Salts Farm Road and immediately west of the roundabout junction. The opportunity would be taken within any development to retain views to the South Downs and Lancing College from the open spaces within the scheme.
- 6.14 It is considered that within an appropriate and robust landscape strategy, residential development could be accommodated on the site as shown on the Illustrative Masterplan, and landscape strategy to minimise landscape and visual effects whilst safeguarding the qualities of the Gap and managed for the long term through a legal agreement.

#### 7 SUMMARY AND CONCLUSION

- 7.1 This statement provides a critique of the landscape related evidence base to the Amendments to the Proposed Submission Adur Local Plan 2016 (APSALP) and considers the landscape sensitivity and capacity of the landscape character areas within the proposed Local Green Gap to accommodate development. It also provides an analysis of the Green Gap in terms of policy function. It references a comparable landscape sensitivity and capacity assessment prepared by DHA and provided at **Appendix A**.
- 7.2 The comparative assessment demonstrates the scope for different conclusions to be drawn with regard to the landscape sensitivity of parts of the Green Gap when a detailed methodology is followed and when landscape sensitivity is considered in relation to a specific type of development and the assessment extended to consider landscape capacity. Specifically in relation to the landscape character areas within which the New Salts Farm site lies, when the landscape character area is reduced to reflect a finer grain of study (that is noted in the findings to the Adur Landscape Studies but not actually reflected in the character area boundaries), the differences across LCA 6 in particular can be drawn out, with the overall landscape sensitivity of LCA6 west of New Salts Farm Road assessed as being 'moderate' in comparison to the higher 'moderate-high' overall landscape sensitivity of the part of LCA 6 that lies east of New Salts Farm Road. When landscape value and the type of development/potential mitigation is also considered, this results in a landscape capacity assessed as moderate-high across the New Salts Farm site. By reference to our methodology Table F in Appendix A, this equates to a situation where "Few of the key characteristics of the landscape are vulnerable to change. The landscape is likely to be able to accommodate development with only minor-moderate adverse change in character taking account of appropriate mitigation. May be suitable for urban extensions, but potentially a need to take account of/to with development in relation to ensure care locating specific characteristics/factors eg. settlement separation/settings".
- 7.3 The landscape evidence base documents show a seemingly marked change in advice to Adur DC on the role of the Gap and other landscape issues and also include several anomalies and inconsistencies.
- 7.4 Whilst the Adur Landscape Studies provide a general indication of the intrinsic landscape and visual sensitivities and the potential constraints and attributes relating to the landscape of the Local Green Gap, they are based upon a flimsy methodology that means that assessment judgements cannot be easily understood or demonstrated to be based upon a balanced or systematic approach following best practice. The Landscape Character Area boundaries for LCA 1, 2 and 6 in the Lancing-Shoreham Gap do not seem to reflect the Studies own findings or in the case of LCA 1 and 2 reflect clear or defined boundaries on the ground. The character area boundary for LCA 1 has been updated in the most recent Landscape Study Update 2016

Landscape Report on behalf of Hyde New Homes Amendments to the Proposed Submission Adur Local Plan 2016 David Huskisson Associates – April 2016 with no explanation provided, and now reflects the extent of the strategic site allocation at New Monks Farm, suggesting that in this regard, the evidence is policy-led.

- 7.5 The Landscape Study Update 2016 offers a review of the settlement setting function of the existing Adur Green Gap, however, significantly, it does not specifically address the role that the existing Gap and its constituent LCA play in meeting the policy function of providing settlement separation. By contrast, our comparative landscape sensitivity and capacity assessment considers the current contribution made by the Local Green Gaps as a whole and by the constituent landscape character areas to both preventing settlement coalescence and to protecting the separate character and identities of Adur's settlements. It then goes onto to test the extent to which each the proposed Local Green Gaps (a local designation) would fulfil their intended planning policy functions, and whether or not they would be undermined by the proposed development (strategic allocations) at their edges.
- 7.6 The Adur Landscape Studies are based upon an assessment of inherent sensitivity; that is that they do not consider the sensitivity of the landscape to a specific development proposal or scale of change. Whilst this might not be considered an unreasonable approach to informing strategic decision making, clearly there is also scope for different judgements to be made when sensitivity is assessed in relation to specific development proposals such as required for Environmental Impact Assessment.
- 7.7 As noted, the Adur Landscape Studies are based upon landscape character areas that extend across areas with different landscape characteristics and there is therefore an inevitable 'averaging out' of assessment rankings across each area. This is pertinent in relation to the New Salts Farm site as many of the features which contribute to its sensitivity, whilst falling within the local site setting are outside of the site itself and would not be directly affected by development of parts of the site. Significant proportions of LCA6 and LCA7 lie outside of the site and would remain unaltered and therefore continue to provide their existing function within the Gap as open and undeveloped areas which form a visual break between the settlements and assist with a sense of travelling between the settlements but with a better urban edge established by a comprehensive development with appropriate landscape treatment.
- 7.8 Despite the questions we have raised about the robustness and transparency of the methodology and findings of the Adur Landscape Studies, our comparative landscape sensitivity and landscape capacity assessment shares some similar results with them.
- 7.9 With regard to the New Salts Farm site, which lies within LCA 6 and LCA 7 of the Lancing-Shoreham Gap, our assessment considers that LCA 6A to the west of New Salts Farm Road has an overall moderate landscape sensitivity to housing (in comparison to the Adur Landscape Study 2016 consideration of moderate-high overall inherent landscape sensitivity across a

wider area), whilst LCA 7 has a low-moderate sensitivity to housing (compared to a similarly ranked assessment of inherent overall landscape sensitivity in the Adur Landscape Studies).

- 7.10 When this assessment is extended to also take into consideration landscape value and the type of development proposed, LCA 6A and LCA 7 are assessed as having a moderate-high capacity to accommodate housing. This equates to a situation where "Few of the key characteristics of the landscape are vulnerable to change. The landscape is likely to be able to accommodate development with only minor-moderate adverse change in character taking account of appropriate mitigation. May be suitable for urban extensions, but potentially a need to take account of/to ensure care with locating development in relation to specific characteristics/factors eg. settlement separation/settings". Whilst no landscape capacity assessment is provided by the Adur Landscape Studies, the 2012 Landscape Study illustrates Indicative Development Proposals for the New Salts Farm site that suggest a similar ability of the landscape to accommodate development.
- 7.11 An Illustrative Masterplan has been prepared to demonstrate how one possible arrangement for residential development could be accommodated on the New Salts Farm site. In tandem with the landscape strategy, this illustrates how a scheme could be implemented in a way that would ensure that landscape and visual issues are suitably addressed. It is based upon the findings of our own site appraisal work and comparative landscape sensitivity and capacity study and is also broadly based upon the Indicative Development Principles in the 2012 Landscape Study.
- 7.12 A landscape strategy is proposed and illustrated as part on the Illustrative Masterplan at **Appendix B** and described in Section 5 of this report. The overarching objective of the landscape strategy is to integrate the proposed development into the existing landscape and to ensure the proposed development provides a more appropriate treatment to the rural/urban edge. The landscape strategy outlines a number of landscape recommendations to achieve this.
- 7.13 The Landscape Study 2012 considers potential landscape impacts, noting several potentially positive enhancements. It is considered that the Illustrative masterplan scheme now presented, alongside appropriate landscape measures as defined in the landscape strategy, would be likely to result in similar potential landscape impacts, including the positive enhancements noted.
- 7.14 Whilst development of any greenfield site would inevitably result in a direct loss of landscape resource, it is considered that there is scope to accommodate a degree of development on the site broadly based upon the Indicative Development Principles and Landscape Strategy that would address the key landscape and visual sensitivities identified as contributing to the Gap and the overall landscape sensitivity of the LCAs within which the site site.

- 7.15 Notwithstanding the concerns raised regarding the transparency and reliability of the APSALP Landscape Studies, the site lies within landscape character areas assessed by Adur DC as making a contribution to the Strategic Gap/Local Green Gap. It is considered however, that development of the site as envisaged would not be perceived as materially eroding the Strategic Gap/Local Green Gap in this area which would continue to provide a green and open setting and settlement separation on the northern side of the A259, with the potential benefit of landscape management that could be secured for the long term by legal agreement.
- 7.16 The fundamental role of the Strategic Gap/Local Green Gap in this vicinity would not be compromised by its release for development adopting the principles identified on the Illustrative Masterplan and landscape strategy.

APPENDIX A

DHA Comparative Landscape Sensitivity and Capacity Assessment

Landscape Report on behalf of Hyde New Homes Amendments to the Proposed Submission Adur Local Plan 2016 David Huskisson Associates – April 2016

#### APPENDIX B

DHA Landscape Strategy overlaid on the Illustrative Masterplan for New Salts Farm by HGP Architects

> Landscape Report on behalf of Hyde New Homes Amendments to the Proposed Submission Adur Local Plan 2016 David Huskisson Associates – April 2016



- **1) Retention of a GI corridor with SUDs** Network of existing ditches to be retained with a minimum 8m buffer as an undisturbed wildlife corridor on either side of the ditch. These would link to areas of retained woodland and scrub and new open space corridor with tree planting along the northern boundary linking to a wet meadow SUDs area and open space buffers to the eastern boundary
- 2) Improve pedestrian conections Pedestrian routes proposed with footbridges across the ditch corridors to link between the parts of the site lying in LCA6 and those lying in LCA7. Creation of a public open space to the north of Bristol Avenue in West Beach. Pedestrian routes also proposed to link to the East lancing recreation ground, A259, New Salts Farm Road and the existing residential areas on currently dead-end roads in West Beach, with potential for linkages to be created to the wider countryside beyond the site.



- 3 Incorporate existing isolated wetland area to provide a distinctive landscape setting for the new development and a functional SUDS - A wet meadow SUDs area is proposed to link with the retained network of drainage ditches and their buffer zones. An undeveloped corridor of open space and landscaping is proposed along the eastern boundary with New Salts Farm Road.
- (4) Perception of New Salts Farm Road as a 'causeway', with wetlands on either side, to give prominence to the farm building - An undeveloped corridor of open space and landscaping is proposed along the eastern boundary with New Salts Farm Road.
- (5) Retain the sense that there is a depth of greenspace beyond the railway/airport buildings and prevent a perceived coalescence of development - A proposed network of green corridors and public open space to the northern, eastern and western boundaries of the site, to act as a buffer to development and help

#### GENERAL LANDSCAPE NOTES:

All planting to be of local provenance, with an emphasis upon native and maritime species and selected for its interest and benefit to wildlife and aesthetic appeal as well as suitability to the microclimate.

Play facilities to be incorporated into the open space corridors to meet Adur DC requirements but with an overall natural appearance such as using natural play features and timber furniture.

Consideration should be given to the height of the development to ensure building heights respond to nearby properties whilst allowing for flood

retain the perception of a visual break between settlements and prevent a coalescence of built development. This would also retain an area of green space south of the railway line in views of the Gap from the Lancing Ring. The open space would expand out in the north east corner to allow a sense of retaining a depth to the Gap.

New woodland planting along the railway embankment to screen and integrate the new housing edge and extend the existing chain of woodland/scrub habitats along the railway - Planting is proposed within the proposed open space along the northern site boundary and would be arranged to allow the retention of key views to Lancing College and the Downs (subject to agreement with Network Rail).

constraints. The use of areen/blue flat roofs should also be considered to help limit visual impact and provide biodiversity and landscape benefit.

Block paving should be considered to provide permeable surfacing and soften the impact of hard surfaced areas.

The use of local materials and features should be incorporated to help integrate the development into the local landscape.

- create a more robust and softer interface between the urban edge and the countryside and mitigate the visual impacts of adjoining housing. Planting to the site boundaries should generally lie outside of private curtilages to ensure retention and ongoing management in the longer term
- (2) A more open boundary treatment should be incorporated to locations on the eastern boundary with New Salts Park Farm and to the northern areas.
- appearance, including incorporating existing ditches/streams and new SUDs wet meadow areas.

### LANDSCAPE MANAGEMENT

A long term Landscape and Ecological Management Plan should address the appropriate maintenance and management of the site's landscape features such as the open spaces, wet meadow, ditches and boundary treatments and other structural landscape including trees and woodland, grassland, hedgerows and SUDs areas. This would be secured by legal agreement.

- (1) Soft boundary treatments including hedgerows and tree planting to (4) The open space on the northern boundary should incorporate increased tree planting to help mitigate the visual impacts of the railway whilst still allowing for views into and out of the development. The detailed design of this area should allow for retaining key views to the South Downs and Lancing College.
  - (5) Road frontage to A259 would include a wide landscape verge to provide habitat linkage and create a perception of approaching open green space when traveling east towards Shoreham.
- boundary open space to retain a sense of an open landscape in these 🔞 Existing ditches, trees to the railway embankment, wooded stream and woodland / scrub areas to be retained and augmented with additional native planting.
- 3 Open spaces to provide informal amenity space with a natural 🕜 Formal hedge planting and small-medium size trees to private front gardens along the main access roads through the site to soften its appearance and provide structure, defining private front garden frontages. Open grass verges onto public realm areas addressing the access roads to retain a feeling of openness.

| MANAGEMENT<br>Landscape and Ecological Management Plan  | Project: New Salts Farm, Shoreham-by-Sea<br>The Hyde Group |                   |                           | <sup>a</sup> D | HA 2     |
|---|--|-------------------|---------------------------|----------------|----------|
| dress the appropriate maintenance and<br>nt of the site's landscape features such as the<br>es, wet meadow, ditches and boundary<br>und other structural landscape including trees  | Title:   | Landscape         | e Strategy                |                |          |
| VANAGEMENT<br>andscape and Ecological Management Plan<br>ress the appropriate maintenance and<br>it of the site's landscape features such as the<br>ss, wet meadow, ditches and boundary<br>nd other structural landscape including trees<br>id, grassland, hedgerows and SUDs areas. This<br>ured by legal agreement.<br>FOR ILLUSTRATIVE PURPOSES ONL | Date: Mar  | y 2016            | Project No: 734 Drawn: JP | Chkd: NB       | Appd: NB |
| cured by legal agreement.   | Scale: Not   | to Scale          | Dwg No: 734/dwgs/Dł       | A/DHA-02       | Rev: B   |
| FOR ILLUSTRATIVE PURPOSES ONLY  | File ref: P/734/D  | wgs/DHA/Current/I | DHA-02                    |                |          |

### **FINAL**



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### COMPARATIVE LANDSCAPE SENSITIVITY AND CAPACITY ASSESSMENT OF THE PROPOSED ADUR DISTRICT LOCAL GREEN GAP

#### TO ACCOMPANY REPRESENTATIONS

#### TO THE

#### AMENDMENTS TO THE PROPOSED SUBMISSION ADUR LOCAL PLAN 2016

on behalf of

HYDE NEW HOMES

April 2016

Date of Issue: 11/05/16 Status/Revision: FINAL File ref: 734/DHA /REPORTS /CURRENT /Capacity and Gap/Landscape + Capacity Assess.doc Checked and Approved: NB/DH/MB

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#### 1 INTRODUCTION

- 1.1 David Huskisson Associates (DHA) is a firm of Chartered Landscape Architects, established in 1987 and registered since then with the Landscape Institute. DHA has been a member of the Institute of Environmental Management and Assessment since 1992. The practice is Quality Assured to BS EN ISO 9001:2008. Both directors of the practice are Chartered Members of the Landscape Institute.
- 1.2 DHA has undertaken a range of environmental planning and landscape and visual assessment and design work for many clients including public bodies, private companies and individuals on projects including commercial, industrial, retail, recreational, healthcare, agricultural, infrastructure and residential schemes. The practice has undertaken assessment work in Conservation Areas, in National Parks and in Areas of Outstanding Natural Beauty and other environmentally sensitive areas. The practice has also given extensive development control advice to Local Planning Authorities on a wide range of projects and has significant experience in presenting landscape and visual evidence at planning appeals. DHA is also a member of the professional working group providing advice to Natural England on the replacement of Topic Paper 6 relating to Landscape Sensitivity and Capacity Assessment.
- 1.3 DHA is now retained by Hyde New Homes to provide landscape consultancy in connection with their site at New Salts Farm in Shoreham-by-Sea in which they have a freehold interest.
- 1.4 This Landscape Sensitivity and Capacity Assessment addresses the landscape within the proposed Local Green Gaps of Adur district on a character area basis. It informs a landscape report submitted as part of representations to the Amendments to the Proposed Submission Adur Local Plan 2016 (APSALP) on behalf of Hyde New Homes. The representations report provides a critique of the landscape evidence base to the APSALP, notably the Urban Fringe Study 2006, the 'Adur Landscape and Ecological surveys of key sites within the Adur District' (referred to as the Landscape Study 2012) and the 'Adur Landscape Study Update Local Green Gap & Built-Up Area Boundary policy checks for the emerging Adur Local Plan, 2016' and the 'Assessment of Landscape Sensitivity Adur Local Plan Area, 2016' (together referred to as the Landscape Study Update 2016). The critique records a number of inadequacies in the landscape evidence base that undermine the soundness and transparency of its findings. This comparative landscape sensitivity and capacity assessment has therefore been prepared to address the main issues raised, these being:
  - Methodology the landscape evidence base studies provide no detailed methodology to define the criteria that underpin the assessment or to demonstrate how criteria have been applied in a consistent and methodical way to reach assessment judgements and rankings. The methodology used for our comparative landscape sensitivity and capacity assessment describes the key assessment stages, describes the criteria used to determine sensitivity and capacity and demonstrates

how these criteria are considered and combined using assessment tables to achieve assessment rankings.

- Local Landscape Character Areas The Landscape Study 2012 adopts character area boundaries imposed by a 2006 Urban Fringe Study that are based upon a flawed landscape character assessment. The Landscape Study Update 2016 provides a limited review of the boundaries to exclude areas outside of the Adur District and include parts of the study area that were missing from the 2006 and 2012 studies. However, some of the character area boundaries do not appear to reflect fundamental differences in character that are noted within its own assessment findings, notably for LCA 1, LCA 2 and LCA 6 within the Lancing Shoreham Gap. This comparative landscape sensitivity and capacity assessment has reviewed the landscape character area boundaries in light of this.
- Sensitivity and capacity The Adur Landscape Studies provide an assessment of inherent landscape sensitivity, that is that they do not consider the sensitivity of the landscape to a particular type or scale of change. Whilst the Landscape Study 2012 provides some consideration of how appropriate development could be accommodated across six potential sites (including the New Salts Farm site), this is not considered by way of an assessment of landscape capacity or any consideration of landscape value. Our comparative assessment addresses sensitivity to residential development and extends this consideration to address the potential landscape capacity of the landscape to accommodate residential (or other) development, based upon a consideration of overall landscape sensitivity in conjunction with landscape value.
- 1.5 This work has been informed by desktop studies and site visits carried out by two chartered landscape architects during February, March and April 2016 in a variety of weather conditions.
- 1.6 The Landscape Sensitivity and Capacity Assessment draws upon a range of information contained in other published studies and reports, including the following primary reference documents (in so far as they relate to the landscape and visual context of the Local Green Gaps):
  - National Planning Policy Framework, March 2012;
  - National Planning Practice Guidance;
  - The Countryside Agency, Countryside Character, Volume 7: South East & London, published 1999 and now extensively updated;
  - A Strategy for the West Sussex landscape, West Sussex County Council, October 2005;

- The Landscape Character Assessment of West Sussex, Chris Blandford Associates for West Sussex County Council, 2003;
- Local Distinctiveness Study of West Sussex, West Sussex County Council;
- Adur District Local Plan 1996;
- Strategic Housing Land Availability Assessment (SHLAA) Update An Assessment of Previously Developed Sites in the Built Up Area December 2015 (Base Date of Study 01/04/2015), Adur DC;
- Landscape and ecological surveys of key sites within the Adur District, Sheils Flynn for Adur DC, November 2012;
- Adur Landscape Study Update Local Green Gap & Built-Up Area Boundary policy checks for the emerging Adur Local Plan, Sheils Flynn for Adur DC, January 2016;
- Assessment of landscape sensitivity Adur Local Plan area, Sheils Flynn for Adur DC, January 2016;
- Urban Fringe Study, 2006;
- Adur Characterisation Study, Tibbalds, 2009, (status unknown);
- Conservation Area Appraisal Sompting Village (Adur DC);
- MAGIC website;
- English Heritage website (listed building entries);
- Google maps and Google Earth;
- An Approach to Landscape Character Assessment, Natural England, October 2014;
- Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA3) published in April 2013 by the Landscape Institute and the Institute of Environmental Management and Assessment;
- Topic Paper 6: Techniques and Criteria for Judging Capacity and Sensitivity, 2002, The Countryside Agency and Scottish Natural Heritage.

#### 2 METHODOLOGY AND APPROACH TO ASSESSMENT

- 2.1 The general approach to assessing landscape sensitivity and capacity used in this report has been informed by Landscape Character Guidance published by Natural England<sup>1</sup> and builds upon the discussion paper Topic Paper 6<sup>2</sup>. There is currently no agreed methodology for evaluating sensitivity or capacity of different types of landscape and the concepts and definitions of landscape sensitivity and landscape capacity are the subject of much ongoing debate. Indeed Topic Paper 6 is currently being reviewed, however, no revised version has yet been issued. The methodology used in this assessment therefore works within the framework of existing available guidance and builds on our own experience in this area, alongside other best practice landscape sensitivity and capacity studies.
- 2.2 The focus for the assessment is on land within the two proposed Local Green Gaps (currently designated as Strategic Gaps) in Adur district. The areas of study are defined by the character of the landscape and urban edge, with assessment based upon consideration of local landscape character areas.

Definitions

- 2.3 A number of technical terms are used for precision and as a means for reaching transparent conclusions on sensitivity and capacity. These terms are defined below:
  - Landscape Sensitivity This is defined as the relative robustness/vulnerability of a landscape to a specific type of development based on judgements about landscape character sensitivity and visual sensitivity. It is the combination of the distinctive characteristics (including cultural and natural/ecological factors, condition and aesthetic characteristics) and visual sensitivity.
  - Landscape Capacity This is defined as the relative ability of the landscape to accommodate different amounts of change or development of a specific type without significant effects on its landscape and visual character, or significantly compromising the landscape values associated with it.
- 2.4 The type of development considered is principally housing development and the amount and scale of development ranges from relatively small scale edge of settlement/infill housing developments (generally up to 50 homes) to larger urban extensions (generally of up to 500 homes). It is generally assumed that the height of housing development would be two storey, approximately 8.5m ridge height, but where specific other local constraints apply that would influence the necessary height of development (for example, flood risk) this is also taken into consideration. In addition in landscape character areas where employment uses are potentially

<sup>&</sup>lt;sup>1</sup> An Approach to Landscape Character Assessment, Natural England, October 2014

<sup>&</sup>lt;sup>2</sup> Topic Paper 6: Techniques and Criteria for Judging Capacity and Sensitivity, 2002, The Countryside Agency and Scottish Natural Heritage

appropriate, for example at Shoreham Airport, or where there could be mixed use as part of larger urban extensions with community or employment uses these are also considered, with the height of this development generally assumed to be approximately 12m ridge height.

#### Assessment process and judgements

2.5 Our approach and the main stages for the assessment are set out below:

#### Stage 1: Assessment framework

Development of detailed assessment criteria appropriate to the study and associated matrices indicating how the various criteria have been combined to arrive at overall judgements of sensitivity and capacity.

#### Stage 2: Desktop analysis

Including review of existing character assessments and studies, along with aerial photography and detailed mapped information, based upon geology, landform, land cover, natural and cultural factors to ascertain the landscape character and visual baseline.

#### Stage 3: Site survey and analysis

Field survey was carried out to verify and refine the desk based consideration of local landscape character areas and included inspecting views and gaining information on visibility from public roads, rights of way and other public viewpoints (both within the proposed Local Green Gap and the surrounding landscape/townscape), visual / aesthetic characteristics, tranquillity, condition, and relationship between the area and settlement. The key distinctive characteristics of each area were identified.

#### Stage 4: Assessment

Firstly, the overall <u>sensitivity</u> of each landscape character area to the type of development was assessed. This was considered in terms of the defined criteria relating to the interactions between the landscape itself, (landscape character sensitivity) and the way it is viewed (visibility). Therefore:

#### **Overall Landscape Sensitivity** = Landscape Character Sensitivity + Visual Sensitivity

Secondly, the landscape <u>capacity</u> of each landscape character area to accommodate residential (or other specific types of) development was assessed. This took into account the sensitivity of the landscape (as above), and considered the perceptions/values attached to the landscape (against defined criteria), and the amount and type of development. Therefore:

Landscape Capacity = Overall Landscape Sensitivity + Landscape Value + Scale / Amount of development

The criteria used to assess landscape sensitivity and landscape capacity are set out in more detail below.

#### Stage 5: Mitigation

Drawing upon the findings of the above assessment work, consideration is given to opportunities for mitigation and enhancement that should be designed into any potential development within the landscape character areas.

#### Stage 6: Gap Analysis

Our assessment also separately considers the contribution currently made by the Green Gaps as a whole and by their constituent landscape character areas to fulfilling their intended planning policy functions of preventing settlement coalescence and protecting the separate character and identities of Adur's settlements. This draws upon and considers in more detail the assessment criteria addressed in the landscape character sensitivity assessment, 'character contribution to the landscape setting of the settlements' and 'contribution to physical/visual settlement separation' as well as the visual sensitivity assessment. It then goes onto to test the extent to which each the proposed Local Green Gaps (a local designation) would fulfil their intended planning policy functions, and whether or not they would be undermined by the proposed development (strategic allocations).

#### Landscape character sensitivity criteria

- 2.6 The Landscape character sensitivity analysis considered the impact of the type of development upon overall character, particular landscape characteristics, including landform, landscape pattern, quality of the landscape settlement edge, together with the quality and condition of the landscape, as well as the contribution they make to the landscape setting of the settlements and their separation, bearing in mind the planning policy context in respect of the current strategic gaps/proposed local green gaps. Therefore the following sensitivity factors were considered:
  - <u>Landform</u> areas with a very varied/complex land form or strong topographic features e.g. strongly rolling landform are likely to be more sensitive to large scale development compared with those with a simple, predominantly flat landform.
  - <u>Landscape scale and pattern</u> areas with a complex, intimate and small scale, irregular field pattern are likely to be more sensitive to disruption of field pattern by development, compared with a simple, more uniform or eroded/fragmented field pattern. In particular small scale landscapes are particularly sensitive to larger

scale developments.

- Landscape condition/quality based upon judgements about the physical state of the landscape, and about its intactness from visual, functional and ecological perspectives. It also reflects the state of repair of individual features and elements which make up character in any one place. A range of issues such as how intact the hedgerows are, whether the characteristic tree cover is declining, whether the landscape is being damaged by intensive agricultural practices or whether suburban features are being introduced or fly tipping is present are considered. Areas with well managed landscape features in good condition are likely to be more sensitive to residential development compared with those in poor condition where there may be an opportunity to enhance landscape character in association with new development. Areas are assessed in terms of poor, poor to fair, fair, good, and very good condition.
- Contribution to the landscape setting of the settlements settlements with particularly distinctive landscape settings in terms of a combination of key component character features eg rivers, landform, tree groups/woodlands, landmark buildings, experienced in key views approaching or leaving the settlement or are experienced as an attractive backdrop from within the settlement are more likely to be sensitive to larger scale development that could erode/or lead to the loss of these settings than those
- <u>Settlement edge quality/condition</u> landscapes with existing harsh, abrupt and unattractive settlement edges are less likely to be sensitive to housing development compared to those with an attractive or muted settlement edge such as that provided by open spaces or small scale historic buildings, or by an existing strong green edge, such as woodland and hedgerow belts.
- <u>Contribution to the physical/visual separation of the settlements</u> settlements which are widely spaced and/or are perceived to have their own distinctive identity as a result of a strong landscape structure of trees and hedgerows in the open land between them are more likely to be sensitive to larger scale development as compared with those without.
- 2.7 The above criteria are set out in **Table A** below and an overall landscape character sensitivity rating is given, based on the considerations set out above and professional judgement.

| LANDSCAPE<br>CHARACTER<br>SENSITIVITY CRITERIA                               |   |  | DEGREE OF SENSITIVI   |   | HIGH   |
|--|---|--|---|---|--|
| Topography/<br>landform  | Simple, large scale<br>predominantly flat.  | Simple, large to<br>medium scale,<br>predominantly flat<br>to mildly undulating.                 | Occasional variety<br>but lacking strong<br>complexity.   | Complex<br>topographical<br>variation.  | Very complex with<br>strong<br>topographical<br>variety.   |
| Landscape<br>scale/pattern   | Simple large scale<br>pattern, and/or<br>very fragmented,<br>disturbed land<br>cover. | Largely simple, with<br>some disturbance,<br>or mostly<br>fragmented land<br>cover and land use. | Some variety.<br>Limited disturbance,<br>a degree of<br>consistency in<br>pattern of land use<br>and cover. | Varied pattern with<br>some intricacy.<br>Largely undisturbed<br>and coherent land<br>cover. Some historic<br>land use pattern. | Intricate, varied<br>pattern,<br>undisturbed,<br>consistent patterns<br>of land cover and<br>historic layout.  |
| Landscape condition/<br>intactness   | Poor  | Poor to Fair   | Fair  | Good  | Very good  |
| Character<br>contribution to the<br>landscape setting of<br>the settlements. | No contribution, ie<br>no identifiable<br>landscape setting                           | Partial/ minor<br>contribution from<br>landscape features/<br>green spaces.                      | Moderate<br>contribution from<br>landscape features<br>and green spaces.                                    | Important<br>contribution from<br>landscape features<br>and green spaces.   | Substantial<br>contribution to<br>setting from very<br>distinctive landscape<br>features and green<br>spaces at the edge<br>of /on the<br>approaches to the<br>settlements |
| Condition / quality of<br>the settlement edge                                | Harsh, abrupt and<br>unfiltered<br>settlement edge.                                   | Occasional filtered<br>edge but<br>predominantly<br>abrupt.                                      | Variable edge,<br>some historic but<br>modern larger scale<br>also evident.                                 | Variable edge,<br>some modern<br>influence but<br>predominantly well<br>filtered into<br>landscape.                             | Soft porous<br>settlement edge<br>filtered into historic<br>landscape pattern.   |
| Contribution to<br>physical/ visual<br>settlement separation                 | No separation<br>function   | Provides a partial separation  | Provides some of a<br>wider area of<br>separation   | Important<br>contribution to<br>separation  | Provides the entire<br>extent of the<br>settlement<br>separation   |
| Overall landscape character sensitivity                                      | Low   | Low-Moderate   | Moderate  | Moderate-High   | High   |

#### TABLE A: APPLICATION OF LANDSCAPE CHARACTER SENSITIVITY CRITERIA

#### Visual Sensitivity Criteria

- 2.8 The assessment of visual sensitivity examines the potential visual effects of development, including whether any development would be likely to obstruct or significantly impact upon views; how conspicuous / prominent development may be within the surroundings, whether it would affect important skylines or views. Elements and factors considered to be important in the assessment of visual sensitivity are:
  - Visibility- the relative degree to which development is likely to visible from the wider landscape or from within an area in terms of public views available from public rights of way and transport routes, taking account of any screening effects of landform and vegetation:
  - Views and landmarks- the importance of views and landmarks looking outwards from the area;
  - Visual receptors the numbers, type and sensitivity of viewers

- 2.9 Photographs are provided within the assessment to help to illustrate the key landscape and visual attributes and typical views into, out of or across the area. Photographs were taken using a Nikon digital SLR camera with the equivalent of a 50mm lens on a film camera. Photographs are provided for illustrative purposes only and are therefore presented at an appropriate size for report review. DHA photographs were taken during February and March 2016 with some of the Sheils Flynn photographs also reproduced where appropriate, copied from the Landscape Study Update 2016.
- 2.10 The above criteria are set out in **Table B** below and an overall landscape character sensitivity rating is given, based on the considerations set out above and professional judgement.

| VISUAL<br>SENSITIVITY<br>CRITERIA |  |   | DEGREE OF SENSITIVI   |   | HIGH   |
|-----------------------------------|--|---|---|---|--|
| General<br>visibility             | The area is well<br>contained by existing<br>features- buildings,<br>trees, landform. Low<br>level of visibility   | Occasional views of<br>/across the area<br>where gaps in<br>existing features<br>allow. Low-moderate<br>level of visibility       | Some visibility of /<br>across the area from<br>the surrounding<br>landscape. Moderate<br>level of visibility.                                    | The area is a<br>component of wider,<br>longer landscape views<br>of /across the area.<br>Moderate-high level of<br>visibility  | Extensive views of<br>/across the area. The<br>area is a major<br>component of wider<br>landscape views. High<br>level of visibility   |
| Views and<br>landmarks            | No views of natural and<br>built landmarks,<br>Cluttered skyline<br>character.   | Limited, partial views<br>of natural / built<br>landmarks but there<br>may also be a<br>relatively developed<br>cluttered skyline | Area from which<br>there are some wider<br>views containing<br>natural / built<br>landmarks, but there<br>may also be some<br>intrusive elements. | Some important views<br>to the wider landscape<br>and of natural / built<br>landmarks are<br>available, and any<br>more intrusive<br>elements are not<br>particularly prominent | Distinctive panoramic<br>views, including<br>prominent natural /<br>built landmarks, and<br>/or major gateway<br>views available from /<br>across the area.                                      |
| Visual<br>receptors <sup>3</sup>  | Public views are<br>experienced by a small<br>number of public<br>receptors or by a larger<br>of receptors with a<br>passing interest in their<br>visual environment eg.<br>motorists on local<br>transport routes | Occasional public<br>views from PROW<br>routes and local<br>transport routes.   | Some public views<br>for visitors and from<br>PROWs. Some<br>visibility from<br>transport routes.   | Frequent public views<br>for visitors enjoying the<br>landscape and from<br>PRoWs.  | Public views are<br>experienced by a high<br>number of visitors to<br>the landscape and /or<br>from long distance or<br>locally important<br>PRoW. Visibility from<br>major transport<br>routes. |
| Overall visual sensitivity        | Low  | Low-Moderate  | Moderate  | Moderate-High   | High   |

#### TABLE B: APPLICATION OF VISUAL SENSITIVITY CRITERIA

2.11 Once the individual assessment of landscape character sensitivity and visual sensitivity judgements have been made, the results are combined to give an overall assessment of landscape sensitivity. This is set out in **Table C** below:

<sup>&</sup>lt;sup>3</sup> The effects of distance from the viewpoints to the character area and the scope for mitigation is also considered in the visual sensitivity judgements

| LANDSCAPE<br>CHARACTER<br>SENSITIVITY | High          | High          | High           | High          | High           | High |
|---------------------------------------|---------------|---------------|----------------|---------------|----------------|------|
|                                       | Moderate-High | Moderate-High | Moderate -High | Moderate-High | Moderate -High | High |
|                                       | Moderate      | Moderate      | Moderate       | Moderate      | Moderate -High | High |
|                                       | Low-Moderate  | Low- Moderate | Low-Moderate   | Moderate      | Moderate-High  | High |
|                                       | Low           | Low           | Low -Moderate  | Moderate      | Moderate-High  | High |
|                                       | •             | Low           | Low-Moderate   | Moderate      | Moderate-High  | High |
| VISUAL SENSITIVITY                    |               |               |                |               |                |      |

#### TABLE C: LANDSCAPE SENSITIVITY

#### Landscape Value Criteria

- 2.12 Landscape value is concerned with the relative value that is attached to different landscapes. In this context, there are no nationally designated landscapes within the landscape character areas, but the A27 marks the northern extent of the Adur Green Gap and forms the southern boundary to the South Downs National Park. The relative contribution made by the landscape character areas to the setting of the National Park is therefore considered as well as other criteria that allow a comparison of the relative value of each of the character areas:-
  - Perceptual aspects/qualities (eg. scenic beauty, sense of place, tranquillity, wildness, rurality);
  - Contribution to the setting of the South Downs National Park the extent to which the landscape contributes to the setting of the national park taking account of effects of distance, and how strong any visual linkages are perceived with it;
  - Conservation interests the presence of features of wildlife, archaeological, historic and cultural interest that can add value to the landscape, as well as having high value in their own right.
- 2.13 The definitions and criteria used in this study in relation to landscape value are set out in Table D below. A five point scale was used to assess these criteria and an overall value assessment is arrived at using professional judgement.

| LANDSCAPE VALUE<br>CRITERIA  |  | D   | EGREE OF SENSITIVI  |  | HIGH  |
|--|--|---|---|--|---|
| Perceptual<br>aspects/qualities<br>(eg scenic beauty,<br>sense of place,<br>tranquillity, wildness,<br>rurality) | Not tranquil, much<br>human activity. Lack<br>of a distinctive sense<br>of place or scenic<br>beauty | Limited tranquillity,<br>with significant<br>human detractors<br>from rural / natural<br>qualities. Limited<br>perception of a<br>sense of place. | Some human<br>activity, affecting<br>tranquillity and / or<br>some features that<br>contribute to a<br>sense of place | Relatively tranquil<br>and / or<br>a strong sense of<br>place with some<br>scenic features | Tranquil and remote<br>in character, natural<br>beauty with few<br>human influences.<br>Very distinctive sense<br>of place. |
| Contribution to the setting of the South   | No contribution. No relationship with the  | Slight contribution.<br>Limited, distant  | Moderate<br>contribution.   | Moderate-Major<br>contribution. Close  | Substantial contribution. Close   |

#### TABLE D: APPLICATON OF LANDSCAPE VALUE CRITERIA

| LANDSCAPE VALUE<br>CRITERIA   | LOW DEGREE OF SENSITIVITY   |   |   |  | HIGH  |
|---|---|---|---|--|---|
| Downs National Park   | Downs.  | setting to the South<br>Downs   | Middle distance<br>setting to the South<br>Downs  | distance setting to the South Downs.   | distance setting to the<br>Downs, with<br>boundaries<br>adjoining.                                |
| Conservation<br>interests: presence of<br>features of wildlife,<br>archaeological,<br>historic and cultural<br>interest that can add<br>value to the<br>landscape, as well as<br>having value in their<br>own right | Not present. Lack of<br>local or statutory<br>designations within<br>the area or<br>adjacent. | Slight contribution<br>from a few<br>undesignated<br>features of interest.<br>Lack of statutory<br>designations within<br>the area or<br>adjoining. | Some features of<br>interest. Some local<br>designations cover<br>the area or are<br>immediately<br>adjacent. Statutory<br>designation in the<br>vicinity | A number of<br>features of interest.<br>Statutory<br>designations and<br>their settings affect<br>parts of the area. | Statutory/Local<br>designations and<br>their settings affect a<br>high proportion of<br>the area. |
| Overall relative<br>landscape value   | Low   | Low-Moderate  | Moderate  | Moderate-High  | High  |

#### Landscape Capacity

2.14 The Landscape Capacity of each area was then assessed by combining the Landscape Sensitivity rating, and the Value rating as set out in Table E below and exercising professional judgement in terms of the capacity assessment definitions set out in Table F below.

#### TABLE E: LANDSCAPE CAPACITY

|  | High            | Moderate      | Low-Moderate  | Negligible/Low | Negligible/Low | Negligible/Low |
|--|-----------------|---------------|---------------|----------------|----------------|----------------|
| <b>MAR</b>   | Moderate-High   | Moderate      | Low-Moderate  | Low-Moderate   | Negligible/Low | Negligible/low |
| N<br>S<br>D<br>S<br>D<br>S<br>D<br>S<br>D<br>S<br>D<br>S<br>D<br>S<br>D<br>S<br>D<br>S<br>D<br>S | Moderate        | Moderate-High | Moderate      | Moderate       | Low-Moderate   | Negligible/Low |
| 文明   | Low-Moderate    | Moderate-High | Moderate-High | Moderate       | Low-Moderate   | Low-Moderate   |
|  | Low             | High          | Moderate-High | Moderate       | Moderate       | Low-Moderate   |
|  |                 | Low           | Low- Moderate | Moderate       | Moderate-High  | High           |
|  | LANDSCAPE VALUE |               |               |                |                |                |

#### TABLE F: LANDSCAPE CAPACITY ASSESSMENT RANKINGS

| CAPACITY<br>ASSESSMENT<br>RANKING | DEFINITION  |
|-----------------------------------|---|
| Negligible/Low                    | Positive key characteristics, overall character and qualities of the landscape are highly vulnerable to development.<br>Development would be likely to result in a significant detrimental effects on the character of the landscape as a<br>whole and should be generally avoided, unless on a very small scale.   |
| Low-Moderate                      | Positive key characteristics, overall character and qualities of the landscape are vulnerable to change. There may<br>be some limited opportunities to accommodate development without detrimental effects.   |
| Moderate                          | Some of the key characteristics and qualities of the landscape are vulnerable to change. Although the landscape has some ability to absorb development, it is likely to cause some change in character. Care would be needed in locating development. It may be able to be accommodated in some parts of the area eg 'rounding off of a settlement' or in 'infill sites''. May be areas suitable for small urban extensions, assuming appropriate mitigation. |
| Moderate-High                     | Few of the key characteristics of the landscape are vulnerable to change. The landscape is likely to be able to accommodate development with only minor-moderate adverse change in character taking account of appropriate mitigation. May be suitable for urban extensions, but potentially a need to take account of/to ensure care with locating development in relation to specific characteristics/factors eg. settlement separation/settings.           |

| CAPACITY<br>ASSESSMENT<br>RANKING | DEFINITION   |
|-----------------------------------|--|
| High                              | Key characteristics and the overall character of the landscape would not be likely to be adversely affected by development. The landscape is likely to be able to accommodate development without significant adverse change in landscape character, taking account of appropriate mitigation. May be areas that are suitable for larger urban extensions. |

- 2.15 A written commentary on the landscape capacity judgement is also provided, including as appropriate, consideration of the potential opportunities for development or reasons for limiting it, together with an identification of the potential landscape mitigation and enhancement measures. The commentaries bear in mind that capacity rankings cover the extent of the landscape character area and therefore it is useful to provide area-specific guidance on which parts of or proportion of an area may be able to accommodate development without likely significant adverse effects
- 2.16 By necessity professional judgements have to be made on the relative balance of the individual rankings of the various criteria which combine to contribute to landscape character sensitivity, visual sensitivity and value (as highlighted in green in the assessment tables). The degree to which individual sensitivity criteria assume importance in different character areas may vary.

#### 3 LOCAL CONTEXT

3.1 **DHA Figure 1** below illustrates the extent of the Adur district proposed Local Green Gap, the South Downs National Park and other landscape related designations:



DHA Figure 1 - Landscape Context of the Adur Local Green Gap

#### 4 WORTHING – SOMPTING GAP: LANDSCAPE SENSITIVITY AND CAPACITY ASSESSMENT

4.1 Landscape character areas within the Worthing – Sompting Gap are illustrated on **DHA Figure 2** below:



| SG LCA1  | Loose Lane Fields  |
|----------|--------------------|
| SG LCA2  | Lower Cokeham Fen  |
| SG LCA3  | NW Sompting Fringe |
| SG LCA4  | Sompting Village   |
| SG LCA5  | Broadwater Fringe  |
| SG LCA 6 | Sompting Village   |
| SG LCA7  | Sompting Downs     |
|          |                    |

DHA Figure 2 - Worthing-Sompting Gap Landscape Character Areas

4.2 Our landscape sensitivity and landscape capacity assessment of the Worthing-Sompting Gap landscape character areas (LCA) is set out on the following pages.

## SG LCA 1 LOOSE LANE FIELDS

#### **KEY CHARACTERISTICS**

- Flat, open, intensive arable farmland, with large fields and an expansive scale in the centre and south of the area, and smaller scale fields towards the fringes of Sompting village, partially enclosed by hedgerows.
- Line of pylons and some smaller overhead wires are prominent.
- Some of the wider views to housing in Lancing are softened by the layering effects of hedgerows and trees
- Stark housing edge of NW Sompting in the north east part of the LCA
- Large scale industrial development at the western edge of the LCA with Worthing
- Open panoramic views northwards to the South Downs, including Sompting Village from Loose Lane, although no public access.
- Some sense of isolation and tranquillity in the centre of the area.



LANDSCAPE CHARACTER SENSITIVITY: The area's flat topography, simple field pattern, some abrupt settlement edges are factors that lower its landscape character sensitivity, but its extensive open fields make an important contribution at a broad scale, to the landscape setting of Worthing and Lancing, and create a sense of settlement separation, so pointing, on balance, to an overall moderate landscape character sensitivity.

| LANDSCAPE<br>CHARACTER<br>SENSITIVITY CRITERIA                            | LOW   | DE   | GREE OF SENSITIVITY  |   | HIGH  |
|---|---|--|--|---|---|
| Topography/<br>landform   | Simple, large scale<br>predominantly flat.  | Simple, large to<br>medium scale,<br>predominantly flat to<br>mildly undulating.                 | Occasional variety but<br>lacking strong<br>complexity.  | Complex<br>topographical<br>variation.  | Very complex with<br>strong topographical<br>variety.   |
| Landscape scale/pattern   | Simple large scale<br>pattern, and/or very<br>fragmented,<br>disturbed land<br>cover. | Largely simple, with<br>some disturbance, or<br>mostly fragmented<br>land cover and land<br>use. | Some variety. Limited<br>disturbance, A degree<br>of consistency in<br>pattern of land use and<br>cover. | Varied pattern with<br>some intricacy. Largely<br>undisturbed and<br>coherent land cover.<br>Some historic land use<br>pattern. | Intricate, varied pattern,<br>undisturbed, consistent<br>patterns of land cover<br>and historic layout.   |
| Landscape condition/<br>intactness  | Poor  | Poor to Fair   | Fair   | Good  | Very good   |
| Character contribution to<br>the landscape setting of<br>the settlements. | No contribution, i.e.<br>no identifiable<br>landscape setting                         | Partial/minor<br>contribution from<br>landscape<br>features/green spaces.                        | Moderate contribution<br>from landscape<br>features and green<br>spaces.                                 | Important contribution<br>from landscape<br>features and green<br>spaces.   | Substantial contribution<br>to setting from very<br>distinctive landscape<br>features and green<br>spaces at the edge<br>of/on the approaches<br>to the settlements |
| Condition /quality of the settlement edge                                 | Harsh, abrupt and<br>unfiltered settlement<br>edge                                    | Occasional filtered<br>edge but<br>predominantly abrupt.   | Variable edge, some<br>historic but modern<br>larger scale also<br>evident.                              | Variable edge, some<br>modern influence but<br>predominantly well<br>filtered into landscape.                                   | Soft porous settlement<br>edge filtered into<br>historic landscape<br>pattern.  |
| Contribution to physical/<br>visual settlement<br>separation              | No separation<br>function   | Provides a partial<br>separation   | Provides some of a<br>wider area of<br>separation  | Important contribution<br>to separation   | Provides the entire<br>extent of the settlement<br>separation   |
| Overall Landscape<br>Character Sensitivity                                | Low   | Low-Moderate   | Moderate   | Moderate-High   | High  |

#### TABLE 1A: LANDSCAPE CHARACTER SENSITIVITY

# SG LCA 1 LANDSCAPE CHARACTER SENSITIVITY:MODERATECOMPARISON TO ADUR LANDSCAPE STUDIES:2012 = MEDIUM2016 = MEDIUM

VISUAL SENSITIVITY: The area is visible in close views from the railway at its southern boundary, partially from West Street, and there are a few occasional views from quiet residential roads around its northern fringe. However, there are no PROWs crossing the area. The landmarks of the ridgeline of the Nore, Cissbury Hill and Sompting church and the school are important in some of the views outwards from the LCA. There are also some medium - high sensitivity public views of the majority of the LCA available from Cissbury Hill, High Barn Golf Course and Lancing Ring (seen in the background of these views).

#### TABLE 1B: VISUAL SENSITIVITY

| VISUAL SENSITIVITY<br>CRITERIA |  | DEG  | GREE OF SENSITIVITY   |   | HIGH  |
|--------------------------------|--|--|---|---|---|
| General Visibility             | The area is well<br>contained by existing<br>features- buildings,<br>trees, landform. Low<br>level of visibility   | Occasional views<br>of/across the area<br>where gaps in<br>existing features<br>allow. Low-moderate<br>level of visibility       | Some visibility<br>of/across the area<br>from the surrounding<br>landscape. Moderate<br>level of visibility.  | The area is a<br>component of wider,<br>longer landscape<br>views of/across the<br>area. Moderate-high<br>level of visibility   | Extensive views<br>of/across the area.<br>The area is a major<br>component of wider<br>landscape views. High<br>level of visibility   |
| Views and Landmarks            | No views of natural and<br>built landmarks,<br>Cluttered skyline<br>character.   | Limited, partial views<br>of natural /built<br>landmarks but there<br>may also be a<br>relatively developed<br>cluttered skyline | Area from which there<br>are some wider views<br>containing<br>natural/built<br>landmarks/, but<br>there may also be<br>some intrusive<br>elements. | Some important views<br>to the wider landscape<br>and of natural/built<br>landmarks are<br>available, and any<br>more intrusive<br>elements are not<br>particularly prominent | Distinctive panoramic<br>views, including<br>prominent natural<br>/built landmarks,<br>and/or major gateway<br>views available from/<br>across the area.  |
| Visual Receptors               | Public views are<br>experienced by a small<br>number of public<br>receptors or by a larger<br>of receptors with a<br>passing interest in their<br>visual environment eg.<br>motorists on local<br>transport routes | Occasional public<br>views from PROW<br>routes and local<br>transport routes.  | Some public views for<br>visitors and from<br>PROWs. Some<br>visibility from transport<br>routes. 1   | Frequent public views<br>for visitors enjoying<br>the landscape and<br>from PRoWs.  | Public views are<br>experienced by a high<br>number of visitors to<br>the landscape and/or<br>from long distance or<br>locally important<br>PRoW. Visibility from<br>major transport<br>routes. |
| Overall Visual<br>Sensitivity  | Low  | Low-Moderate   | Moderate  | Moderate-High   | High  |

#### SG LCA 1 VISUAL SENSITIVITY: MODERATE COMPARISON TO ADUR LANDSCAPE STUDIES: 2012= HIGH 2016= HIGH

#### TABLE 1C: LANDSCAPE SENSITIVITY

| - 4                                   | High          | High           | High            | High          | High            | High |
|---------------------------------------|---------------|----------------|-----------------|---------------|-----------------|------|
| LANDSCAPE<br>CHARACTER<br>SENSITIVITY | High          | High           | High            | High          | High            | High |
|                                       | Moderate-high | Moderate- high | Moderate - high | Moderate-high | Moderate - high | High |
|                                       | Moderate      | Moderate       | Moderate        | Moderate      | Moderate - high | High |
|                                       | Low-moderate  | Low-moderate   | Low-Moderate    | Moderate      | Moderate-high   | High |
|                                       |               | Low            | Low-moderate    | Moderate      | Moderate-high   | High |
|                                       |               |                |                 |               |                 |      |

#### SG LCA 1 LANDSCAPE SENSITIVITY: MODERATE COMPARISON TO ADUR LANDSCAPE STUDIES: 2012= MEDIUM-HIGH 2016= MEDIUM-HIGH

LANDSCAPE VALUE: There are no landscape, ecological or historic designations within the area, but the SNCI and the Sompting village conservation areas lie adjacent. There is some sense of tranquillity/isolation in the centre of the area and the area provides a middle distance setting to the South Downs.

| LANDSCAPE VALUE<br>CRITERIA   | LOW  | DEGR  | EE OF SENSITIVITY   |  | HIGH  |
|---|--|---|---|--|---|
| Perceptual<br>aspects/qualities<br>(e.g. scenic beauty,<br>sense of place,<br>tranquillity, wildness,<br>rurality)  | Not tranquil, much<br>human activity. Lack<br>of a distinctive sense<br>of place or scenic<br>beauty | Limited tranquillity,<br>with significant<br>human detractors<br>from rural/natural<br>qualities. Limited<br>perception of a<br>sense of place.     | Some human<br>activity, affecting<br>tranquillity and/or<br>some features that<br>contribute to a sense<br>of place                                       | Relatively tranquil<br>and/or<br>a strong sense of<br>place with some<br>scenic features                             | Tranquil and remote<br>in character, natural<br>beauty with few<br>human influences.<br>Very distinctive sense<br>of place. |
| Contribution to the<br>setting of the South<br>Downs National Park  | No contribution. No<br>relationship with the<br>Downs.   | Slight contribution.<br>Limited, distant<br>setting to the South<br>Downs   | Moderate<br>contribution. Middle<br>distance setting to<br>the South Downs  | Moderate-Major<br>contribution. Close<br>distance setting to<br>the South Downs.                                     | Substantial<br>contribution. Close<br>distance setting to<br>the Downs -<br>boundaries<br>adjoining.                        |
| Conservation interests<br>– presence of features<br>of wildlife,<br>archaeological, historic<br>and cultural interest<br>that can add value to<br>the landscape, as well<br>as having value in their<br>own right | Not present. Lack of<br>local or statutory<br>designations within<br>the area or<br>adjacent.        | Slight contribution<br>from a few<br>undesignated<br>features of interest.<br>Lack of statutory<br>designations within<br>the area or<br>adjoining. | Some features of<br>interest. Some local<br>designations cover<br>the area or are<br>immediately<br>adjacent. Statutory<br>designation in the<br>vicinity | A number of<br>features of interest.<br>Statutory<br>designations and<br>their settings affect<br>parts of the area. | Statutory/Local<br>designations and<br>their settings affect a<br>high proportion of<br>the area.                           |
| Overall Relative<br>Landscape Value   | Low  | Low-Moderate  | Moderate  | Moderate-High  | High  |

#### TABLE 1D: LANDSCAPE VALUE

#### SG LCA 1 LANDSCAPE VALUE: MODERATE

NOT CONSIDERED IN ADUR LANDSCAPE STUDIES 2012 or 2016

LANDSCAPE CAPACITY: Taking into account the area's moderate landscape sensitivity, moderate visual sensitivity and moderate landscape value it is considered this character area has a moderate landscape capacity to absorb housing development, possibly in the form of minor southern and western extensions to the existing larger scale development of NW Sompting adjoining. However, the landscape separation of the settlements, the broad landscape setting of the settlements and views to and from the area are characteristics that are vulnerable to development, so great care is needed in its precise location and design.

#### TABLE 1E: LANDSCAPE CAPACITY MATRIX

|                 | High           | Moderate       | Low-Moderate  | Negligible/Low | Negligible/Low | Negligible/Low |
|-----------------|----------------|----------------|---------------|----------------|----------------|----------------|
| APE<br>/ITY     | Moderate- High | Moderate       | Low- Moderate | Low-Moderate   | Negligible/Low | Negligible/low |
| DSC             | Moderate       | Moderate- High | Moderate      | Moderate       | Low-Moderate   | Negligible/Low |
| AN<br>SEN       | Low-Moderate   | Moderate-High  | Moderate-High | Moderate       | Low-Moderate   | Low-Moderate   |
|                 | Low            | High           | Moderate-High | Moderate       | Moderate       | Low-Moderate   |
|                 |                | Low            | Low-Moderate  | Moderate       | Moderate-High  | High           |
| LANDSCAPE VALUE |                |                |               |                |                |                |

#### SG LCA 1 LANDSCAPE CAPACITY: MODERATE NOT CONSIDERED IN ADUR LANDSCAPE STUDIES 2012 or 2016

#### SG LCA 1 MITIGATION ISSUES AND OPPORTUNITIES FOR ENHANCEMENT

- Essential to provide a robust strategic planting buffer, outside of private curtilages, associated with any new development, to include small copses and new hedgerows.
- Provide relatively low density, smaller scale development at the extended settlement edge, giving careful consideration to building heights.
- Maintain key views to the Downs from Loose Lane
- Maintain and enhance the existing hedgerow and drainage network for biodiversity.
- Scale of development needs to be such that any wider adverse landscape/townscape impacts of associated traffic generation/necessary highway improvements on Sompting village are minimised.

#### SG LCA 1 CONTEXT PHOTOGRAPHS







### SG LCA 2 LOWER COKEHAM FEN

#### **KEY CHARACTERISTICS**

- A distinctive corridor of wetland habitats bordered by small pastures along the east edge of the Worthing-Sompting Gap.
- Mosaic of reed bed and tall fen, which is crossed and bordered by wet ditches.
- Wetland area is fringed by meadows of irregular shapes and sizes, all enclosed by hedgerows.
- Winding ditches are a feature within the damp meadows fringing the wetlands, as well as within the fen.
- Groups of hedgerow trees and patches of scrub create an enclosed character, which contrasts with adjacent fields (WSG-LCA1)
- Views to the adjacent urban area of Lower Cokeham are softened by scrubby vegetation on the edge of the fen and by trees and hedgerows in back gardens.
- A line of tall pylons is prominent and the massive structures are dominant within this relatively narrow corridor of wetland/pasture.



**LANDSCAPE CHARACTER SENSITIVITY:** The balance of landscape character sensitivity factors, apart from the area's simple landform points to a moderate to high landscape character sensitivity including its varied pattern, its contribution to landscape setting and its relatively soft settlement edge

| LANDSCAPE<br>CHARACTER<br>SENSITIVITY CRITERIA                            | LOW DEGREE OF SENSITIVITY HIGH  |  |   |   |  |  |  |
|---|---|--|---|---|--|--|--|
| Topography/<br>landform   | Simple, large scale predominantly flat.   | Simple, large to<br>medium scale,<br>predominantly flat to<br>mildly undulating.                 | Occasional variety<br>but lacking strong<br>complexity.   | Complex<br>topographical<br>variation.  | Very complex with strong topographical variety.  |  |  |
| Landscape<br>scale/pattern  | Simple large scale<br>pattern, and/or very<br>fragmented,<br>disturbed land<br>cover. | Largely simple, with<br>some disturbance, or<br>mostly fragmented<br>land cover and land<br>use. | Some variety.<br>Limited disturbance,<br>A degree of<br>consistency in<br>pattern of land use<br>and cover. | Varied pattern with<br>some intricacy.<br>Largely undisturbed<br>and coherent land<br>cover. Some historic<br>land use pattern. | Intricate, varied pattern,<br>undisturbed, consistent<br>patterns of land cover<br>and historic layout.  |  |  |
| Landscape condition/<br>intactness  | Poor  | Poor to Fair   | Fair  | Good  | Very good  |  |  |
| Character contribution<br>to the landscape setting<br>of the settlements. | No contribution, i.e.<br>no identifiable<br>landscape setting                         | Partial/minor<br>contribution from<br>landscape<br>features/green spaces.                        | Moderate<br>contribution from<br>landscape features<br>and green spaces.                                    | Important contribution<br>from landscape<br>features and green<br>spaces.   | Substantial contribution<br>to setting from very<br>distinctive landscape<br>features and green<br>spaces at the edge of<br>/on the approaches to<br>the settlements |  |  |
| Condition /quality of the settlement edge                                 | Harsh, abrupt and unfiltered settlement edge.   | Occasional filtered<br>edge but<br>predominantly abrupt.   | Variable edge,<br>some historic but<br>modern larger scale<br>also evident.                                 | Variable edge, some<br>modern influence but<br>predominantly well<br>filtered into landscape.                                   | Soft porous settlement<br>edge filtered into historic<br>landscape pattern.  |  |  |
| Contribution to<br>physical/visual<br>settlement separation               | No separation<br>function   | Provides a partial separation  | Provides some of a wider area of separation   | Important contribution to separation  | Provides the entire extent<br>of the settlement<br>separation  |  |  |
| Overall Landscape<br>Character Sensitivity                                | Low   | Low-Moderate   | Moderate  | Moderate-High   | High   |  |  |

#### TABLE 2A: LANDSCAPE CHARACTER SENSITIVITY

#### SG LCA 2 LANDSCAPE CHARACTER SENSITIVITY: MODERATE-HIGH COMPARISON TO ADUR LANDSCAPE STUDIES: 2012: MEDIUM-HIGH 2016: MEDIUM-HIGH

VISUAL SENSITIVITY: There is no public access into the area, nor are there public views from PROWs or transport routes close to the area within the Gap. However, the central and southern parts are highly visible from open access land/and/or PROWs e.g. Cissbury Ring, the Nore, Tennant Down in the middle ground/ background of views and there are views outwards towards the Downs.

|                               |  |  |   |   | нсн   |
|-------------------------------|--|--|---|---|---|
| SENSITIVITY<br>CRITERIA       |  |  |   |   |   |
| General<br>Visibility         | The area is well<br>contained by existing<br>features- buildings,<br>trees, landform. Low<br>level of visibility   | Occasional views<br>of/across the area<br>where gaps in<br>existing features<br>allow. Low-<br>moderate level of<br>visibility         | Some visibility<br>of/across the area<br>from the<br>surrounding<br>landscape.<br>Moderate level of<br>visibility.                                  | The area is a<br>component of<br>wider, longer<br>landscape views of/<br>across the area.<br>Moderate-high level<br>of visibility   | Extensive views of/<br>across the area. The<br>area is a major<br>component of wider<br>landscape views. High<br>level of visibility  |
| Views and<br>Landmarks        | No views of natural<br>and built landmarks,<br>Cluttered skyline<br>character.   | Limited, partial<br>views of natural<br>/built landmarks<br>but there may<br>also be a<br>relatively<br>developed<br>cluttered skyline | Area from which<br>there are some<br>wider views<br>containing natural<br>/built landmarks,<br>but there may also<br>be some intrusive<br>elements. | Some important<br>views to the wider<br>landscape and of<br>natural/built<br>landmarks are<br>available, and any<br>more intrusive<br>elements are not<br>particularly<br>prominent | Distinctive panoramic<br>views, including<br>prominent natural<br>/built landmarks,<br>and/or major<br>gateway views<br>available from/<br>across the area.                                     |
| Visual Receptors              | Public views are<br>experienced by a<br>small number of<br>public receptors or by<br>a larger of receptors<br>with a passing interest<br>in their visual<br>environment eg<br>motorists on local<br>transport routes | Occasional public<br>views from PROW<br>routes and local<br>transport routes.  | Some public views<br>for visitors and from<br>PROWs. Some<br>visibility from<br>transport routes.   | Frequent public<br>views for visitors<br>enjoying the<br>landscape and from<br>PRoWs.   | Public views are<br>experienced by a high<br>number of visitors to<br>the landscape and/or<br>from long distance or<br>locally important<br>PRoW. Visibility from<br>major transport<br>routes. |
| Overall Visual<br>Sensitivity | Low  | Low-Moderate   | Moderate  | Moderate-High   | High  |

#### TABLE 2B: VISUAL SENSITIVITY

#### SG LCA 2 VISUAL SENSITIVITY: MODERATE COMPARISON TO ADUR LANDSCAPE STUDIES: 2012: MEDIUM-HIGH 2016: MEDIUM-HIGH

#### TABLE 2C: LANDSCAPE SENSITIVITY

|                        | High           | High          | High           | High          | High            | High |  |  |
|------------------------|----------------|---------------|----------------|---------------|-----------------|------|--|--|
|                        | Moderate- High | Moderate-High | Moderate -High | Moderate-High | Moderate -High  | High |  |  |
| IDSC<br>NRAC<br>ISITIV | Moderate       | Moderate      | Moderate       | Moderate      | Moderate - High | High |  |  |
| A A R                  | Low-Moderate   | Low-Moderate  | Low-Moderate   | Moderate      | Moderate-High   | High |  |  |
| -                      | Low            | Low           | Low -Moderate  | Moderate      | Moderate- High  | High |  |  |
|                        |                | Low           | Low-Moderate   | Moderate      | Moderate- High  | High |  |  |
|                        |                |               |                |               |                 |      |  |  |

VISUAL SENSITIVITY

#### SG LCA 2 LANDSCAPE SENSITIVITY: MODERATE - HIGH COMPARISON TO ADUR LANDSCAPE STUDIES: 2012: MEDIUM-HIGH 2016: MEDIUM-HIGH

LANDSCAPE VALUE: A large proportion of the area is an SNCI (county level nature conservation designation), and its somewhat wild qualities give it some sense of place. So, despite it providing only a distant setting to the South Downs, it is considered to have an overall high landscape value.

| LANDSCAPE VALUE<br>CRITERIA  | LOW  | DEGREE OF SENSITIVITY  |  |   | HIGH  |
|--|--|--|--|---|---|
| Perceptual<br>aspects/qualities<br>(e.g. scenic beauty, sense<br>of place, tranquillity,<br>wildness, rurality)  | Not tranquil, much<br>human activity. Lack<br>of a distinctive sense<br>of place or scenic<br>beauty | Limited tranquillity,<br>with significant<br>human detractors<br>from rural/natural<br>qualities. Limited<br>perception of a sense<br>of place.  | Some human activity,<br>affecting tranquillity<br>and/or some features<br>that contribute to a<br>sense of place                                       | Relatively tranquil<br>and/or<br>a strong sense of<br>place with some<br>scenic features                          | Tranquil and remote<br>in character, natural<br>beauty with few<br>human influences.<br>Very distinctive sense<br>of place. |
| Contribution to the setting<br>of the South Downs<br>National Park   | No contribution. No<br>relationship with the<br>Downs.   | Slight contribution.<br>Limited, distant setting<br>to the South Downs   | Moderate<br>contribution. Middle<br>distance setting to the<br>South Downs   | Moderate-Major<br>contribution. Close<br>distance setting to the<br>South Downs.                                  | Substantial<br>contribution. Close<br>distance setting to the<br>Downs with<br>boundaries adjoining.                        |
| Conservation interests –<br>presence of features of<br>wildlife, archaeological,<br>historic and cultural<br>interest that can add value<br>to the landscape, as well<br>as having value in their<br>own right | Not present. Lack of<br>local or statutory<br>designations within<br>the area or<br>adjacent.        | Slight contribution<br>from a few<br>undesignated features<br>of interest. Lack of<br>statutory designations<br>within the area or<br>adjoining. | Some features of<br>interest. Some local<br>designations cover<br>the area or are<br>immediately adjacent.<br>Statutory designation<br>in the vicinity | A number of features<br>of interest. Statutory<br>designations and their<br>settings affect parts of<br>the area. | Statutory/Local<br>designations and their<br>settings affect a high<br>proportion of the<br>area.                           |
| Overall Relative<br>Landscape Value  | Low  | Low-Moderate   | Moderate   | Moderate-High   | High  |

#### TABLE 2D: LANDSCAPE VALUE

#### SG LCA2 LANDSCAPE VALUE: HIGH

NOT CONSIDERED IN ADUR LANDSCAPE STUDIES 2012 or 2016

LANDSCAPE CAPACITY: Taking into account the area's moderate-high landscape character sensitivity, moderate visual sensitivity and high landscape value it is considered this character area has a negligible/low landscape capacity to absorb housing development. Any housing development in this area would be likely to have a detrimental landscape impact.

#### TABLE 2E: LANDSCAPE CAPACITY

|     | High           | Moderate      | Low-Moderate  | Negligible/Low  | Negligible/Low | Negligible/Low |
|-----|----------------|---------------|---------------|-----------------|----------------|----------------|
| ₩Ę  | Moderate- High | Moderate      | Low-Moderate  | Low-Moderate    | Negligible/Low | Negligible/low |
| DSC | Moderate       | Moderate-High | Moderate      | Moderate        | Low-Moderate   | Negligible/Low |
| SEN | Low-Moderate   | Moderate-High | Moderate-High | Moderate        | Low-Moderate   | Low-Moderate   |
| _   | Low            | High          | Moderate-High | Moderate        | Moderate       | Low-Moderate   |
|     |                | Low           | Low-Moderate  | Moderate        | Moderate-Hiah  | Hiah           |
|     |                |               |               | LANDSCAPE VALUE |                |                |

#### SG LCA 2 LANDSCAPE CAPACITY: NEGLIGIBLE/LOW NOT CONSIDERED IN ADUR LANDSCAPE STUDIES 2012 or 2016

#### SG LCA 2 MITIGATION ISSUES AND OPPORTUNITIES FOR ENHANCEMENT

- Appropriate landscape mitigation would be unlikely to be feasible
- The value of the wetland restricts opportunities for extensive planting.

#### SG LCA 2 CONTEXT PHOTOGRAPHS


# SG LCA 3 NW SOMPTING FRINGE

# **KEY CHARACTERISTICS**

- Medium size pastures bounded by hedgerows and flint walls, further sub- divided in parts by post and rail/post and wire fences.
- Relatively enclosed landscape due to the presence of hedgerows, trees at the boundaries.
- Malthouse public open space of semi-natural greenspace.
- Gently sloping landform, but with a backdrop of steeper ground of the downs outside the area.
- Distinct separation of open land between the eastern edge of Sompting village and the western edge of NW Sompting.
- Intensive horse grazing, field shelters, rough parking areas and other paraphernalia in the centre of the area.
- Some urban fringe influences from traffic along West Street and along the A27 (with street lamps).
- St Mary's Church, Sompting and Sompting Abbots School lie just outside the area, but are prominent, attractive historic landmarks on rising ground, seen from it.
- Flint walls are a locally distinctive feature.



LANDSCAPE CHARACTER SENSITIVITY: The area's gently sloping topography, somewhat fragmented field pattern, and landscape in a poor to fair condition, but with a relatively soft settlement edges, settlement separation provided by a fairly small pocket of farmland, and its important contribution to the distinctive rural landscape setting of Sompting Village, contrasting with extensive urban areas close by, point to an overall moderate landscape character sensitivity.

| LANDSCAPE<br>CHARACTER<br>SENSITIVITY CRITERIA                            | LOW   |  | DEGREE OF SENSITIVITY  |   | HIGH   |
|---|---|--|--|---|--|
| Topography/<br>Landform   | Simple, large scale<br>predominantly flat.  | Simple, large to<br>medium scale,<br>predominantly flat to<br>mildly undulating.                 | Occasional variety but<br>lacking strong<br>complexity.  | Complex<br>topographical<br>variation.  | Very complex with<br>strong topographical<br>variety.  |
| Landscape<br>scale/pattern  | Simple large scale<br>pattern, and/or<br>very fragmented,<br>disturbed land<br>cover. | Largely simple, with<br>some disturbance, or<br>mostly fragmented<br>land cover and land<br>use. | Some variety. Limited<br>disturbance, A degree<br>of consistency in<br>pattern of land use<br>and cover. | Varied pattern with<br>some intricacy.<br>Largely undisturbed<br>and coherent land<br>cover. Some historic<br>land use pattern. | Intricate, varied<br>pattern, undisturbed,<br>consistent patterns of<br>land cover and<br>historic layout.   |
| Landscape Condition/<br>Intactness  | Poor  | Poor to Fair   | Fair   | Good  | Very good  |
| Character contribution<br>to the landscape setting<br>of the settlements. | No contribution,<br>i.e. no identifiable<br>landscape setting                         | Partial/minor<br>contribution from<br>landscape<br>features/green<br>spaces.                     | Moderate contribution<br>from landscape<br>features/green spaces   | Important contribution<br>from landscape<br>features and green<br>spaces.   | Substantial<br>contribution to setting<br>from very distinctive<br>landscape features<br>and green spaces at<br>the edge of/on the<br>approaches to the<br>settlements |

#### TABLE 3A: LANDSCAPE CHARACTER SENSITIVITY CRITERIA

| LANDSCAPE<br>CHARACTER<br>SENSITIVITY CRITERIA              | LOW   |   | DEGREE OF SENSITIVITY   |  | HIGH   |
|---|---|---|---|--|--|
| Condition /Quality of<br>the Settlement Edge                | Harsh, abrupt and<br>unfiltered<br>settlement edge. | Occasional filtered<br>edge but<br>predominantly<br>abrupt. | Variable edge, some<br>historic but modern<br>larger scale also<br>evident. | Variable edge, some<br>modern influence but<br>predominantly well<br>filtered into<br>landscape. | Soft porous settlement<br>edge filtered into<br>historic landscape<br>pattern. |
| Contribution to<br>physical/visual<br>Settlement Separation | No separation<br>function                           | Provides a partial separation                               | Provides some of a<br>wider area of<br>separation                           | Important contribution to separation   | Provides the entire<br>extent of the<br>settlement separation                  |
| Overall Landscape<br>Character Sensitivity                  | Low   | Low-Moderate  | Moderate  | Moderate-High  | High   |

SG LCA 3 LANDSCAPE CHARACTER SENSITIVITY: MODERATE COMPARISON TO ADUR LANDSCAPE STUDIES: 2012= MEDIUM 2016= MEDIUM

VISUAL SENSITIVITY: The area is highly visible from West Street, from Church Lane, from the Malthouse open space and from a PROW crossing the north- east corner of the site, with many receptors of medium-high sensitivity. The landmarks of the church and the school are important in views. There are also a small number of high sensitivity public views of parts of the site from the Downs, but a high proportion of the area is screened from view by intervening landform and vegetation.

| VISUAL<br>SENSITIVITY<br>CRITERIA | LOW   |  | DEGREE OF SENSITIVITY HIGH  |  |  |  |
|-----------------------------------|---|--|---|--|--|--|
| General<br>Visibility             | The area is well<br>contained by existing<br>features- buildings,<br>trees, landform. Low<br>level of visibility  | Occasional views<br>of/across the area<br>where gaps in<br>existing features<br>allow. Low-moderate<br>level of visibility       | Some visibility<br>of/across the area<br>from the surrounding<br>landscape. Moderate<br>level of visibility.  | The area is a<br>component of wider,<br>longer landscape<br>views of/across the<br>area. Moderate-high<br>level of visibility  | Extensive views<br>of/across the area.<br>The area is a major<br>component of wider<br>landscape views.<br>High level of visibility  |  |
| Views and<br>Landmarks            | No views of natural<br>and built landmarks.<br>Cluttered skyline<br>character.  | Limited, partial views<br>of natural /built<br>landmarks but there<br>may also be a<br>relatively developed<br>cluttered skyline | Area from which<br>there are some wider<br>views containing<br>natural/built<br>landmarks/, but<br>there may also be<br>some intrusive<br>elements. | Some important<br>views to the wider<br>landscape and of<br>natural/built<br>landmarks are<br>available, and any<br>more intrusive<br>elements are not<br>particularly prominent | Distinctive<br>panoramic views,<br>including prominent<br>natural /built<br>landmarks, and/or<br>major gateway views<br>available from/<br>across the area.  |  |
| Visual<br>Receptors               | Public views are<br>experienced by a<br>small number of<br>public receptors or by<br>a larger of receptors<br>with a passing interest<br>in their visual<br>environment Eg.<br>motorists on local<br>transport routes | Occasional public<br>views from PROW<br>routes and local<br>transport routes.  | Some public views for<br>visitors and from<br>PROWs. Some<br>visibility from<br>transport routes.   | Frequent public views<br>for visitors enjoying<br>the landscape and<br>from PRoWs.   | Public views are<br>experienced by a<br>high number of<br>visitors to the<br>landscape and/or<br>from long distance<br>or locally important<br>PRoW. Visibility from<br>major transport<br>routes. |  |
| Overall Visual<br>Sensitivity     | Low   | Low-Moderate   | Moderate  | Moderate-High  | High   |  |

#### TABLE 3B: VISUAL SENSITIVITY

#### SG LCA 3 VISUAL SENSITIVITY: MODERATE COMPARISON TO ADUR LANDSCAPE STUDIES: 2012: MEDIUM-LOW 2016: MEDIUM

| IER    | High               | High              | High            | High          | High            | High |
|--------|--------------------|-------------------|-----------------|---------------|-----------------|------|
| HARAC' | Moderate-High      | Moderate-<br>High | Moderate - High | Moderate-High | Moderate - High | High |
|        | Moderate           | Moderate          | Moderate        | Moderate      | Moderate - High | High |
|        | Low-Moderate       | Low-<br>Moderate  | Low-Moderate    | Moderate      | Moderate-High   | High |
| A      | Low                | Low               | Low -Moderate   | Moderate      | Moderate- High  | High |
|        |                    | Low               | Low-Moderate    | Moderate      | Moderate-High   | High |
|        | VISUAL SENSITIVITY |                   |                 |               |                 |      |

### TABLE 3C: LANDSCAPE SENSITIVITY

#### SG LCA 3 LANDSCAPE SENSITIVITY: MODERATE COMPARISON TO ADUR LANDSCAPE STUDIES: 2012: MEDIUM

2016: MEDIUM

LANDSCAPE VALUE: There are no landscape, ecological or historic designations within the area, but the listed buildings of the church and the school are close. Tranquillity is compromised by the A27, but the area is also very close to the National Park, and some sense of place can be appreciated.

|  |  | הנכנ  |   |   |   |  |
|--|--|---|---|---|---|--|
| CRITERIA   |  |   |   |   |   |  |
| Perceptual<br>aspects/qualities<br>(e.g. scenic beauty, sense<br>of place, tranquillity,<br>wildness, rurality)  | Not tranquil, much<br>human activity. Lack<br>of a distinctive sense<br>of place or scenic<br>beauty | Limited tranquillity,<br>with significant<br>human detractors<br>from rural/natural<br>qualities. Limited<br>perception of a sense<br>of place.     | Some human activity,<br>affecting tranquillity<br>and/or some<br>features that<br>contribute to a sense<br>of place                                       | Relatively tranquil<br>and/or<br>a strong sense of<br>place with some<br>scenic features                          | Tranquil and remote<br>in character, natural<br>beauty with few<br>human influences.<br>Very distinctive sense<br>of place. |  |
| Contribution to the<br>setting of the South<br>Downs National Park   | No contribution. No<br>relationship with the<br>Downs.   | Slight contribution.<br>Limited, distant<br>setting to the South<br>Downs   | Moderate<br>contribution. Middle<br>distance setting to the<br>South Downs  | Moderate-Major<br>contribution. Close<br>distance setting to the<br>South Downs.                                  | Substantial<br>contribution. Close<br>distance setting to the<br>Downs,with<br>boundaries<br>adjoining.                     |  |
| Conservation interests –<br>presence of features of<br>wildlife, archaeological,<br>historic and cultural<br>interest that can add<br>value to the landscape,<br>as well as having value in<br>their own right | Not present. Lack of<br>local or statutory<br>designations within<br>the area or<br>adjacent.        | Slight contribution<br>from a few<br>undesignated<br>features of interest.<br>Lack of statutory<br>designations within<br>the area or<br>adjoining. | Some features of<br>interest. Some local<br>designations cover<br>the area or are<br>immediately<br>adjacent. Statutory<br>designation in the<br>vicinity | A number of features<br>of interest. Statutory<br>designations and<br>their settings affect<br>parts of the area. | Statutory/Local<br>designations and<br>their settings affect a<br>high proportion of<br>the area.                           |  |
| Overall Relative<br>Landscape Value  | Low  | Low-Moderate  | Moderate  | Moderate-High   | High  |  |

# TABLE 3D: LANDSCAPE VALUE

SG LCA 3 LANDSCAPE VALUE: MODERATE NOT CONSIDERED IN ADUR LANDSCAPE STUDIES 2012 AND 2016 LANDSCAPE CAPACITY: Taking into account the area's moderate landscape sensitivity, moderate visibility and moderate landscape value it is considered this character area has a moderate landscape capacity to absorb housing development, possibly in the form of a minor extension to the existing larger scale development of NW Sompting adjoining. However, the landscape separation of the settlements, the landscape setting of Sompting Village, and the views to the listed buildings are characteristics that are very vulnerable to development, so great care is needed in its precise location and design

|         |                                |               |               | LANDSCAPE VALUE |                |                |
|---------|--------------------------------|---------------|---------------|-----------------|----------------|----------------|
|         |                                | Low           | Low-Moderate  | Moderate        | Moderate- High | High           |
| -       | Low                            | High          | Moderate-High | Moderate        | Moderate       | Low-Moderate   |
| ANDS    | Low-Moderate                   | Moderate-High | Moderate-High | Moderate        | Low-Moderate   | Low-Moderate   |
| CAPE S  | Moderate                       | Moderate-High | Moderate      | Moderate        | Low-Moderate   | Negligible/Low |
| ENSITIV | Modera <del>t</del> e-<br>High | Moderate      | Low-Moderate  | Low-Moderate    | Negligible/Low | Negligible/low |
| ΥT      | High                           | Moderate      | Low-Moderate  | Negligible/Low  | Negligible/Low | Negligible/Low |

#### TABLE 3E: LANDSCAPE CAPACITY MATRIX

# SG LCA 3 LANDSCAPE CAPACITY: MODERATE NOT CONSIDERED IN ADUR LANDSCAPE STUDIES 2012 or 2016

#### SG LCA 3 MITIGATION ISSUES AND OPPORTUNITIES FOR ENHANCEMENT

- Essential to provide a robust strategic planting buffer, outside of private curtilages, associated with any new development.
- Provide relatively low density, small scale development at the extended settlement edge, giving careful consideration to building heights.
- Conserve and manage existing hedgerows and add small copses
- Maintain key views to the listed buildings and the Downs from West Street, from the Malthouse open space and from the public footpath.
- Consider the opportunity for improved land management of the horse grazed areas if land ownership allows.
- Retain the historic character of West Street

# SG LCA 3 CONTEXT PHOTOGRAPHS





Comparative Landscape Sensitivity and Capacity Assessment of the Proposed Local Green Gap on behalf of Hyde New Homes David Huskisson Associates – April 2016

# SG LCA 4 SOMPTING VILLAGE PASTURES

# **KEY CHARACTERISTICS**

- Patchwork of small pastures, orchards and paddocks, which retains an historic, small scale field pattern, on south fringes of Sompting Village.
- Contrasts with the open character of arable land to the east and south east.
- Enclosed character, with dense scrubby hedgerows, hedgerow and orchard trees, copses and belts of woodland.
- Flat landform-some areas are poorly drained with ditches and textured, tussocky grassland.
- Views are constrained by the layering effect of vegetation, which also limits intervisibility between the edge of Sompting Village and edge of Worthing.
- Groups of farm buildings, cottages, outbuildings, tracks and access lanes are interspersed with pastures and orchards, creating an eclectic mix of uses on the edge of Sompting Village and edge of Worthing.
- Landscape has a domestic, rural quality. There is no public access and the area feels private and connected to the village.



LANDSCAPE CHARACTER SENSITIVITY: The area's flat to gently undulating topography and poor to fair condition but small scale pattern, relatively soft settlement edges and its contribution to the landscape setting of the village, together with its contribution to settlement separation points to an overall moderate landscape character sensitivity

| LANDSCAPE<br>CHARACTER<br>SENSITIVITY CRITERIA                            | LOW   |  | DEGREE OF SENSITIVITY  |   | HIGH   |
|---|---|--|--|---|--|
| Topography/<br>Landform   | Simple, large scale predominantly flat.   | Simple, large to<br>medium scale,<br>predominantly flat to<br>mildly undulating.                 | Occasional variety<br>but lacking strong<br>complexity.  | Complex<br>topographical<br>variation.  | Very complex with<br>strong topographical<br>variety.  |
| Landscape<br>scale/pattern  | Simple large scale<br>pattern, and/or<br>very fragmented,<br>disturbed land<br>cover. | Largely simple, with<br>some disturbance, or<br>mostly fragmented<br>land cover and land<br>use. | Some variety. Limited<br>disturbance, A degree<br>of consistency in<br>pattern of land use<br>and cover. | Varied pattern with<br>some intricacy.<br>Largely undisturbed<br>and coherent land<br>cover. Some historic<br>land use pattern. | Intricate, varied<br>pattern, undisturbed,<br>consistent patterns of<br>land cover and<br>historic layout.   |
| Landscape Condition/<br>Intactness  | Poor  | Poor to Fair   | Fair   | Good  | Very good  |
| Character contribution<br>to the landscape setting<br>of the settlements. | No contribution,<br>i.e. no identifiable<br>landscape setting                         | Partial/minor<br>contribution from<br>landscape<br>features/green<br>spaces.                     | Moderate<br>contribution from<br>landscape<br>features/green spaces                                      | Important<br>contribution from<br>landscape features<br>and green spaces.   | Substantial<br>contribution to setting<br>from very distinctive<br>landscape features<br>and green spaces at<br>the edge of/on the<br>approaches to the<br>settlements |
| Condition /Quality of<br>the Settlement Edge                              | Harsh, abrupt and<br>unfiltered<br>settlement edge.                                   | Occasional filtered<br>edge but<br>predominantly<br>abrupt.                                      | Variable edge, some<br>historic but modern<br>larger scale also<br>evident.                              | Variable edge, some<br>modern influence but<br>predominantly well<br>filtered into<br>landscape.                                | Soft porous settlement<br>edge filtered into<br>historic landscape<br>pattern.   |

# TABLE 4A: LANDSCAPE CHARACTER SENSITIVITY

| LANDSCAPE<br>CHARACTER<br>SENSITIVITY CRITERIA              | LOW  | C                             | DEGREE OF SENSITIVITY                             |  | HIGH  |  |  |
|---|--|-------------------------------|---|--|---|--|--|
| Contribution to<br>physical/visual<br>Settlement Separation | No separation<br>function                          | Provides a partial separation | Provides some of a<br>wider area of<br>separation | Important<br>contribution to<br>separation | Provides the entire<br>extent of the<br>settlement separation |  |  |
| Overall Landscape<br>Character Sensitivity                  | Low  | Low-Moderate                  | Moderate  | Moderate-High                              | High  |  |  |
| SG LCA 4 LANDS  | SG LCA 4 LANDSCAPE CHARACTER SENSITIVITY: MODERATE |                               |   |  |   |  |  |

COMPARISON TO ADUR LANDSCAPE STUDIES 2012: MEDIUM

2016: MEDIUM

VISUAL SENSITIVITY: There are no public views within the area but there are partial views of a few parts of the area from West Street and a PROW to the west. In terms of overlooking views from PROWs and open access land on the Downs only the southern part of the area is visible in medium to long distance views from e.g. the Nore and Cissbury Ring.

# TABLE 4B: VISUAL SENSITIVITY CRITERIA

| VISUAL SENSITIVITY<br>CRITERIA | LOW   | DEG  | REE OF SENSITIVITY  |  | HIGH   |
|--------------------------------|---|--|---|--|--|
| General Visibility             | The area is well<br>contained by existing<br>features- buildings,<br>trees, landform. Low<br>level of visibility  | Occasional views<br>of/across the area<br>where gaps in<br>existing features<br>allow. Low-moderate<br>level of visibility       | Some visibility<br>of/across the area<br>from the surrounding<br>landscape. Moderate<br>level of visibility.                                      | The area is a<br>component of wider,<br>longer landscape<br>views of/across the<br>area. Moderate-high<br>level of visibility  | Extensive views<br>of/across the area.<br>The area is a major<br>component of wider<br>landscape views.<br>High level of visibility  |
| Views and<br>Landmarks         | No views of natural and<br>built landmarks,<br>Cluttered skyline<br>character.  | Limited, partial views<br>of natural /built<br>landmarks but there<br>may also be a<br>relatively developed<br>cluttered skyline | Area from which<br>there are some wider<br>views containing<br>natural /built<br>landmarks/, but there<br>may also be some<br>intrusive elements. | Some important<br>views to the wider<br>landscape and of<br>natural/built<br>landmarks are<br>available, and any<br>more intrusive<br>elements are not<br>particularly prominent | Distinctive panoramic<br>views, including<br>prominent natural<br>/built landmarks,<br>and/or major<br>gateway views<br>available from/<br>across the area.  |
| Visual Receptors               | Public views are<br>experienced by a small<br>number of public<br>receptors or by a larger<br>of receptors with a<br>passing interest in their<br>visual environment (e.g.<br>motorists on local<br>transport routes) | Occasional public<br>views from PROW<br>routes and local<br>transport routes.  | Some public views for<br>visitors and from<br>PROWs. Some<br>visibility from<br>transport routes.   | Frequent public views<br>for visitors enjoying<br>the landscape and<br>from PRoWs.   | Public views are<br>experienced by a<br>high number of<br>visitors to the<br>landscape and/or<br>from long distance or<br>locally important<br>PRoW. Visibility from<br>major transport<br>routes. |
| Overall Visual<br>Sensitivity  | Low   | Low-Moderate   | Moderate  | Moderate-High  | High   |

SG LCA 4 VISUAL SENSITIVITY: LOW-MODERATE COMPARISON TO ADUR LANDSCAPE STUDIES 2012: MEDIUM-LOW 2016: MEDIUM

### TABLE 4C: LANDSCAPE SENSITIVITY

|               | High           | High           | High            | High          | High            | High |
|---------------|----------------|----------------|-----------------|---------------|-----------------|------|
| 동<br>문<br>도   | Moderate- High | Moderate- High | Moderate - High | Moderate-High | Moderate - High | High |
| ARAC<br>ASTIV | Moderate       | Moderate       | Moderate        | Moderate      | Moderate - High | High |
| ₹9ë           | Low-Moderate   | Low-Moderate   | Low-Moderate    | Moderate      | Moderate- High  | High |
|               | Low            | Low            | Low - Moderate  | Moderate      | Moderate- High  | High |
|               |                | Low            | Low-Moderate    | Moderate      | Moderate-High   | High |
|               |                |                | V               |               |                 |      |

SG LCA 4 LANDSCAPE SENSITIVITY: MODERATE COMPARISON TO ADUR LANDSCAPE STUDIES: 2012: MEDIUM

2016: MEDIUM

LANDSCAPE VALUE: There are no designations within the area that contribute to landscape value but the network of hedgerows is likely to encourage wildlife and there is some distinctive sense of place provided its well treed, rural character and orchards. It forms a middle distance setting to the Downs.

| LANDSCAPE VALUE<br>CRITERIA  | LOW  | DE  | GREE OF SENSITIVITY   |   | HIGH  |
|--|--|---|---|---|---|
| Perceptual<br>aspects/qualities<br>(e.g. scenic beauty,<br>sense of place,<br>tranquillity, wildness,<br>rurality)   | Not tranquil, much<br>human activity. Lack<br>of a distinctive sense<br>of place or scenic<br>beauty | Limited tranquillity,<br>with significant<br>human detractors<br>from rural/natural<br>qualities. Limited<br>perception of a sense<br>of place.     | Some human activity,<br>affecting tranquillity<br>and/or some<br>features that<br>contribute to a sense<br>of place                                       | Relatively tranquil<br>and/or<br>a strong sense of<br>place with some<br>scenic features                          | Tranquil and remote<br>in character, natural<br>beauty with few<br>human influences.<br>Very distinctive sense<br>of place. |
| Contribution to the<br>setting of the South<br>Downs National Park   | No contribution. No<br>relationship with the<br>Downs.   | Slight contribution.<br>Limited, distant<br>setting to the South<br>Downs   | Moderate<br>contribution. Middle<br>distance setting to the<br>South Downs  | Moderate-Major<br>contribution. Close<br>distance setting to the<br>South Downs.                                  | Substantial<br>contribution. Close<br>distance setting to the<br>Downs, with<br>boundaries adjoining                        |
| Conservation interests –<br>presence of features of<br>wildlife, archaeological,<br>historic and cultural<br>interest that can add<br>value to the landscape,<br>as well as having value<br>in their own right | Not present. Lack of<br>local or statutory<br>designations within<br>the area or adjacent.           | Slight contribution<br>from a few<br>undesignated<br>features of interest.<br>Lack of statutory<br>designations within<br>the area or<br>adjoining. | Some features of<br>interest. Some local<br>designations cover<br>the area or are<br>immediately<br>adjacent. Statutory<br>designation in the<br>vicinity | A number of features<br>of interest. Statutory<br>designations and<br>their settings affect<br>parts of the area. | Statutory/Local<br>designations and<br>their settings affect a<br>high proportion of<br>the area.                           |
| Overall Relative<br>Landscape Value  | Low  | Low-Moderate  | Moderate  | Moderate-High   | High  |

#### TABLE 4D: LANDSCAPE VALUE CRITERIA

SG LCA 4 LANDSCAPE VALUE: MODERATE NOT CONSIDERED IN ADUR LANDSCAPE STUDIES 2012 or 2016

LANDSCAPE CAPACITY: Taking into account the area's moderate landscape character sensitivity, low-moderate visibility and moderate landscape value it is considered this character area has a low-moderate landscape capacity to absorb housing development. A small southern extension to the village might be possible. However, the landscape setting of the village and the separation of the settlements are vulnerable to development, so great care would be needed in its precise location and design.

#### TABLE 4E: LANDSCAPE CAPACITY MATRIX

|      | High          | Moderate      | Low-Moderate  | Negligible/Low  | Negligible/Low | Negligible/Low |
|------|---------------|---------------|---------------|-----------------|----------------|----------------|
| APE  | Moderate-High | Moderate      | Low-Moderate  | Low-Moderate    | Negligible/Low | Negligible/low |
| NDSC | Moderate      | Moderate-High | Moderate      | Moderate        | Low-Moderate   | Negligible/Low |
| ₹ B  | Low-Moderate  | Moderate-High | Moderate-High | Moderate        | Low-Moderate   | Low-Moderate   |
|      | Low           | High          | Moderate-High | Moderate        | Moderate       | Low-Moderate   |
|      |               | Low           | Low-Moderate  | Moderate        | Moderate-High  | High           |
|      |               |               |               | LANDSCAPE VALUE |                |                |

#### SG LCA 4 LANDSCAPE CAPACITY: MODERATE NOT CONSIDERED IN ADUR LANDSCAPE STUDIES 2012 or 2016

# SG LCA 4 MITIGATION ISSUES AND OPPORTUNITIES FOR ENHANCEMENT

- Good potential for mitigation within a relatively well enclosed and small –scale landscape pattern with high levels of tree cover and a mixture of scrub and orchards. Additional planting could improve the structure of the landscape
- Provide relatively low density, small scale development at the extended settlement edge, giving careful consideration to building heights.
- Scale of development needs to be such that any wider adverse landscape/townscape impacts of associated traffic generation/necessary highway improvements on Sompting village are minimised.

# SG LCA 4 CONTEXT PHOTOGRAPH





# SG LCA 5 BROADWATER FRINGE

# **KEY CHARACTERISTICS**

- Two arable fields bordering built development, separating the urban area of Broadwater from the village of Sompting.
- Bounded by tall hedgerows and groups of hedgerow tees, but inter-visibility between Broadwater aand Sompting Village to the east.
- Busy urban fringe character, with West Street and A27 to the north and surrounding residential development. Large buildings of Broadwater Retail Park are visible to the east.
- Crossed by a fenced footpath.
- View to the Downs to the north.



LANDSCAPE CHARACTER SENSITIVITY: The area's simple landform and field pattern, and urban fringe character would suggest a lower landscape character sensitivity. However, it is considered in this case the critical contribution made by the two fields to settlement separation is an overriding factor, giving an overall high landscape character sensitivity for this area.

| LANDSCAPE<br>CHARACTER<br>SENSITIVITY CRITERIA                            | LOW   | LOW DEGREE OF SENSITIVITY HIGH   |  |   |  |
|---|---|--|--|---|--|
| Topography/<br>Landform   | Simple, large scale<br>predominantly flat.  | Simple, large to<br>medium scale,<br>predominantly flat to<br>mildly undulating.                 | Occasional variety but<br>lacking strong<br>complexity.  | Complex<br>topographical<br>variation.  | Very complex with<br>strong topographical<br>variety.  |
| Landscape<br>scale/pattern  | Simple large scale<br>pattern, and/or<br>very fragmented,<br>disturbed land<br>cover. | Largely simple, with<br>some disturbance, or<br>mostly fragmented<br>land cover and land<br>use. | Some variety. Limited<br>disturbance, A degree<br>of consistency in<br>pattern of land use<br>and cover. | Varied pattern with<br>some intricacy.<br>Largely undisturbed<br>and coherent land<br>cover. Some historic<br>land use pattern. | Intricate, varied<br>pattern, undisturbed,<br>consistent patterns of<br>land cover and<br>historic layout.   |
| Landscape Condition/<br>Intactness  | Poor  | Poor to Fair   | Fair   | Good  | Very good  |
| Character contribution<br>to the landscape setting<br>of the settlements. | No contribution,<br>i.e. no identifiable<br>landscape setting                         | Partial/minor<br>contribution from<br>landscape<br>features/green<br>spaces.                     | Moderate contribution<br>from landscape<br>features/green spaces   | Important contribution<br>from landscape<br>features and green<br>spaces.   | Substantial<br>contribution to setting<br>from very distinctive<br>landscape features<br>and green spaces at<br>the edge of/on the<br>approaches to the<br>settlements |
| Condition /Quality of<br>the Settlement Edge                              | Harsh, abrupt and<br>unfiltered<br>settlement edge.                                   | Occasional filtered<br>edge but<br>predominantly<br>abrupt.                                      | Variable edge, some<br>historic but modern<br>larger scale also<br>evident.                              | Variable edge, some<br>modern influence but<br>predominantly well<br>filtered into<br>landscape.                                | Soft porous settlement<br>edge filtered into<br>historic landscape<br>pattern.   |
| Contribution to<br>physical/ visual<br>Settlement Separation              | No separation<br>function   | Provides a partial separation  | Provides some of a<br>wider area of<br>separation  | Important contribution<br>to separation   | Provides the entire<br>extent of the<br>settlement separation  |
| Overall Landscape<br>Character Sensitivity                                | Low   | Low-Moderate   | Moderate   | Moderate-High   | High   |

# TABLE 5A: LANDSCAPE CHARACTER SENSITIVITY

#### SG LCA 5 LANDSCAPE CHARACTER SENSITIVITY: HIGH COMPARISON TO ADUR LANDSCAPE STUDIES: 2012=MEDIUM

2016= MEDIUM

VISUAL SENSITIVITY: The area is highly visible from West Street, from the A27, Clarendon Road and from a PROW crossing the north- east corner of the site, with many receptors of medium-high sensitivity. The South Downs are also a landmark feature, important in views looking outwards from the area. There are also a small number of high sensitivity public views of parts of the site from the Downs e.g. Cissbury Ring.

| VISUAL<br>SENSITIVITY<br>CRITERIA | LOW  |   | EGREE OF SENSITIVIT  | Y   | HIGH   |
|-----------------------------------|--|---|--|---|--|
| General Visibility                | The area is well<br>contained by existing<br>features- buildings,<br>trees, landform. Low<br>level of visibility   | Occasional views<br>of/across the area<br>where gaps in<br>existing features<br>allow. Low-<br>moderate level of<br>visibility      | Some visibility<br>of/across the area<br>from the<br>surrounding<br>landscape.<br>Moderate level of<br>visibility.                                     | The area is a<br>component of<br>wider, longer<br>landscape views<br>of/across the area.<br>Moderate-high<br>level of visibility  | Extensive views<br>of/across the area.<br>The area is a major<br>component of wider<br>landscape views.<br>High level of<br>visibility   |
| Views and<br>Landmarks            | No views of natural<br>and built landmarks,<br>Cluttered skyline<br>character.   | Limited, partial<br>views of natural<br>/built landmarks<br>but there may also<br>be a relatively<br>developed cluttered<br>skyline | Area from which<br>there are some<br>wider views<br>containing<br>natural/built<br>landmarks/, but<br>there may also be<br>some intrusive<br>elements. | Some important<br>views to the wider<br>landscape and of<br>natural/built<br>landmarks are<br>available, and any<br>more intrusive<br>elements are not<br>particularly<br>prominent | Distinctive<br>panoramic views,<br>including prominent<br>natural /built<br>landmarks, and/or<br>major gateway<br>views available<br>from/ across the<br>area.                                     |
| Visual Receptors                  | Public views are<br>experienced by a<br>small number of<br>public receptors or by<br>a larger of receptors<br>with a passing interest<br>in their visual<br>environment (e.g.<br>motorists on local<br>transport routes) | Occasional public<br>views from PROW<br>routes and local<br>transport routes.   | Some public views<br>for visitors and<br>from PROWs.<br>Some visibility from<br>transport routes.  | Frequent public<br>views for visitors<br>enjoying the<br>landscape and<br>from PRoWs.   | Public views are<br>experienced by a<br>high number of<br>visitors to the<br>landscape and/or<br>from long distance<br>or locally important<br>PRoW. Visibility from<br>major transport<br>routes. |
| Overall Visual<br>Sensitivity     | Low  | Low-Moderate  | Moderate   | Moderate-High   | High   |

#### TABLE 5B. VISUAL SENSITIVITY CRITERIA

SG LCA 5 VISUAL SENSITIVITY: MODERATE-HIGH COMPARISON TO ADUR LANDSCAPE STUDIES 2012: MEDIUM

2016: MEDIUM

#### TABLE 5C: LANDSCAPE SENSITIVITY

| LANDSCAPE<br>CHARACTER<br>SENSITIVITY | High          | High               | High           | High          | High           | High |  |  |
|---------------------------------------|---------------|--------------------|----------------|---------------|----------------|------|--|--|
|                                       | Moderate-High | Moderate-High      | Moderate -High | Moderate-High | Moderate -High | High |  |  |
|                                       | Moderate      | Moderate           | Moderate       | Moderate      | Moderate -High | High |  |  |
|                                       | Low-Moderate  | Low-Moderate       | Low-Moderate   | Moderate      | Moderate-High  | High |  |  |
|                                       | Low           | Low                | Low -Moderate  | Moderate      | Moderate-High  | High |  |  |
|                                       |               | Low                | Low-Moderate   | Moderate      | Moderate-High  | High |  |  |
|                                       |               | VISUAL SENSITIVITY |                |               |                |      |  |  |

#### SG LCA 5 LANDSCAPE SENSITIVITY: HIGH COMPARISON TO ADUR LANDSCAPE STUDIES: 2012: MEDIUM-HIGH

LANDSCAPE VALUE: The area lies very close to the South Downs National Park so is clearly part of its setting, but there are no conservation interests present that contribute to landscape value. Combined with the lack of tranquillity or any strong sense of place, the area is assessed overall as having no greater than moderate landscape value.

| LANDSCAPE VALUE<br>CRITERIA   |   | DE   | GREE OF SENSITIVITY   |  | HIGH  |
|---|---|--|---|--|---|
| Perceptual<br>aspects/qualities<br>(e.g. scenic beauty,<br>sense of place,<br>tranquillity, wildness,<br>rurality)  | Not tranquil, much<br>human activity.<br>Lack of a<br>distinctive sense of<br>place or scenic<br>beauty | Limited tranquillity, with<br>significant human<br>detractors from<br>rural/natural qualities.<br>Limited perception of a<br>sense of place.     | Some human<br>activity, affecting<br>tranquillity and/or<br>some features that<br>contribute to a sense<br>of place.                                      | Relatively tranquil<br>and/or<br>a strong sense of<br>place with some<br>scenic features                             | Tranquil and remote<br>in character, natural<br>beauty with few<br>human influences.<br>Very distinctive sense<br>of place. |
| Contribution to the<br>setting of the South<br>Downs National Park  | No contribution.<br>No relationship<br>with the Downs.  | Slight contribution.<br>Limited, distant setting<br>to the South Downs   | Moderate<br>contribution. Middle<br>distance setting to<br>the South Downs  | Moderate-Major<br>contribution. Close<br>distance setting to<br>the South Downs.                                     | Substantial<br>contribution. Close<br>distance setting to<br>the Downs,with<br>boundaries<br>adjoining.                     |
| Conservation interests<br>– presence of features<br>of wildlife,<br>archaeological, historic<br>and cultural interest<br>that can add value to<br>the landscape, as well<br>as having value in their<br>own right | Not present. Lack<br>of local or statutory<br>designations within<br>the area or<br>adjacent.           | Slight contribution from<br>a few undesignated<br>features of interest.<br>Lack of statutory<br>designations within the<br>area or<br>adjoining. | Some features of<br>interest. Some local<br>designations cover<br>the area or are<br>immediately<br>adjacent. Statutory<br>designation in the<br>vicinity | A number of<br>features of interest.<br>Statutory<br>designations and<br>their settings affect<br>parts of the area. | Statutory/Local<br>designations and<br>their settings affect a<br>high proportion of<br>the area.                           |
| Overall Relative<br>Landscape Value   | Low   | Low-Moderate   | Moderate  | Moderate-High  | High  |

#### TABLE 5D: LANDSCAPE VALUE CRITERIA

#### SG LCA 5 LANDSCAPE VALUE: MODERATE NOT CONSIDERED IN ADUR LANDSCAPE STUDIES 2012 or 2016

LANDSCAPE CAPACITY: Taking into account the high landscape character sensitivity, moderate – high visual sensitivity and moderate landscape value, it is considered that this character area has a negligible/low landscape capacity to absorb housing development. Any development, except on a very small scale, would be likely to have a detrimental effect on/erode the settlement separation provided by the open land in this location.

|    |               |               |               | LANDSCAPE VALUE |                |                |  |
|----|---------------|---------------|---------------|-----------------|----------------|----------------|--|
|    |               | Low           | Low-Moderate  | Moderate        | Moderate-High  | High           |  |
|    | Low           | High          | Moderate-High | Moderate        | Moderate       | Low-Moderate   |  |
| ₹₩ | Low-Moderate  | Moderate-High | Moderate-High | Moderate        | Low-Moderate   | Low-Moderate   |  |
|    | Moderate      | Moderate-High | Moderate      | Moderate        | Low-Moderate   | Negligible/Low |  |
| ₩Ę | Moderate-High | Moderate      | Low-Moderate  | Low-Moderate    | Negligible/Low | Negligible/low |  |
|    | High          | Moderate      | Low-Moderate  | Negligible/Low  | Negligible/Low | Negligible/Low |  |
|    |               |               |               |                 |                |                |  |

#### TABLE 5E: LANDSCAPE CAPACITY MATRIX

#### SG LCA 5 LANDSCAPE CAPACITY: NEGLIGIBLE/LOW NOT CONSIDERED IN ADUR LANDSCAPE STUDIES 2012 or 2016

### MITIGATION ISSUES AND OPPORTUNITIES FOR ENHANCEMENT

- Essential to retain and manage existing hedgerows and tree groups.
- Consider woodland planting to integrate the large scale buildings of the Broadwater retail/employment areas any better.
- Maintain some views to the Downs from the public footpath.

#### SG LCA 5 CONTEXT PHOTOGRAPH



# SG LCA 6 SOMPTING VILLAGE

#### **KEY CHARACTERISTICS**

- Diverse mix of pastures, horse paddocks and remnant orchards, with a domestic small scale
- Historic village, of linear form, with a mix of detached farm houses, cottages and some modern properties set in varied size plots, mostly facing the narrow lanes of West Street and Church Lane
- Small scale, relatively enclosed character, with tall hedgerow trees and some distinctive flint stone walls.
- St Mary's Church, Sompting (Grade I listed) and the buildings of Sompting Abbotts School (Grade II listed) are local landmarks, visible above the surrounding trees (although outside the area)
- Sompting Village is severed by the A27, which forms the northern edge of the character area. This major through route is s significant influence, although dense tree cover screens views to the road. (The A27 bisects the historic village – this LCA only covers the area to the south of the A27).



LANDSCAPE CHARACTER SENSITIVITY: The area's small scale field pattern, flat to gently sloping topography, and landscape in a poor condition, but with a relatively soft settlement edges, and the contribution made to the distinctive rural landscape setting of Sompting Village, contrasting with extensive urban areas close by, points to an overall moderate – high landscape character sensitivity.

| LANDSCAPE<br>CHARACTER<br>SENSITIVITY CRITERIA                               | LOW   |  | DEGREE OF SENSITIVT  |   | HIGH   |
|--|---|--|--|---|--|
| Topography/<br>Landform  | Simple, large<br>scale<br>predominantly<br>flat.                                      | Simple, large to<br>medium scale,<br>predominantly flat to<br>mildly undulating.                 | Occasional variety<br>but lacking strong<br>complexity.  | Complex<br>topographical<br>variation.  | Very complex with<br>strong topographical<br>variety.  |
| Landscape<br>scale/pattern   | Simple large scale<br>pattern, and/or<br>very fragmented,<br>disturbed land<br>cover. | Largely simple, with<br>some disturbance,<br>or mostly<br>fragmented land<br>cover and land use. | Some variety.<br>Limited<br>disturbance. A<br>degree of<br>consistency in<br>pattern of land use<br>and cover. | Varied pattern with<br>some intricacy.<br>Largely undisturbed<br>and coherent land<br>cover. Some historic<br>land use pattern. | Intricate, varied<br>pattern, undisturbed,<br>consistent patterns of<br>land cover and historic<br>layout.   |
| Landscape<br>Condition/<br>Intactness  | Poor  | Poor to Fair   | Fair   | Good  | Very good  |
| Character<br>contribution to the<br>landscape setting of<br>the settlements. | No contribution,<br>ie. no identifiable<br>landscape setting                          | Partial/minor<br>contribution from<br>landscape features/<br>green spaces.                       | Moderate<br>contribution from<br>landscape<br>features/ green<br>spaces  | Important<br>contribution from<br>landscape features<br>and green spaces.   | Substantial<br>contribution to setting<br>from very distinctive<br>landscape features<br>and green spaces at<br>the edge of/on the<br>approaches to the<br>settlements |

# TABLE 6A: LANDSCAPE CHARACTER SENSITIVITY CRITERIA

| Condition /Quality of<br>the Settlement Edge                | Harsh, abrupt<br>and unfiltered<br>settlement edge. | Occasional filtered<br>edge but<br>predominantly<br>abrupt. | Variable edge,<br>some historic but<br>modern larger<br>scale also evident. | Variable edge,<br>some modern<br>influence but<br>predominantly well<br>filtered into<br>landscape. | Soft porous settlement<br>edge filtered into<br>historic landscape<br>pattern. |
|---|---|---|---|---|--|
| Contribution to<br>physical/visual<br>Settlement Separation | No separation<br>function                           | Provides a partial separation                               | Provides some of a<br>wider area of<br>separation                           | Important<br>contribution to<br>separation  | Provides the entire<br>extent of the settlement<br>separation                  |
| Overall Landscape<br>Character Sensitivity                  | Low   | Low-Moderate  | Moderate  | Moderate-High   | High   |

#### SG LCA 6 LANDSCAPE CHARACTER SENSITIVITY: MODERATE-HIGH COMPARISON TO AUDUR LANDSCAPE STUDIES: 2012: MEDIUM-HIGH 2016: MEDIUM-HIGH

VISUAL SENSITIVITY: The area is partially visible from West Street and from Church Lane, and there is one public footpath adjoining the western boundary. However generally the area is relatively enclosed and the views from the nearest parts of the Downs are mostly screened by intervening landform and vegetation.

| VISUAL<br>SENSITIVITY<br>CRITERIA |   |  | DEGREE OF SENSITIVITY   |  | HIGH   |
|-----------------------------------|---|--|---|--|--|
| General Visibility                | The area is well<br>contained by existing<br>features- buildings,<br>trees, landform. Low<br>level of visibility  | Occasional views<br>of/across the area<br>where gaps in existing<br>features allow. Low-<br>moderate level of<br>visibility      | Some visibility<br>of/across the area<br>from the surrounding<br>landscape. Moderate<br>level of visibility.  | The area is a<br>component of wider,<br>longer landscape<br>views of/across the<br>area. Moderate-high<br>level of visibility  | Extensive views<br>of/across the area.<br>The area is a major<br>component of wider<br>landscape views.<br>High level of visibility  |
| Views and<br>Landmarks            | No views of natural<br>and built landmarks,<br>Cluttered skyline<br>character.  | Limited, partial views<br>of natural /built<br>landmarks but there<br>may also be a<br>relatively developed<br>cluttered skyline | Area from which there<br>are some wider views<br>containing<br>natural/built<br>landmarks/, but<br>there may also be<br>some intrusive<br>elements. | Some important views<br>to the wider<br>landscape and of<br>natural/built<br>landmarks are<br>available, and any<br>more intrusive<br>elements are not<br>particularly prominent | Distinctive<br>panoramic views,<br>including prominent<br>natural /built<br>landmarks, and/or<br>major gateway views<br>available from/<br>across the area.  |
| Visual Receptors                  | Public views are<br>experienced by a<br>small number of<br>public receptors or<br>by a larger of<br>receptors with a<br>passing interest in<br>their visual<br>environment (e.g.<br>motorists on local<br>transport routes) | Occasional public<br>views from PROW<br>routes and local<br>transport routes.  | Some public views for<br>visitors and from<br>PROWs. Some<br>visibility from<br>transport routes.   | Frequent public views<br>for visitors enjoying<br>the landscape and<br>from PRoWs.   | Public views are<br>experienced by a<br>high number of<br>visitors to the<br>landscape and/or<br>from long distance<br>or locally important<br>PRoW. Visibility from<br>major transport<br>routes. |
| Overall Visual<br>Sensitivity     | Low   | Low-Moderate   | Moderate  | Moderate-High  | High   |

# TABLE 6B: VISUAL SENSITIVITY CRITERIA

SG LCA 6 VISUAL SENSITIVITY: LOW-MODERATE COMPARISON TO ADUR LANDSCAPE STUDIES: 2012: MEDIUM

2016: MEDIUM

#### TABLE 6C: LANDSCAPE SENSITIVITY

| LPE<br>TER<br>TT | High          | High               | High           | High          | High           | High |  |  |
|------------------|---------------|--------------------|----------------|---------------|----------------|------|--|--|
|                  | Moderate-High | Moderate-High      | Moderate -High | Moderate-High | Moderate -High | High |  |  |
| SITV             | Moderate      | Moderate           | Moderate       | Moderate      | Moderate -High | High |  |  |
| N A N<br>SEN AN  | Low-Moderate  | Low-Moderate       | Low-Moderate   | Moderate      | Moderate-High  | High |  |  |
|                  | Low           | Low                | Low -Moderate  | Moderate      | Moderate-High  | High |  |  |
|                  |               | Low                | Low-Moderate   | Moderate      | Moderate-High  | High |  |  |
|                  |               | VISUAL SENSITIVITY |                |               |                |      |  |  |

### SG LCA 6 LANDSCAPE SENSITIVITY: MODERATE-HIGH COMPARISON TO ADUR LANDSCAPE STUDIES : 2012: MEDIUM-HIGH

#### 2016: MEDIUM-HIGH

LANDSCAPE VALUE: The Conservation Area covers approximately two thirds of the LCA. Despite the proximity of the South Downs National Park, there is not perceived to be a strong relationship between the two due to the severance effect of the A27 combined with the presence of established tree belts. There is a lack of tranquillity. The area is assessed overall as having a moderate landscape value.

| LANDSCAPE VALUE<br>CRITERIA   |  | D  | EGREE OF SENSITIVITY  |  | HIGH   |
|---|--|--|---|--|--|
| Perceptual<br>aspects/qualities<br>(e.g. scenic beauty,<br>sense of place,<br>tranquillity, wildness,<br>rurality)  | Not tranquil, much<br>human activity. Lack<br>of a distinctive sense<br>of place or scenic<br>beauty | Limited tranquillity,<br>with significant<br>human detractors<br>from rural/natural<br>qualities. Limited<br>perception of a sense<br>of place.  | Some human<br>activity, affecting<br>tranquillity and/or<br>some features that<br>contribute to a sense<br>of place                                       | Relatively tranquil<br>and/or<br>a strong sense of<br>place with some<br>scenic features                             | Tranquil and<br>remote in<br>character, natural<br>beauty with few<br>human influences.<br>Very distinctive<br>sense of place. |
| Contribution to the<br>setting of the South<br>Downs National Park  | No contribution. No<br>relationship with the<br>Downs.   | Slight contribution.<br>Limited, distant setting<br>to the South Downs   | Moderate<br>contribution. Middle<br>distance setting to<br>the South Downs  | Moderate-Major<br>contribution. Close<br>distance setting to<br>the South Downs.                                     | Substantial<br>contribution. Close<br>distance setting to<br>the Downs,with<br>boundaries<br>adjoining.                        |
| Conservation interests<br>– presence of features<br>of wildlife,<br>archaeological, historic<br>and cultural interest<br>that can add value to<br>the landscape, as well<br>as having value in their<br>own right | Not present. Lack of<br>local or statutory<br>designations within<br>the area or adjacent.           | Slight contribution<br>from a few<br>undesignated features<br>of interest. Lack of<br>statutory designations<br>within the area or<br>adjoining. | Some features of<br>interest. Some local<br>designations cover<br>the area or are<br>immediately<br>adjacent. Statutory<br>designation in the<br>vicinity | A number of<br>features of interest.<br>Statutory<br>designations and<br>their settings affect<br>parts of the area. | Statutory/Local<br>designations and<br>their settings affect<br>a high proportion<br>of the area.                              |
| Overall Relative<br>Landscape Value   | Low  | Low-Moderate   | Moderate  | Moderate-High  | High   |

# TABLE 6D: LANDSCAPE VALUE CRITERIA

#### SG LCA 6 LANDSCAPE VALUE: MODERATE NOT CONSIDERED IN ADUR LANDSCAPE STUDIES 2012 or 2016

LANDSCAPE CAPACITY: LOW-MODERATE Taking into account the area's moderate-high landscape character sensitivity, low-moderate visual sensitivity and moderate landscape value it is considered this character area has a low-moderate landscape capacity to accommodate housing development. The precise location and design of this development would be very important to ensure the character and qualities of the Conservation Area are respected

and so as not to detract from the village's historic linear settlement pattern, but there some opportunities for small scale development within enclosed fields, outside the Conservation Area, towards the north western edge of the village, as long as development does not extend further west than at present.

|                | High          | Moderate      | Low-Moderate  | Negligible/Low | Negligible/Low | Negligible/Low |
|----------------|---------------|---------------|---------------|----------------|----------------|----------------|
|                | Moderate-High | Moderate      | Low-Moderate  | Low-Moderate   | Negligible/Low | Negligible/low |
| APE            | Moderate      | Moderate-High | Moderate      | Moderate       | Low-Moderate   | Negligible/Low |
| IDSC<br>ISITIV | Low-Moderate  | Moderate-High | Moderate-High | Moderate       | Low-Moderate   | Low-Moderate   |
| SE LA          | Low           | High          | Moderate-High | Moderate       | Moderate       | Low-Moderate   |
|                |               | Low           | Low-Moderate  | Moderate       | Moderate-High  | High           |
|                |               |               |               |                |                |                |

#### TABLE 6E: LANDSCAPE CAPACITY MATRIX

#### SG LCA 6 LANDSCAPE CAPACITY: LOW-MODERATE NOT CONSIDERED IN ADUR LANDSCAPE STUDIES 2012 or 2016

# SG LCA 6 MITIGATION ISSUES AND OPPORTUNITIES FOR ENHANCEMENT

- Essential to retain and manage existing tree groups.
- Provide low density, small scale development.
- Maintain key views to the listed buildings.
- Consider the opportunity for improved land management.

# SG LCA 5 CONTEXT PHOTOGRAPH



# 5 LANCING – SHOREHAM GAP: LANDSCAPE SENSITIVITY AND CAPACITY ASSESSMENT



5.1 Landscape character areas within the Lancing-Shoreham Gap are illustrated on **Figure 3** below:

| LG LCA 1     | New Monk's Farm*          |  |  |  |
|--------------|---------------------------|--|--|--|
| LG LCA 2     | Saltworks*                |  |  |  |
| LG LCA 3     | Shoreham Airport          |  |  |  |
| LG LCA 4     | NE Adur Fringe            |  |  |  |
| LG LCA 5     | SW Adur Fringe            |  |  |  |
| LG LCA 6A    | New Salts Farm West*      |  |  |  |
| LG LCA 6B    | New Salts Farm East*      |  |  |  |
| LG LCA 7     | Hasler Fringe             |  |  |  |
| LG LCA 8     | Old Salts Farm Fringe     |  |  |  |
| LG LCA 9     | Mill Hill Slopes          |  |  |  |
| * LCA bounde | ary has been reviewed and |  |  |  |

\* LCA boundary has been reviewed and altered by DHA over that shown in the Adur Landscape Studies.

- 5.2 Our landscape sensitivity and landscape capacity assessment of the landscape character areas in the Lancing Shoreham Gap is set out on the following pages.
- Comparative Landscape Sensitivity and Capacity Assessment of the Proposed Local Green Gap on behalf of Hyde New Homes David Huskisson Associates – April 2016

# DHA LG LCA1 NEW MONKS FARM

# **KEY CHARACTERISTICS**

- Flat landform, with ditches and ponds in the NW of the LCA
- Medium-large size former arable fields, subdivided by scrubby hedgerows in the centre of the area and a small area of woodland and meadows, enclosed by hedgerows and hedgerow trees, providing a contrasting lush small scale-landscape in the NW corner. Fenced sports pitches in the south of the area.
- Groups of derelict farm buildings at Mash Barn Lane and New Monks Farm
- Brighton and Hove Albion Football Academy building dominates the landscape to the south and has a strong urbanising presence, together with its security fencing and tall lighting columns.
- A strong urban fringe character with housing on the eastern edge of Lancing forming a mostly prominent edge, with no distinct character and a poor quality interface between buildings and landscape.
- Intermittent vegetation along the railway boundary provides a partial screen to urban areas further south.
- The green lane of Mash Barn lane is a historic rural lane and the trees and hedgerows bordering it, although intermittent in places, forms a significant local landscape feature, defining the eastern boundary of the LCA.



DHA LCA 1



Adur Landscape Study Update 2016 LCA 1

LANDSCAPE CHARACTER SENSITIVITY: The various landscape character sensitivity factors considered are judged as having either low or low-moderate sensitivity. However the generally urban fringe character of the area is a key consideration and the dominant football academy building itself diminishes a sense of settlement separation, so it is considered on balance the area has a low landscape character sensitivity.

# TABLE 1A: LANDSCAPE CHARACTER SENSITIVITY CRITERIA

| LANDSCAPE<br>CHARACTER<br>SENSITIVITY CRITERIA                               | LOW  | LOW DEGREE OF SENSITIVITY HIGH   |  |   |  |  |  |  |
|--|--|--|--|---|--|--|--|--|
| Topography/<br>Landform  | Simple, large<br>scale<br>predominantly<br>flat.   | Simple, large to<br>medium scale,<br>predominantly flat<br>to mildly undulating                  | Occasional variety<br>but lacking strong<br>complexity.  | Complex<br>topographical<br>variation.  | Very complex with<br>strong topographical<br>variety.  |  |  |  |
| Landscape<br>scale/pattern   | Simple large<br>scale pattern,<br>and/or very<br>fragmented,<br>disturbed land<br>cover. | Largely simple, with<br>some disturbance,<br>or mostly<br>fragmented land<br>cover and land use. | Some variety.<br>Limited<br>disturbance. A<br>degree of<br>consistency in<br>pattern of land use<br>and cover. | Varied pattern with<br>some intricacy.<br>Largely undisturbed<br>and coherent land<br>cover. Some historic<br>land use pattern. | Intricate, varied<br>pattern, undisturbed,<br>consistent patterns of<br>land cover and historic<br>layout.   |  |  |  |
| Landscape condition/<br>intactness   | Poor   | Poor to Fair   | Fair   | Good  | Very good  |  |  |  |
| Character<br>contribution to the<br>landscape setting of<br>the settlements. | No contribution,<br>ie. no identifiable<br>landscape setting                             | Partial/minor<br>contribution from<br>landscape<br>features/green<br>spaces.                     | Moderate<br>contribution from<br>landscape features<br>and green spaces.                                       | Important<br>contribution from<br>landscape features<br>and green spaces.   | Substantial contribution<br>to setting from very<br>distinctive landscape<br>features and green<br>spaces at the edge of/<br>on the approaches to<br>the settlements |  |  |  |
| Condition /Quality of<br>the Settlement Edge                                 | Harsh, abrupt<br>and unfiltered<br>settlement edge.                                      | Occasional filtered<br>edge but<br>predominantly<br>abrupt.                                      | Variable edge,<br>some historic but<br>modern larger<br>scale also evident.                                    | Variable edge, some<br>modern influence<br>but predominantly<br>well filtered into<br>landscape                                 | Soft porous settlement<br>edge filtered into<br>historic landscape<br>pattern.   |  |  |  |
| Contribution to<br>physical/visual<br>Settlement Separation                  | No separation<br>function  | Provides a partial separation  | Provides some of a<br>wider area of<br>separation  | Important<br>contribution to<br>separation  | Provides the entire<br>extent of the settlement<br>separation  |  |  |  |
| Overall Landscape<br>Character Sensitivity                                   | Low  | Low-Moderate   | Moderate   | Moderate-High   | High   |  |  |  |

#### DHA LG LCA1 LANDSCAPE CHARACTER SENSITIVITY: LOW COMPARISON TO ADUR LANDSCAPE STUDIES: 2012: LOW 2016: LOW

VISUAL SENSITIVITY: There are few public views within this LCA, with no PROWs crossing the area, and only occasional, intermittent views available from the railway. The central and southern parts of the area are visible in medium/longer distance views from PROWs/ Open Access land from Mill Hill, Lancing Ring and Hoe Court Farm. The northern part of the area is more visually enclosed by existing vegetation.

# TABLE 1B: VISUAL SENSITIVITY

|                                   | •••  |   |   |  |   |
|-----------------------------------|--|---|---|--|---|
| VISUAL<br>SENSITIVITY<br>CRITERIA |  |   | DEGREE OF SENSITIVI   |  | HIGH  |
| General<br>Visibility             | The area is well<br>contained by existing<br>features- buildings,<br>trees, landform. Low<br>level of visibility | Occasional views<br>of/across the area<br>where gaps in existing<br>features allow. Low-<br>moderate level of<br>visibility | Some visibility<br>of/across the area<br>from the surrounding<br>landscape.Moderate<br>level of visibility. | The area is a<br>component of wider,<br>longer landscape views<br>of/ across the area.<br>Moderate-high level of<br>visibility | Extensive views<br>of/across the area.<br>The area is a major<br>component of wider<br>landscape views.<br>High level of visibility |

| VISUAL<br>SENSITIVITY<br>CRITERIA |  |  | DEGREE OF SENSITIVI  | HIGH  |  |
|-----------------------------------|--|--|--|---|--|
| Views and<br>Landmarks            | No views of natural<br>and built landmarks,<br>Cluttered skyline<br>character.   | Limited, partial views<br>of natural /built<br>landmarks but there<br>may also be a<br>relatively developed<br>cluttered skyline | Area from which<br>there are some wider<br>views containing<br>natural/ built<br>landmarks, but there<br>may also be some<br>intrusive elements. | Some important views<br>to the wider landscape<br>and of natural/built<br>landmarks are<br>available, and any<br>more intrusive elements<br>are not particularly<br>prominent | Distinctive panoramic<br>views, including<br>prominent natural<br>/built landmarks,<br>and/or major<br>gateway views<br>available from/<br>across the area.  |
| Visual<br>Receptors               | Public views are<br>experienced by a<br>small number of<br>public receptors or by<br>a larger of receptors<br>with a passing interest<br>in their visual<br>environment (e.g.<br>motorists on local<br>transport routes) | Occasional public<br>views from PROW<br>routes and local<br>transport routes.  | Some public views<br>for visitors and from<br>PROWs. Some<br>visibility from<br>transport routes.  | Frequent public views<br>for visitors enjoying the<br>landscape and from<br>PRoWs.  | Public views are<br>experienced by a<br>high number of<br>visitors to the<br>landscape and/or<br>from long distance or<br>locally important<br>PRoW. Visibility from<br>major transport<br>routes. |
| Overall Visual<br>Sensitivity     | Low  | Low-Moderate   | Moderate   | Moderate-High   | High   |

#### DHA LG LCA1 VISUAL SENSITIVITY: MODERATE COMPARISON TO ADUR LANDSCAPE STUDIES (LCA1): 2012: MEDIUM 2016: MEDIUM

# TABLE 1C: LANDSCAPE SENSITIVITY

|                        | High          | High          | High           | High               | High           | High |
|------------------------|---------------|---------------|----------------|--------------------|----------------|------|
| 昨眠≻                    | Moderate-High | Moderate-High | Moderate -High | Moderate-High      | Moderate -High | High |
| DSCA<br>RACT<br>SITIVI | Moderate      | Moderate      | Moderate       | Moderate           | Moderate -High | High |
| SEN<br>SEN             | Low-Moderate  | Low-Moderate  | Low-Moderate   | Moderate           | Moderate-High  | High |
|                        | Low           | Low           | Low -Moderate  | Moderate           | Moderate-High  | High |
|                        |               | Low           | Low-Moderate   | Moderate           | Moderate-High  | High |
|                        |               |               |                | VISUAL SENSITIVITY |                |      |

#### DHA LG LCA1 VISUAL SENSITIVITY: MODERATE COMPARISON TO ADUR LANDSCAPE STUDIES (LCA1): 2012: MEDIUM-LOW 2016: MEDIUM-LOW

LANDSCAPE VALUE: The area has a few undesignated wildlife and historic conservation interests which confer landscape value such as the woodland, hedgerows and ponds, and Mash Barn lane. However, the area is not tranquil and largely lacks any distinctive sense of place. The centre of the area has some connection with the Downs and makes a partial contribution to their setting, but it must be taken into account the northern part of the area, closest to the Downs is very enclosed and the strong urban fringe character of much of the area, including the dominant presence of the football academy diminishes its contribution to setting.

#### TABLE 1D: LANDSCAPE VALUE CRITERIA

| LANDSCAPE VALUE<br>CRITERIA  | LOW  | DE  | GREE OF SENSITIVITY   |  | HIGH  |
|--|--|---|---|--|---|
| Perceptual<br>aspects/qualities<br>(e.g. scenic beauty,<br>sense of place,<br>tranquillity, wildness,<br>rurality)   | Not tranquil, much<br>human activity.<br>Lack of a distinctive<br>sense of place or<br>scenic beauty | Limited tranquillity,<br>with significant<br>human detractors<br>from rural/natural<br>qualities. Limited<br>perception of a sense<br>of place.     | Some human<br>activity, affecting<br>tranquillity and/or<br>some features that<br>contribute to a<br>sense of place                                       | Relatively tranquil<br>and/or<br>a strong sense of<br>place with some<br>scenic features                             | Tranquil and remote<br>in character, natural<br>beauty with few<br>human influences.<br>Very distinctive<br>sense of place. |
| Contribution to the<br>setting of the South<br>Downs National Park   | No contribution.<br>No relationship<br>with the Downs.   | Slight contribution.<br>Limited, distant<br>setting to the South<br>Downs   | Moderate<br>contribution.<br>Middle distance<br>setting to the South<br>Downs   | Moderate-Major<br>contribution. Close<br>distance setting to<br>the South Downs.                                     | Substantial<br>contribution. Close<br>distance setting to<br>the Downs,with<br>boundaries<br>adjoining.                     |
| Conservation<br>interests – presence<br>of features of wildlife,<br>archaeological,<br>historic and cultural<br>interest that can add<br>value to the<br>landscape, as well as<br>having value in their<br>own right | Not present. Lack<br>of local or statutory<br>designations within<br>the area or<br>adjacent.        | Slight contribution<br>from a few<br>undesignated<br>features of interest.<br>Lack of statutory<br>designations within<br>the area or<br>adjoining. | Some features of<br>interest. Some<br>local designations<br>cover the area or<br>are immediately<br>adjacent. Statutory<br>designation in the<br>vicinity | A number of<br>features of interest.<br>Statutory<br>designations and<br>their settings affect<br>parts of the area. | Statutory/Local<br>designations and<br>their settings affect a<br>high proportion of<br>the area.                           |
| Overall Relative<br>Landscape Value  | Low  | Low-Moderate  | Moderate  | Moderate-High  | High  |

#### DHA LG LCA1 LANDSCAPE VALUE: LOW-MODERATE NOT CONSIDERED IN ADUR LANDSCAPE STUDIES 2012 or 2016

LANDSCAPE CAPACITY: Taking into account the area's low-moderate landscape character sensitivity, moderate visual sensitivity and low-moderate landscape value it is considered this character area has an overall moderate landscape capacity to accommodate housing development. Whilst it is assumed the Brighton and Hove Football Academy site itself would be unlikely to be redeveloped, it is considered there is potential to locate housing development within the central and northern fields of the LCA, as long as those landscape features which are more vulnerable to change within this area, such as the rural, historic lane of Mash Barn Lane at the eastern edge and the hedgerows, woodland and ponds in the north west corner are substantially retained.

TABLE 1E: LANDSCAPE CAPACITY MATRIX

|             | High          | Moderate      | Low-Moderate  | Negligible/Low  | Negligible/Low | Negligible/Low |
|-------------|---------------|---------------|---------------|-----------------|----------------|----------------|
| APE<br>MTY  | Moderate-High | Moderate      | Low-Moderate  | Low-Moderate    | Negligible/Low | Negligible/low |
| DSC<br>IDSC | Moderate      | Moderate-High | Moderate      | Moderate        | Low-Moderate   | Negligible/Low |
| SEN         | Low-Moderate  | Moderate-High | Moderate-High | Moderate        | Low-Moderate   | Low-Moderate   |
|             | Low           | High          | Moderate-High | Moderate        | Moderate       | Low-Moderate   |
|             |               | Low           | Low-Moderate  | Moderate        | Moderate-High  | High           |
|             |               |               |               | LANDSCAPE VALUE |                |                |

#### DHA LG LCA 1 LANDSCAPE CAPACITY: MODERATE NOT CONSIDERED IN ADUR LANDSCAPE STUDIES 2012 or 2016

#### MITIGATION ISSUES AND OPPORTUNITIES FOR ENHANCEMENT

- Retain the existing hedgerows and trees along Mash Barn Lane, strengthening its western boundary with substantial additional woodland planting to provide an effective, long term, defensible boundary to any new housing development in this location, rather than any built development being extended further westwards into the adjoining Saltworks LCA (LCA LG 2)
- Give careful consideration to the precise location of and an appropriate height and density of any housing development close to Mash Barn lane to avoid any impression of a hard edge being created and to provide an enhanced, attractive settlement edge to Lancing, in comparison with the poor quality existing one.
- Maintain the essentially rural character of Mash Barn Lane utilising it for a footpath/cyclepath route, rather than for a vehicular access.
- Conserve and manage existing woodlands, hedgerows, streams and ponds.
- Any community use or employment use buildings, of greater height, associated with the housing development to be set back from the western development edge and to be more closely related to the southern boundary with the football academy and the Shadwells Recreation ground on the eastern boundary.

# LG LCA 1 CONTEXT PHOTOGRAPHS









# DHA LG LCA 2 SALTWORKS

### **KEY CHARACTERISTICS**

- An undulating 'moonscape' landform formed from extensive tipping of recycled aggregates and other 'inert' materials.
- Rough, open grassland, peppered with patches of scrub, highly textured and untamed character, contrasts with the smoothness of the Downs to the north and Shoreham Airfield to the east.
- A network of winding watercourses and drainage ditches cross the area, and a few hedgerows retained between the undulating mounds.
- Mature trees and hedgerows define the western boundary of the LCA with Mash Barn lane.
- Extensive views to Downs to the north and east; Lancing College Chapel is a prominent landmark. Clear views to Shoreham and Shoreham Airport from the high points within the LCA.
- Tree belts adjoining the A27 enclose a substantial length of this road corridor and also an existing Gypsy and Traveller's site
- The combination of landform and intermittent vegetation along the railway provides a strong separation of this LCA from urban areas to the south and west.



LANDSCAPE CHARACTER SENSITIVITY: The balance of landscape character factors for this LCA points to an overall moderate landscape character sensitivity. The disturbed, artificial landform and the overall poor landscape condition of this area are of lower sensitivity, but the presence of winding water courses and some hedgerows has meant that some elements of the historic landscape pattern remain intact, and the area is important in contributing to a wider separation of open, undeveloped land between the settlements of Shoreham and Lancing.

| LANDSCAPE<br>CHARACTER<br>SENSITIVITY CRITERIA                               | LOW  |  | DEGREE OF SENSITIVIT  | DEGREE OF SENSITIVITY   |  |  |
|--|--|--|---|---|--|--|
| Topography/<br>Landform  | Simple, large<br>scale<br>predominantly<br>flat.   | Simple, large to<br>medium scale,<br>predominantly flat<br>to mildly<br>undulating.              | Occasional variety<br>but lacking strong<br>complexity.   | Complex<br>topographical<br>variation.  | Very complex with<br>strong topographical<br>variety.  |  |
| Landscape<br>scale/pattern   | Simple large<br>scale pattern,<br>and/or very<br>fragmented,<br>disturbed land<br>cover. | Largely simple, with<br>some disturbance,<br>or mostly<br>fragmented land<br>cover and land use. | Some variety.<br>Limited disturbance,<br>A degree of<br>consistency in<br>pattern of land use<br>and cover. | Varied pattern with<br>some intricacy.<br>Largely undisturbed<br>and coherent land<br>cover. Some historic<br>land use pattern. | Intricate, varied<br>pattern, undisturbed,<br>consistent patterns of<br>land cover and historic<br>layout.   |  |
| Landscape Condition/<br>Intactness   | Poor   | Poor to Fair   | Fair  | Good  | Very good  |  |
| Character<br>contribution to the<br>landscape setting of<br>the settlements. | No contribution,<br>i.e. no<br>identifiable<br>landscape setting                         | Partial/minor<br>contribution from<br>landscape<br>features/green<br>spaces.                     | Moderate<br>contribution from<br>landscape features<br>and green spaces.                                    | Important<br>contribution from<br>landscape features<br>and green spaces.   | Substantial contribution<br>to setting from very<br>distinctive landscape<br>features and green<br>spaces at the edge of<br>/on the approaches to<br>the settlements |  |

#### TABLE 2A: LANDSCAPE CHARACTER SENSITIVITY CRITERIA

| LANDSCAPE<br>CHARACTER<br>SENSITIVITY CRITERIA              | LOW   |   | DEGREE OF SENSITIVIT  | Y  | HIGH   |
|---|---|---|---|--|--|
| Condition /Quality of<br>the Settlement Edge                | Harsh, abrupt<br>and unfiltered<br>settlement edge. | Occasional filtered<br>edge but<br>predominantly<br>abrupt. | Variable edge, some<br>historic but modern<br>larger scale also<br>evident. | Variable edge, some<br>modern influence<br>but predominantly<br>well filtered into<br>landscape. | Soft porous settlement<br>edge filtered into<br>historic landscape<br>pattern. |
| Contribution to<br>physical/visual<br>Settlement Separation | No separation<br>function                           | Provides a partial separation                               | Provides some of a<br>wider area of<br>separation                           | Important<br>contribution to<br>separation   | Provides the entire<br>extent of the settlement<br>separation                  |
| Overall Landscape<br>Character Sensitivity                  | Low   | Low-Moderate  | Moderate  | Moderate-High  | High   |

#### DHA LG LCA 2 LANDSCAPE CHARACTER SENSITIVITY: MODERATE COMPARISON TO ADUR LANDSCAPE STUDIES: 2012: MEDIUM-LOW

2016: MEDIUM-LOW

VISUAL SENSITIVITY: There is no public access within this LCA, with no PROWs crossing the area. Some glimpsed close views of the northern and southern parts are available respectively from the A27 and the railway. The area however is highly visible in close distance views from the River Adur riverside paths, and from the PROW at Hoe Court Farm, as well as in medium to longer distance views from PROWs/ Open Access land at Mill Hill and Lancing Ring. Outward views to the landmarks of Lancing Chapel and Lancing Hill are also important. As a result the area is considered to be of overall moderate-high visual sensitivity.

# TABLE 2B: VISUAL SENSITIVITY CRITERIA

| VISUAL<br>SENSITIVITY<br>CRITERIA |  |  | DEGREE OF SENSITIVIT   | Y   | HIGH   |
|-----------------------------------|--|--|--|---|--|
| General Visibility                | The area is well<br>contained by existing<br>features- buildings,<br>trees, landform. Low<br>level of visibility   | Occasional views<br>of/across the area<br>where gaps in existing<br>features allow. Low-<br>moderate level of<br>visibility      | Some visibility<br>of/across the area<br>from the<br>surrounding<br>landscape.Moderate<br>level of visibility.   | The area is a<br>component of wider,<br>longer landscape<br>views of/across the<br>area. Moderate-high<br>level of visibility   | Extensive views<br>of/across the area.<br>The area is a major<br>component of wider<br>landscape views.<br>High level of visibility  |
| Views and<br>Landmarks            | No views of natural<br>and built landmarks,<br>Cluttered skyline<br>character.   | Limited, partial views<br>of natural /built<br>landmarks but there<br>may also be a<br>relatively developed<br>cluttered skyline | Area from which<br>there are some<br>wider views<br>containing<br>natural/built<br>landmarks/, but<br>there may also be<br>some intrusive<br>elements. | Some important views<br>to the wider landscape<br>and of natural/built<br>landmarks are<br>available, and any<br>more intrusive<br>elements are not<br>particularly prominent | Distinctive<br>panoramic views,<br>including prominent<br>natural /built<br>landmarks, and/or<br>major gateway views<br>available from/<br>across the area.  |
| Visual Receptors                  | Public views are<br>experienced by a<br>small number of<br>public receptors or by<br>a larger of receptors<br>with a passing interest<br>in their visual<br>environment (e.g.<br>motorists on local<br>transport routes) | Occasional public<br>views from PROW<br>routes and local<br>transport routes.  | Some public views<br>for visitors and from<br>PROWs. Some<br>visibility from<br>transport routes.  | Frequent public views<br>for visitors enjoying the<br>landscape and from<br>PRoWs.  | Public views are<br>experienced by a<br>high number of<br>visitors to the<br>landscape and/or<br>from long distance<br>or locally important<br>PRoW. Visibility from<br>major transport<br>routes. |
| Overall Visual<br>Sensitivity     | Low  | Low-Moderate   | Moderate   | Moderate-High   | High   |

#### DHA LG LCA 2 VISUAL SENSITIVITY: MODERATE-HIGH COMPARISON TO ADUR LANDSCAPE STUDIES : 2012: MEDIUM

2016: MEDIUM

on behalf of Hyde New Homes David Huskisson Associates – April 2016

#### TABLE 2C: LANDSCAPE SENSITIVITY

|                                  | High          | High          | High           | High          | High           | High |
|----------------------------------|---------------|---------------|----------------|---------------|----------------|------|
| NT<br>NT<br>NT<br>NT<br>NT<br>NT | Moderate-High | Moderate-High | Moderate -High | Moderate-High | Moderate -High | High |
| ARAC<br>IDSC                     | Moderate      | Moderate      | Moderate       | Moderate      | Moderate -High | High |
| A H H                            | Low-Moderate  | Low-Moderate  | Low-Moderate   | Moderate      | Moderate-High  | High |
|                                  | Low           | Low           | Low -Moderate  | Moderate      | Moderate-High  | High |
| L                                |               | Low           | Low-Moderate   | Moderate      | Moderate-High  | High |
| VISUAL SENSITIVITY               |               |               |                |               |                |      |

#### DHA LG LCA 2 LANDSCAPE SENSITIVITY: MODERATE-HIGH COMPARISON TO ADUR LANDSCAPE STUDIES: 2012: MEDIUM

2016: MEDIUM

LANDSCAPE VALUE: The area has some undesignated conservation interests which confer landscape value such as the hedgerows and the watercourses. The area is relatively tranquil in the centre of the area and there is some sense of place derived from its untamed, somewhat natural character. The area also has a relatively close visual connection with the Downs and therefore their setting. As a result overall the area is considered to be of moderate value.

#### TABLE 2D: LANDSCAPE VALUE CRITERIA

| LANDSCAPE VALUE<br>CRITERIA  | LOW DEGREE OF SENSITIVITY  |   |   |  | HIGH  |
|--|--|---|---|--|---|
| Perceptual<br>aspects/qualities<br>(e.g. scenic beauty,<br>sense of place,<br>tranquillity, wildness,<br>rurality)   | Not tranquil, much<br>human activity.<br>Lack of a distinctive<br>sense of place or<br>scenic beauty | Limited tranquillity,<br>with significant<br>human detractors<br>from rural/natural<br>qualities. Limited<br>perception of a<br>sense of place.     | Some human<br>activity, affecting<br>tranquillity and/or<br>some features that<br>contribute to a<br>sense of place                                       | Relatively tranquil<br>and/or<br>a strong sense of<br>place with some<br>scenic features                             | Tranquil and remote<br>in character, natural<br>beauty with few<br>human influences.<br>Very distinctive sense<br>of place. |
| Contribution to the<br>setting of the South<br>Downs National Park   | No contribution.<br>No relationship<br>with the Downs.   | Slight contribution.<br>Limited, distant<br>setting to the South<br>Downs   | Moderate<br>contribution. Middle<br>distance setting to<br>the South Downs  | Moderate-Major<br>contribution.<br>Close distance<br>setting to the<br>South Downs.                                  | Substantial<br>contribution. Close<br>distance setting to the<br>Downs,with<br>boundaries adjoining                         |
| Conservation interests –<br>presence of features of<br>wildlife, archaeological,<br>historic and cultural<br>interest that can add<br>value to the landscape,<br>as well as having value<br>in their own right | Not present. Lack<br>of local or statutory<br>designations within<br>the area or<br>adjacent.        | Slight contribution<br>from a few<br>undesignated<br>features of interest.<br>Lack of statutory<br>designations within<br>the area or<br>adjoining. | Some features of<br>interest. Some local<br>designations cover<br>the area or are<br>immediately<br>adjacent. Statutory<br>designation in the<br>vicinity | A number of<br>features of<br>interest. Statutory<br>designations and<br>their settings affect<br>parts of the area. | Statutory/Local<br>designations and<br>their settings affect a<br>high proportion of<br>the area.                           |
| Overall Relative<br>Landscape Value  | Low  | Low-Moderate  | Moderate  | Moderate-High  | High  |

# DHA LG LCA 2 LANDSCAPE VALUE: MODERATE NOT CONSIDERED IN ADUR LANDSCAPE STUDIES 2012 or 2016

LANDSCAPE CAPACITY: Taking into account the area's low-moderate landscape character sensitivity, moderatehigh visual sensitivity and moderate landscape value it is considered this character area has an overall lowmoderate landscape capacity to accommodate housing development. Whilst this suggests some limited potential for carefully sited development in a small proportion of the area might be acceptable, it is considered in this case that it would be extremely difficult to absorb this without resulting in significant adverse visual impacts in the wider landscape, loss of/substantial change to the historic pattern of watercourses and erosion of/loss of the contribution the open land of the area makes to the separation between Lancing and Shoreham.

|            | High          | Moderate      | Low-Moderate  | Negligible/Low  | Negligible/Low | Negligible/Low |
|------------|---------------|---------------|---------------|-----------------|----------------|----------------|
| APE<br>117 | Moderate-High | Moderate      | Low-Moderate  | Low-Moderate    | Negligible/Low | Negligible/low |
|            | Moderate      | Moderate-High | Moderate      | Moderate        | Low-Moderate   | Negligible/Low |
| SEP LAN    | Low-Moderate  | ModerateHigh  | Moderate-High | Moderate        | Low-Moderate   | Low-Moderate   |
|            | Low           | High          | Moderate-High | Moderate        | Moderate       | Low-Moderate   |
|            |               | Low           | Low-Moderate  | Moderate        | Moderate-High  | High           |
|            |               |               |               | LANDSCAPE VALUE |                |                |

#### TABLE 2E: LANDSCAPE CAPACITY MATRIX

#### DHA LG LCA 2 LANDSCAPE CAPACITY: LOW-MODERATE NOT CONSIDERED IN ADUR LANDSCAPE STUDIES 2012 or 2016

# DHA LG LCA 2 MITIGATION ISSUES AND OPPORTUNITIES FOR ENHANCEMENT

- Retain and manage the existing historic pattern of watercourses and remaining hedgerows.
- Maintain open views across the area, ensuring any planting is carefully sited to avoid intruding on views to landmark features such as Lancing Chapel and the Downs.
- Potential opportunity to regrade some of the existing landform to create more natural profiles.

# LG LCA 2 CONTEXT PHOTOGRAPHS





# LG LCA 3 SHOREHAM AIRPORT

### **KEY CHARACTERISTICS**

- Completely flat, open airport landscape of mown grass with runways and taxiways
- Simple, uniform character within airport contrasts with the sweeping natural forms and patterns of the Rver Adur corridor, which includes intertidal mudflats and saltmarshes
- Riprarian habitats along the margins, with a mosaic of wet grassland, reedbeds, ditches pools contained by flood embankments.
- Well used public footpath on both sides of the river affording panoramic views northwards of the South Downs.
- Landmarks of Lancing College and Old Shoreham Church are important in outward views from the area.
- Industrial area and the elevated A27 junction detract from views to the north east
- The new white colour Brighton Football Academy building (outside the LCA) on the edge of Lancing is a prominent feature in westward views and a visual detractor.
- The airport buildings (including the listed Art Deco Terminal building) are prominent along the southern edge of the LCA and the area is busy, with regular aircraft movement on the airfield and traffic along the road at the eastern edge.



LANDSCAPE CHARACTER SENSITIVITY: The complex wetland/tidal landscape of the river, the historic landscape of the airfield, the area's important contribution to the distinctive landscape setting of Shoreham, as well as the settlement separation function of a large area of open undeveloped land, all point to an overall moderate-high landscape character sensitivity, despite the presence of busy airport uses.

| LANDSCAPE<br>CHARACTER<br>SENSITIVITY CRITERIA                               | LOW   | HIGH   |   |   |   |
|--|---|--|---|---|---|
| Topography/<br>Landform  | Simple, large scale predominantly flat.   | Simple, large to<br>medium scale,<br>predominantly flat to<br>mildly undulating.                 | Occasional variety<br>but lacking strong<br>complexity.   | Complex<br>topographical<br>variation.  | Very complex with<br>strong topographical<br>variety.   |
| Landscape<br>scale/pattern   | Simple large scale<br>pattern, and/or<br>very fragmented,<br>disturbed land<br>cover. | Largely simple, with<br>some disturbance, or<br>mostly fragmented<br>land cover and land<br>use. | Some variety.<br>Limited disturbance,<br>A degree of<br>consistency in pattern<br>of land use and<br>cover. | Varied pattern with<br>some intricacy.<br>Largely undisturbed<br>and coherent land<br>cover. Some historic<br>land use pattern. | Intricate, varied pattern,<br>undisturbed, consistent<br>patterns of land cover<br>and historic layout.               |
| Landscape<br>Condition/<br>Intactness  | Poor  | Poor to Fair   | Fair  | Good  | Very good   |
| Character<br>contribution to the<br>landscape setting of<br>the settlements. | No contribution,<br>i.e. no identifiable<br>landscape setting                         | Partial/minor<br>contribution from<br>landscape<br>features/green<br>spaces.                     | Moderate<br>contribution from<br>landscape features<br>and green spaces.                                    | Important<br>contribution from<br>landscape features<br>and green spaces.   | Substantial contribution<br>to setting from very<br>distinctive landscape<br>features and green<br>spaces at the edge |

# TABLE 3A: LANDSCAPE CHARACTER SENSITIVITY CRITERIA

Comparative Landscape Sensitivity and Capacity Assessment of the Proposed Local Green Gap on behalf of Hyde New Homes David Huskisson Associates – April 2016

| LANDSCAPE<br>CHARACTER<br>SENSITIVITY CRITERIA              | LOW   |   | DEGREE OF SENSITIVI   |  | HIGH  |
|---|---|---|---|--|---|
|   |   |   |   |  | of/on the approaches to the settlements                                     |
| Condition /Quality of<br>the Settlement Edge                | Harsh, abrupt and<br>unfiltered<br>settlement edge. | Occasional filtered<br>edge but<br>predominantly<br>abrupt. | Variable edge, some<br>historic but modern<br>larger scale also<br>evident. | Variable edge, some<br>modern influence but<br>predominantly well<br>filtered into<br>landscape. | Soft porous settlement<br>edge filtered into historic<br>landscape pattern. |
| Contribution to<br>physical/visual<br>Settlement Separation | No separation<br>function                           | Provides a partial separation                               | Provides some of a<br>wider area of<br>separation                           | Important<br>contribution to<br>separation   | Provides the entire<br>extent of the settlement<br>separation               |
| Overall Landscape<br>Character Sensitivity                  | Low   | Low-Moderate  | Moderate  | Moderate-High  | High  |

LG LCA3 LANDSCAPE CHARACTER SENSITIVITY: MODERATE-HIGH COMPARISON TO ADUR LANDSCAPE STUDIES: 2012: MEDIUM-HIGH

2016: MEDIUM-HIGH

VISUAL SENSITIVITY: The area is highly visible from the riverside paths including the Downs Link, from the Shoreham Tollbridge, from the A27 and from the A283 Steyning and Old Shoreham Roads in close public views, with many receptors of high and medium-low sensitivity. The open land of both the airfield and the estuary is also highly visible from medium to high sensitivity views from the Downs at Mill Hill, Lancing College, Hoe Court Farm and Lancing Ring. Lancing College and the Airport Terminal building are also notable landmarks in views.

| VISUAL<br>SENSITIVITY<br>CRITERIA | LOW   |  | DEGREE OF SENSITIVIT  |  | HIGH   |
|-----------------------------------|---|--|---|--|--|
| General<br>Visibility             | The area is well<br>contained by existing<br>features- buildings,<br>trees, landform. Low<br>level of visibility  | Occasional views<br>of/across the area<br>where gaps in existing<br>features allow. Low-<br>moderate level of<br>visibility      | Some visibility<br>of/across the area<br>from the surrounding<br>landscape. Moderate<br>level of visibility.  | The area is a<br>component of wider,<br>longer landscape<br>views of/across the<br>area. Moderate-high<br>level of visibility  | Extensive views<br>of/across the area. The<br>area is a major<br>component of wider<br>landscape views. High<br>level of visibility  |
| Views and<br>Landmarks            | No views of natural<br>and built landmarks,<br>Cluttered skyline<br>character.  | Limited, partial views<br>of natural /built<br>landmarks but there<br>may also be a<br>relatively developed<br>cluttered skyline | Area from which<br>there are some wider<br>views containing<br>natural/ built<br>landmarks, but<br>there may also be<br>some intrusive<br>elements. | Some important views<br>to the wider landscape<br>and of natural/ built<br>landmarks are<br>available, and any<br>more intrusive<br>elements are not<br>particularly prominent | Distinctive panoramic<br>views, including<br>prominent natural<br>/built landmarks,<br>and/or major gateway<br>views available from/<br>across the area.                                     |
| Visual Receptors                  | Public views are<br>experienced by a small<br>number of public<br>receptors or by a<br>larger of receptors with<br>a passing interest in<br>their visual<br>environment (eg.<br>motorists on local<br>transport routes) | Occasional public<br>views from PROW<br>routes and local<br>transport routes   | Some public views for<br>visitors and from<br>PROWs. Some<br>visibility from<br>transport routes  | Frequent public views<br>for visitors enjoying the<br>landscape and from<br>PRoWs.   | Public views are<br>experienced by a high<br>number of visitors to<br>the landscape and/or<br>from long distance or<br>locally important<br>PRoW. Visibility from<br>major transport routes. |
| Overall Visual<br>Sensitivity     | Low   | Low-Moderate   | Moderate  | Moderate-High  | High   |

# TABLE 3B: VISUAL SENSITIVITY CRITERIA

#### LG LCA 3 VISUAL SENSITIVITY: HIGH COMPARISON TO ADUR LANDSCAPE STUDIES: 2012: HIGH

2016: HIGH

# TABLE 3C: LANDSCAPE SENSITIVITY

|                        | High          | High          | High               | High          | High           | High |  |  |  |
|------------------------|---------------|---------------|--------------------|---------------|----------------|------|--|--|--|
| ₩Ĕ                     | Moderate-High | Moderate-High | Moderate -High     | Moderate-High | Moderate -High | High |  |  |  |
| IDSC<br>NRAC<br>ISITIN | Moderate      | Moderate      | Moderate           | Moderate      | Moderate -High | High |  |  |  |
| A P R                  | Low-Moderate  | Low-Moderate  | Low-Moderate       | Moderate      | Moderate-High  | High |  |  |  |
|                        | Low           | Low           | Low -Moderate      | Moderate      | Moderate-High  | High |  |  |  |
|                        |               | Low           | Low-Moderate       | Moderate      | Moderate-High  | High |  |  |  |
|                        |               |               | VISUAL SENSITIVITY |               |                |      |  |  |  |

#### LG LCA3 LANDSCAPE SENSITIVITY: HIGH COMPARISON TO ADUR LANDSCAPE STUDIES: 2012: HIGH

2016: HIGH

LANDSCAPE VALUE: The area has various conservation interests which confer landscape value, in terms of both wildlife and historic value (the statutory designations of the estuary SSSI and the listed building of the Art Deco terminal building). There is also a strong sense of place provided by the estuary landscape and the airfield and the area also makes an important contribution to the setting of the downs as mostly undeveloped land at the foot of their slopes and lying close to them.

#### LANDSCAPE VALUE LOW DEGREE OF SENSITIVITY HIGH CRITERIA Limited tranquillity, Not tranquil, Some human Relatively tranquil Tranquil and remote Perceptual in character, natural aspects/qualities much human with significant activity, affecting and/or (e.g. scenic beauty, activity. Lack of a human detractors tranquillity and/or a strong sense of beauty with few sense of place, some features that human influences. distinctive sense of from rural /natural place with some tranquillity, wildness, qualities. Limited contribute to a sense scenic features Very distinctive sense place or scenic rurality) beauty perception of a sense of place of place. of place. Contribution to the No contribution. Slight contribution. Moderate-Major Substantial Moderate Limited, distant setting setting of the South contribution. Close contribution. Close No relationship contribution. Middle distance setting to Downs National Park with the Downs. to the South Downs distance setting to distance setting to the South Downs the South Downs. the Downs,with boundaries adjoining. **Conservation interests** Not present. Lack Slight contribution Some features of A number of Statutory/Local - presence of features of local or from a few interest. Some local features of interest. designations and undesignated features of wildlife, statutory their settings affect a designations cover Statutory archaeological, historic designations of interest. Lack of designations and the area or are high proportion of and cultural interest within the area or statutory designations immediately their settings affect the area. that can add value to adjacent. within the area or adjacent. Statutory parts of the area. the landscape, as well adjoining. designation in the as having value in their vicinity own right Overall Relative Low-Moderate Moderate Moderate-High High Low Landscape Value

# TABLE 3D: LANDSCAPE VALUE

#### LG LCA 3 LANDSCAPE VALUE: MODERATE-HIGH NOT CONSIDERED IN ADUR LANDSCAPE STUDIES 2012 or 2016

LANDSCAPE CAPACITY Taking into account the area's moderate-high landscape character sensitivity, high visual sensitivity and moderate-high landscape value it is considered this character area has an overall negligible/low

landscape capacity to accommodate development. Clearly built development within/very close to the estuary area itself would be ruled out anyway on flood risk and nature conservation grounds, but the intended raising of the tidal embankments, as part of the Adur Tidal Walls scheme, needs to be take of in terms of mitigation and enhancement. Within the airport itself its open, expansive, undeveloped green character and the views available across this land, particularly to Lancing College and the Downs are very vulnerable to the introduction of any built development and associated infrastructure, so if any additional employment use were to be considered on the airport land its precise location, extent, height and design would need very careful consideration.

|             | High           | Moderate      | Low-Moderate  | Negligible/Low  | Negligible/Low | Negligible/Low |
|-------------|----------------|---------------|---------------|-----------------|----------------|----------------|
| APE<br>VITY | Moderate- High | Moderate      | Low-Moderate  | Low-Moderate    | Negligible/Low | Negligible/low |
| NDSC        | Moderate       | Moderate-High | Moderate      | Moderate        | Low-Moderate   | Negligible/Low |
| ₹ S         | Low-Moderate   | Moderate-High | Moderate-High | Moderate        | Low-Moderate   | Low-Moderate   |
|             | Low            | High          | Moderate-High | Moderate        | Moderate       | Low-Moderate   |
|             |                | Low           | Low-Moderate  | Moderate        | Moderate-High  | High           |
|             |                |               |               | LANDSCAPE VALUE |                |                |

TABLE 3E: LANDSCAPE CAPACITY MATRIX

#### LG LCA 3 LANDSCAPE CAPACITY: NEGLIGIBLE-LOW NOT CONSIDERED IN ADUR LANDSCAPE STUDIES 2012 or 2016

#### LG LCA 3 MITIGATION ISSUES AND OPPORTUNITIES FOR ENHANCEMENT

- Conserve and enhance intertidal habitats
- Retain and enhance a riverside path associated with the Adur Tidal Walls scheme.
- Avoid siting built development in locations which would result in significant intrusion on/screening of attractive views to landmark buildings and features.

# LG LCA 3 CONTEXT PHOTOGRAPHS





# LG LCA 4 ADUR GATEWAY

### **KEY CHARACTERISTICS**

- Gateway to the South Downs from Shoreham, with views to the rolling chalklands to the north, across the Lancing-Shoreham Gap to the south and along the gently curving River Adur.
- Strategic river crossing point- the elevated concrete structures of the A27 interchange are visually prominent and a visual detractor, but the historic pedestrian toll bridge is an attractive feature.
- The bridges enable stunning gateway views along the Adur Valley.
- The riverside path is the popular Downs Link long distance path and national cycle route connecting Shoreham Harbour with the South Downs National Park.
- The Church of St Nicholas, Old Shoreham (a Grade I listed buiding) and the Shoreham Tollbridge (Grade II star listed) are local landmarks.
- River corridor partially enclosed by built development and narrow belts of riverside trees and scrub.
- Commercial development of the Ricardo Shoreham technical centre is prominent on the west bank of the river and is a visual detractor.
- Historic settlement of Old Shoreham centred on the church of St Nicholas.
- Riverside pasture on the east bank contributes to the landscape setting of the River Adur and the Old Shoreham Conservation Area.



LANDSCAPE CHARACTER SENSITIVITY: The area is considered to have an overall moderate landscape character sensitivity taking account of the estuary landscape and the riverside pasture which contributes to landscape setting, but also bearing in mind the presence of the urban features of the A27 interchange and the Ricardo technical centre.

| LANDSCAPE<br>CHARACTER<br>SENSITIVITY CRITERIA                               | LOW   | OW DEGREE OF SENSITIVITY HIGH  |  |  |  |  |  |
|--|---|--|--|--|--|--|--|
| Topography/<br>landform  | Simple, large scale predominantly flat.   | Simple, large to<br>medium scale,<br>predominantly flat<br>to mildly undulating                  | Occasional variety<br>but lacking strong<br>complexity.  | Complex<br>topographical<br>variation.   | Very complex with<br>strong topographical<br>variety.  |  |  |
| Landscape<br>scale/pattern   | Simple large scale<br>pattern, and/or<br>very fragmented,<br>disturbed land<br>cover. | Largely simple, with<br>some disturbance,<br>or mostly<br>fragmented land<br>cover and land use. | Some variety.<br>Limited disturbance,<br>A degree of<br>consistency in<br>pattern of land use<br>and cover | Varied pattern with<br>some intricacy.<br>Largely undisturbed<br>and coherent land<br>cover. Some historic<br>land use pattern | Intricate, varied<br>pattern, undisturbed,<br>consistent patterns of<br>land cover and<br>historic layout.   |  |  |
| Landscape condition/<br>intactness   | Poor  | Poor to Fair   | Fair   | Good   | Very good  |  |  |
| Character contribution<br>to the landscape<br>setting of the<br>settlements. | No contribution,<br>i.e. no identifiable<br>landscape setting                         | Partial/minor<br>contribution from<br>landscape<br>features/green<br>spaces.                     | Moderate<br>contribution from<br>landscape features<br>and green spaces.                                   | Important contribution<br>from landscape<br>features and green<br>spaces.  | Substantial<br>contribution to setting<br>from very distinctive<br>landscape features<br>and green spaces at |  |  |

# TABLE 4A: LANDSCAPE CHARACTER SENSITIVITY CRITERIA

| LANDSCAPE<br>CHARACTER<br>SENSITIVITY CRITERIA              | LOW   |   | DEGREE OF SENSITIV  |  | HIGH   |
|---|---|---|---|--|--|
|   |   |   |   |  | the edge of/on the<br>approaches to the<br>settlements                         |
| Condition /Quality of<br>the Settlement Edge                | Harsh, abrupt and<br>unfiltered<br>settlement edge. | Occasional filtered<br>edge but<br>predominantly<br>abrupt. | Variable edge,<br>some historic but<br>modern larger<br>scale also evident. | Variable edge, some<br>modern influence but<br>predominantly well<br>filtered into<br>landscape. | Soft porous settlement<br>edge filtered into<br>historic landscape<br>pattern. |
| Contribution to<br>physical/visual<br>Settlement Separation | No separation<br>function                           | Provides a partial separation                               | Provides some of a wider area of separation                                 | Important contribution<br>to separation  | Provides the entire<br>extent of the<br>settlement separation                  |
| Overall Landscape<br>Character Sensitivity                  | Low   | Low-Moderate  | Moderate  | Moderate-High  | High   |

#### LG LCA 4 LANDSCAPE CHARACTER SENSITIVITY: MODERATE COMPARISON TO ADUR LANDSCAPE STUDIES: 2012: MEDIUM-LOW

2016: MEDIUM

VISUAL SENSITIVITY: The area is visible from the Shoreham Tollbridge, from the A27 and from the Downs Link footpath in close public views, with many receptors of high and medium and low sensitivity. It is also partly visible in elevated views from the Downs although the structures of the elevated interchange intrude in the foreground.

| VISUAL SENSITIVITY<br>CRITERIA | LOW   |  | DEGREE OF SENSITIVIT   | Y   | HIGH  |
|--------------------------------|---|--|--|---|---|
| General Visibility             | The area is well<br>contained by<br>existing features-<br>buildings, trees,<br>landform. Low level<br>of visibility   | Occasional views<br>of/across the area<br>where gaps in<br>existing features<br>allow. Low-<br>moderate level of<br>visibility   | Some visibility<br>of/across the area<br>from the surrounding<br>landscape. Moderate<br>level of visibility  | The area is a<br>component of wider,<br>longer landscape<br>views of/across the<br>area. Moderate-high<br>level of visibility   | Extensive views<br>of/across the area.<br>The area is a major<br>component of wider<br>landscape views.<br>High level of visibility   |
| Views and<br>Landmarks         | No views of natural<br>and built<br>landmarks,<br>Cluttered skyline<br>character.   | Limited, partial<br>views of natural<br>/built landmarks but<br>there may also be a<br>relatively developed<br>cluttered skyline | Area from which<br>there are some wider<br>views containing<br>natural/built<br>landmarks, but<br>there may also be<br>some intrusive<br>elements. | Some important views<br>to the wider landscape<br>and of natural/built<br>landmarks are<br>available, and any<br>more intrusive<br>elements are not<br>particularly prominent | Distinctive panoramic<br>views, including<br>prominent natural<br>/built landmarks,<br>and/or major<br>gateway views<br>available from/<br>across the area.                                     |
| Visual Receptors               | Public views are<br>experienced by a<br>small number of<br>public receptors or<br>by a larger of<br>receptors with a<br>passing interest in<br>their visual<br>environment (e.g.<br>motorists on local<br>transport routes) | Occasional public<br>views from PROW<br>routes and local<br>transport routes.  | Some public views for<br>visitors and from<br>PROWs. Some<br>visibility from<br>transport routes.  | Frequent public views<br>for visitors enjoying the<br>landscape and from<br>PRoWs.  | Public views are<br>experienced by a high<br>number of visitors to<br>the landscape and/or<br>from long distance or<br>locally important<br>PRoW. Visibility from<br>major transport<br>routes. |
| Overall Visual<br>Sensitivity  | Low   | Low-Moderate   | Moderate   | Moderate-High   | High  |

# TABLE 4B: VISUAL SENSITIVITY CRITERIA

LG LCA4 VISUAL SENSITIVITY: MODERATE-HIGH COMPARISON TO ADUR LANDSCAPE STUDIES: 2012: MEDIUM-LOW 2016: MEDIUM-HIGH

### TABLE 4C: LANDSCAPE SENSITIVITY

|  | High          | High               | High           | High          | High           | High |  |  |
|--|---------------|--------------------|----------------|---------------|----------------|------|--|--|
| 揭頩┝                                      | Moderate-High | Moderate-High      | Moderate -High | Moderate-High | Moderate -High | High |  |  |
| RAC<br>SITIV                             | Moderate      | Moderate           | Moderate       | Moderate      | Moderate -High | High |  |  |
| N SE | Low-Moderate  | Low-Moderate       | Low-Moderate   | Moderate      | Moderate-High  | High |  |  |
|  | Low           | Low                | Low -Moderate  | Moderate      | Moderate-High  | High |  |  |
| •  |               | Low                | Low-Moderate   | Moderate      | Moderate-High  | High |  |  |
|  |               | VISUAL SENSITIVITY |                |               |                |      |  |  |

LG LCA 4 LANDSCAPE SENSITIVITY: MODERATE-HIGH COMPARISON TO ADUR LANDSCAPE STUDIES 2012: MEDIUM-LOW

#### 2016: MEDIUM-HIGH

LANDSCAPE VALUE: The area has conservation interests which confer landscape value, both wildlife and historic (the statutory designations of the estuary SSSI, the listed structure of the Toll Bridge, and Old Shoreham Conservation Area adjoining). There is also a strong sense of place provided by the estuary landscape but the area is not tranquil. Overall it is considered to be of moderate value.

#### TABLE 4D: LANDSCAPE VALUE CRITERIA

| LANDSCAPE VALUE<br>CRITERIA  | LOW   |   | DEGREE OF SENSITIVIT  | Y  | HIGH  |
|--|---|---|---|--|---|
| Perceptual<br>aspects/qualities<br>(e.g. scenic beauty,<br>sense of place,<br>tranquillity, wildness,<br>rurality)   | Not tranquil, much<br>human activity.<br>Lack of a<br>distinctive sense of<br>place or scenic<br>beauty | Limited tranquillity,<br>with significant<br>human detractors<br>from rural/natural<br>qualities. Limited<br>perception of a<br>sense of place.     | Some human<br>activity, affecting<br>tranquillity and/or<br>some features that<br>contribute to a sense<br>of place                                       | Relatively tranquil<br>and/or<br>a strong sense of<br>place with some<br>scenic features                             | Tranquil and remote<br>in character, natural<br>beauty with few<br>human influences.<br>Very distinctive sense<br>of place. |
| Contribution to the<br>setting of the South<br>Downs National Park   | No contribution.<br>No relationship<br>with the Downs.  | Slight contribution.<br>Limited, distant<br>setting to the South<br>Downs   | Moderate<br>contribution. Middle<br>distance setting to<br>the South Downs  | Moderate-Major<br>contribution. Close<br>distance setting to<br>the South Downs.                                     | Substantial<br>contribution. Close<br>distance setting to<br>the Downs,with<br>boundaries<br>adjoining.                     |
| Conservation interests –<br>presence of features of<br>wildlife, archaeological,<br>historic and cultural<br>interest that can add<br>value to the landscape,<br>as well as having value<br>in their own right | Not present. Lack<br>of local or statutory<br>designations within<br>the area or<br>adjacent.           | Slight contribution<br>from a few<br>undesignated<br>features of interest.<br>Lack of statutory<br>designations within<br>the area or<br>adjoining. | Some features of<br>interest. Some local<br>designations cover<br>the area or are<br>immediately<br>adjacent. Statutory<br>designation in the<br>vicinity | A number of<br>features of interest.<br>Statutory<br>designations and<br>their settings affect<br>parts of the area. | Statutory/Local<br>designations and<br>their settings affect a<br>high proportion of<br>the area.                           |
| Overall Relative<br>Landscape Value  | Low   | Low-Moderate  | Moderate  | Moderate-High  | High  |

# LG LCA 4 LANDSCAPE VALUE: MODERATE-HIGH NOT CONSIDERED IN ADUR LANDSCAPE STUDIES 2012 or 2016

LANDSCAPE CAPACITY: Taking into account the area's moderate landscape character sensitivity, moderate-high visual sensitivity and moderate-high landscape value it is considered this character area has an overall low-negligible landscape capacity to accommodate housing development. The positive key characteristics and qualities of the area are very vulnerable to change, but it is considered there is some limited potential to accommodate

development within a small part of the riverside pasture land which is located between Steyning Road and the River Adur, without significant adverse landscape impacts.

|             | High           | Moderate      | Low-Moderate  | Negligible/Low  | Negligible/Low | Negligible/Low |
|-------------|----------------|---------------|---------------|-----------------|----------------|----------------|
| APE<br>VITY | Moderate- High | Moderate      | Low-Moderate  | Low-Moderate    | Negligible/Low | Negligible/low |
| NDSC        | Moderate       | Moderate-High | Moderate      | Moderate        | Low-Moderate   | Negligible/Low |
| S IA        | Low-Moderate   | Moderate-High | Moderate-High | Moderate        | Low-Moderate   | Low-Moderate   |
|             | Low            | High          | Moderate-High | Moderate        | Moderate       | Low-Moderate   |
|             |                | Low           | Low-Moderate  | Moderate        | Moderate-High  | High           |
|             |                |               |               | LANDSCAPE VALUE |                |                |

TABLE 4E: LANDSCAPE CAPACITY MATRIX

#### LG LCA 4 LANDSCAPE CAPACITY: NEGLIGIBLE/LOW NOT CONSIDERED IN ADUR LANDSCAPE STUDIES 2012 or 2016

# LG LCA 4 MITIGATION ISSUES AND OPPORTUNITIES FOR ENHANCEMENT

- Conserve and enhance intertidal habitats
- Maintain attractive views to the landmark of Old Shoreham Church and ensure a swathe of riverside pasture is retained as open space adjacent to the River Adur and the Conservation Area.
- Any small scale built development should be sited so that it is perceived as closely related to the less sensitive features of existing modern housing development adjoining the area and the elevated road interchange within the northernmost part of the area.

# LG LCA 4 CONTEXT PHOTOGRAPHS





# LG LCA 5 LOWER ADUR MARSHES

#### **KEY CHARACTERISTICS**

- Dynamic wetland landscape of shifting water courses, marsh and mudflats on the lower section of the River Adur; including the inlet to the south east of New Salts Farm.
- Boats, moorings and particularly the string of houseboats along the tidal stretches of the River Adur tributary to the west of the main channel are a highly distinctive local landscape feature.
- Assortment of land uses to north and west of A259, comprising the Adur Recreation Ground, the Outdoor Activities Centre, a BMX track, play area, car park, sheltered by a broad belt of conifers- on land reclaimed from the Adur Estuary following the construction of flood embankments.
- Long views along the river corridor, with the railway bridge to the north and the Adur ferry Bridge (pedestrian) to the south. The A259 crosses the River Adur in the centre of the area, enabling views to the north and south along the river corridor.
- The tower of the Ropetackle Arts Centre and the tower of St Mary's de Haura Church are local landmarks in Shoreham on the east bank of the river.
- The river and associated wetlands are a unifying feature in an area with a mix of surrounding urban and recreational land uses.



LANDSCAPE CHARACTER SENSITIVITY: MODERATE The area's complex wetland/tidal landscape of mudflats, open water and saltmarsh, its strong visual relationship with the historic core of Shoreham (outside the LCA) and its contribution to the landscape setting of Shoreham, combined with its fair condition, some urban influences and its limited settlement separation function points to an overall moderate landscape character sensitivity.

| LANDSCAPE<br>CHARACTER<br>SENSITIVITY CRITERIA                               | LOW DEGREE OF SENSITIVITY   |  |  |   | HIGH   |
|--|---|--|--|---|--|
| Topography/<br>Landform  | Simple, large scale<br>predominantly flat.  | Simple, large to<br>medium scale,<br>predominantly flat<br>to mildly undulating.                 | Occasional variety<br>but lacking strong<br>complexity.  | Complex<br>topographical<br>variation.  | Very complex with<br>strong topographical<br>variety.  |
| Landscape<br>scale/pattern   | Simple large scale<br>pattern, and/or very<br>fragmented,<br>disturbed land<br>cover. | Largely simple, with<br>some disturbance,<br>or mostly<br>fragmented land<br>cover and land use. | Some variety. Limited<br>disturbance, A<br>degree of consistency<br>in pattern of land use<br>and cover. | Varied pattern with<br>some intricacy.<br>Largely undisturbed<br>and coherent land<br>cover. Some historic<br>land use pattern. | Intricate, varied<br>pattern, undisturbed,<br>consistent patterns of<br>land cover and historic<br>layout.                         |
| Landscape Condition/<br>Intactness   | Poor  | Poor to Fair   | Fair   | Good  | Very good  |
| Character contribution<br>to the landscape<br>setting of the<br>settlements. | No contribution, i.e.<br>no identifiable<br>landscape setting                         | Partial/minor<br>contribution from<br>landscape<br>features/green<br>spaces.                     | Moderate<br>contribution from<br>landscape features<br>and green spaces.                                 | Important<br>contribution from<br>landscape features<br>and green spaces.   | Substantial<br>contribution to setting<br>from very distinctive<br>landscape features<br>and green spaces at<br>the edge of/on the |

#### TABLE 5A: LANDSCAPE CHARACTER SENSITIVITY CRITERIA

Comparative Landscape Sensitivity and Capacity Assessment of the Proposed Local Green Gap on behalf of Hyde New Homes David Huskisson Associates – April 2016

| LANDSCAPE<br>CHARACTER<br>SENSITIVITY CRITERIA               | LOW   |   | DEGREE OF SENSITIVIT  | Y  | HIGH   |
|--|---|---|---|--|--|
|  |   |   |   |  | approaches to the settlements  |
| Condition /Quality of<br>the Settlement Edge                 | Harsh, abrupt and<br>unfiltered settlement<br>edge. | Occasional filtered<br>edge but<br>predominantly<br>abrupt. | Variable edge, some<br>historic but modern<br>larger scale also<br>evident. | Variable edge, some<br>modern influence but<br>predominantly well<br>filtered into<br>landscape. | Soft porous settlement<br>edge filtered into<br>historic landscape<br>pattern. |
| Contribution to<br>physical/ visual<br>Settlement Separation | No separation<br>function                           | Provides a partial separation                               | Provides some of a<br>wider area of<br>separation                           | Important<br>contribution to<br>separation   | Provides the entire<br>extent of the settlement<br>separation                  |
| Overall Landscape<br>Character Sensitivity                   | Low   | Low-Moderate  | Moderate  | Moderate-High  | High   |

#### LG LCA 5 LANDSCAPE CHARACTER SENSITIVITY: MODERATE COMPARISON TO ADUR LANDSCAPE STUDIES: 2012: LOW 2016: MEDIUM-HIGH

VISUAL SENSITIVITY: MODERATE-HIGH The area is highly visible from the A259, from the bridges and from the riverside footpaths with many receptors of low, medium and high sensitivity. There is also one Public Rights of Way adjoining the area at its western boundary. It is however much less visible in views from the Downs.

| VISUAL SENSITIVITY<br>CRITERIA | LOW  | DEG  |   | HIGH  |  |
|--------------------------------|--|--|---|---|--|
| General Visibility             | The area is well<br>contained by existing<br>features- buildings,<br>trees, landform. Low<br>level of visibility   | Occasional views<br>of/across the area<br>where gaps in<br>existing features<br>allow. Low-moderate<br>level of visibility       | Some visibility<br>of/across the area<br>from the surrounding<br>landscape. Moderate<br>level of visibility.  | The area is a<br>component of wider,<br>longer landscape<br>views of/across the<br>area. Moderate-high<br>level of visibility   | Extensive views<br>of/across the area.<br>The area is a major<br>component of wider<br>landscape views.<br>High level of visibility  |
| Views and<br>Landmarks         | No views of natural<br>and built landmarks,<br>Cluttered skyline<br>character.   | Limited, partial views<br>of natural /built<br>landmarks but there<br>may also be a<br>relatively developed<br>cluttered skyline | Area from which<br>there are some wider<br>views containing<br>natural/built<br>landmarks/, but<br>there may also be<br>some intrusive<br>elements. | Some important<br>views to the wider<br>landscape and of<br>natural/built<br>landmarks are<br>available, and any<br>more intrusive<br>elements are not<br>particularly<br>prominent | Distinctive panoramic<br>views, including<br>prominent natural<br>/built landmarks,<br>and/or major<br>gateway views<br>available from/<br>across the area.  |
| Visual Receptors               | Public views are<br>experienced by a small<br>number of public<br>receptors or by a<br>larger of receptors with<br>a passing interest in<br>their visual<br>environment (e.g.<br>motorists on local<br>transport routes) | Occasional public<br>views from PROW<br>routes and local<br>transport routes.  | Some public views for<br>visitors and from<br>PROWs. Some<br>visibility from<br>transport routes.   | Frequent public views<br>for visitors enjoying<br>the landscape and<br>from PRoWs.  | Public views are<br>experienced by a<br>high number of<br>visitors to the<br>landscape and/or<br>from long distance or<br>locally important<br>PRoW. Visibility from<br>major transport<br>routes. |
| Overall Visual<br>Sensitivity  | Low  | Low-Moderate   | Moderate  | Moderate-High   | High   |

# TABLE 5B: VISUAL SENSITIVITY CRITERIA
2016: MEDIUM-HIGH

#### TABLE 5C: LANDSCAPE SENSITIVITY

|                        | High          | High           | High            | High               | High            | High |
|------------------------|---------------|----------------|-----------------|--------------------|-----------------|------|
| 昨眠下                    | Moderate-High | Moderate- High | Moderate - High | Moderate-High      | Moderate - High | High |
| DSCA<br>RACT<br>SITIVI | Moderate      | Moderate       | Moderate        | Moderate           | Moderate - High | High |
| SEN                    | Low-Moderate  | Low-Moderate   | Low-Moderate    | Moderate           | Moderate-High   | High |
|                        | Low           | Low            | Low -Moderate   | Moderate           | Moderate-High   | High |
|                        |               | Low            | Low-Moderate    | Moderate           | Moderate-High   | High |
|                        |               |                |                 | VISUAL SENSITIVITY |                 |      |

# LG LCA 5 LANDSCAPE SENSITIVITY: MODERATE-HIGH

COMPARISON TO ADUR LANDSCAPE STUDIES: 2012: MEDIUM-LOW

2016: MEDIUM-HIGH

LANDSCAPE VALUE: The area has various conservation interests which confer landscape value, in terms of both wildlife and historic value (the statutory designations of the estuary SSSI and the listed building settings). There is also a strong sense of place provided by the estuary landscape.

## TABLE 5D: LANDSCAPE VALUE CRITERIA

| LANDSCAPE VALUE<br>CRITERIA  |  |   | DEGREE OF SENSITIVIT   | r internet i | HIGH  |
|--|--|---|--|--|---|
| Perceptual<br>aspects/qualities<br>(e.g. scenic beauty,<br>sense of place,<br>tranquillity, wildness,<br>rurality)   | Not tranquil, much<br>human activity. Lack<br>of a distinctive sense<br>of place or scenic<br>beauty | Limited tranquillity,<br>with significant<br>human detractors<br>from rural/natural<br>qualities. Limited<br>perception of a sense<br>of place.     | Some human activity,<br>affecting tranquillity<br>and/or some features<br>that contribute to a<br>sense of place                                       | Relatively tranquil<br>and/or<br>a strong sense of place<br>with some scenic<br>features   | Tranquil and remote<br>in character, natural<br>beauty with few<br>human influences.<br>Very distinctive sense<br>of place. |
| Contribution to the<br>setting of the South<br>Downs National Park   | No contribution. No<br>relationship with the<br>Downs.   | Slight contribution.<br>Limited, distant<br>setting to the South<br>Downs   | Moderate contribution.<br>Middle distance setting<br>to the South Downs  | Moderate-Major<br>contribution. Close<br>distance setting to the<br>South Downs.   | Substantial<br>contribution. Close<br>distance setting to<br>the Downs,with<br>boundaries<br>adjoining.                     |
| Conservation<br>interests – presence<br>of features of wildlife,<br>archaeological,<br>historic and cultural<br>interest that can add<br>value to the<br>landscape, as well as<br>having value in their<br>own right | Not present. Lack of<br>local or statutory<br>designations within<br>the area or adjacent.           | Slight contribution<br>from a few<br>undesignated<br>features of interest.<br>Lack of statutory<br>designations within<br>the area or<br>adjoining. | Some features of<br>interest. Some local<br>designations cover the<br>area or are<br>immediately adjacent.<br>Statutory designation<br>in the vicinity | A number of features<br>of interest. Statutory<br>designations and their<br>settings affect parts of<br>the area.  | Statutory/Local<br>designations and<br>their settings affect a<br>high proportion of<br>the area.                           |
| Overall Relative<br>Landscape Value  | Low  | Low-Moderate  | Moderate   | Moderate-High  | High  |

## LG LCA 5 LANDSCAPE VALUE: MODERATE-HIGH NOT CONSIDERED IN ADUR LANDSCAPE STUDIES 2012 or 2016

LANDSCAPE CAPACITY: Taking into account the area's moderate-high landscape character sensitivity, moderatehigh visual sensitivity and moderate landscape value it is considered this character area has a negligible/low landscape capacity to absorb housing development. However, this rating is an overall judgement applicable for the area as a whole. In this case it is considered there could be some limited opportunity to accommodate development, without detrimental landscape effects on the western part of the Adur Recreation Ground, avoiding the vulnerable landscape of the intertidal habitats itself. This could be related to the dense urban development of the historic core of Shoreham opposite.

|            |               | 2014          |               |                | moderale-riigh | , iigii        |
|------------|---------------|---------------|---------------|----------------|----------------|----------------|
|            | F             | low           | I ow-Moderate | Moderate       | Moderate-High  | High           |
|            | Low           | High          | Moderate-High | Moderate       | Moderate       | Low-Moderate   |
| SE IA      | Low-Moderate  | Moderate-High | Moderate-High | Moderate       | Low-Moderate   | Low-Moderate   |
| NDSC       | Moderate      | Moderate-High | Moderate      | Moderate       | Low-Moderate   | Negligible/Low |
| APE<br>117 | Moderate-High | Moderate      | Low-Moderate  | Low-Moderate   | Negligible/Low | Negligible/low |
|            | High          | Moderate      | Low-Moderate  | Negligible/Low | Negligible/Low | Negligible/Low |
|            | High          | Moderate      | Low-Moderate  | Negligible/Low | Negligible/Low | Negligib       |

## Table 5E: Landscape Capacity Matrix

#### LG LCA 5 LANDSCAPE CAPACITY: NEGLIGIBLE-LOW NOT CONSIDERED IN ADUR LANDSCAPE STUDIES 2012 or 2016

## LG LCA 5 MITIGATION ISSUES AND OPPORTUNITIES FOR ENHANCEMENT

- Ensure high quality urban design respecting the historic character of Shoreham
- Retain and enhance a riverside path associated with the Adur Tidal Walls scheme.
- Enhance the public realm and the public realm of the Adur Recreation Ground.

# LG LCA 5 CONTEXT PHOTOGRAPHS



# DHA LG LCA 6A WEST NEW SALTS FARM

## **KEY CHARACTERISTICS**

- Flat, open, medium-large size pasture fields bounded by post and wire fence lines, ditches, and a few fragmented sections of scrubby hedgerow.
- Groups of farm buildings and houses adjoin/front the western side of New Salts Road, partially enclosed by existing tree groups. Narrow gaps between these building groups, but with two fields at the southern end of the road forming a slightly wider gap, close to the roundabout junction with the A259 Brighton Road.
- Abrupt interface with housing and a mobile home park on the southern, western and northern boundaries of the area with South Lancing.
- The landmarks of the airport terminal building, Lancing College Chapel and Lancing Hill appear in some outward views
- Busy urban fringe character with modern housing, roads, a large pub carpark adjoining and telegraph poles/overhead lines crossing the area being noticeable features of many of the views..
- A few historic landscape elements, provided by New Salts Road, marking the alignment of the historic flood embankment constructed in 1793, and a single sinuous watercourse.



LANDSCAPE CHARACTER SENSITIVITY: Given the area has a flat topography, a largely simple, regular field pattern, a mostly abrupt, poor quality settlement edge, and the landscape is judged to be in a poor to fair condition (fairly heavily grazed fields and poor boundary treatments) these factors lower its character sensitivity. In addition, it can only be considered to make a limited contribution, by virtue of the presence of open, undeveloped farmland, to the landscape setting of South Lancing. There is no clear sense of arrival approaching the settlement edge of Lancing from the east provided by any distinctive landscape features, and there is a lack of a relationship between the landscape and the modern settlement pattern at the edges, apart from the indentation of a recreation ground. Any sense of separation between the settlements is also reduced by the presence of urban development along the A259, which projects eastwards into the area on the north side (associated with Adur View) and on the south side forms a continuous strip merging Lancing and Shoreham.

| LANDSCAPE<br>CHARACTER<br>SENSITIVITY CRITERIA |   |  | DEGREE OF SENSITIVIT  | Y   | HIGH  |
|--|---|--|---|---|---|
| Topography/<br>Landform                        | Simple, large scale predominantly flat.   | Simple, large to<br>medium scale,<br>predominantly flat to<br>mildly undulating.                 | Occasional variety<br>but lacking strong<br>complexity.   | Complex<br>topographical<br>variation.  | Very complex with<br>strong<br>topographical<br>variety.  |
| Landscape scale/pattern                        | Simple large scale<br>pattern, and/or very<br>fragmented,<br>disturbed land<br>cover. | Largely simple, with<br>some disturbance, or<br>mostly fragmented<br>land cover and land<br>use. | Some variety.<br>Limited disturbance,<br>A degree of<br>consistency in<br>pattern of land use<br>and cover. | Varied pattern with<br>some intricacy.<br>Largely undisturbed<br>and coherent land<br>cover. Some historic<br>land use pattern. | Intricate, varied<br>pattern,<br>undisturbed,<br>consistent patterns<br>of land cover and<br>historic layout. |
| Landscape Condition/<br>Intactness             | Poor  | Poor to Fair   | Fair  | Good  | Very good   |

# TABLE 6A: LANDSCAPE CHARACTER SENSITIVITY CRITERIA

| LANDSCAPE<br>CHARACTER<br>SENSITIVITY CRITERIA                            | LOW   | C  | DEGREE OF SENSITIVIT  | Y   | HIGH  |
|---|---|--|---|---|---|
| Character contribution<br>to the landscape setting<br>of the settlements. | No contribution, i.e.<br>no identifiable<br>landscape setting | Partial/minor<br>contribution from<br>landscape<br>features/green<br>spaces. | Moderate<br>contribution from<br>landscape features<br>and green spaces.    | Important contribution<br>from landscape<br>features and green<br>spaces.                     | Substantial<br>contribution to<br>setting from very<br>distinctive landscape<br>features and green<br>spaces at the edge<br>of/on the<br>approaches to the<br>settlements |
| Condition /Quality of the Settlement Edge                                 | Harsh, abrupt and<br>unfiltered settlement<br>edge.           | Occasional filtered<br>edge but<br>predominantly<br>abrupt.                  | Variable edge, some<br>historic but modern<br>larger scale also<br>evident. | Variable edge, some<br>modern influence but<br>predominantly well<br>filtered into landscape. | Soft porous<br>settlement edge<br>filtered into historic<br>landscape pattern.  |
| Contribution to physical/<br>visual Settlement<br>Separation              | No separation<br>function                                     | Provides a partial separation  | Provides some of a<br>wider area of<br>separation                           | Important contribution to separation  | Provides the entire<br>extent of the<br>settlement<br>separation  |
| Overall Landscape<br>Character Sensitivity                                | Low   | Low-Moderate   | Moderate  | Moderate-High   | High  |

#### LG LCA 6A LANDSCAPE CHARACTER SENSITIVITY: LOW-MODERATE COMPARISON TO ADUR LANDSCAPE STUDIES (LCA6): 2012: MEDIUM-HIGH 2016: MEDIUM-HIGH

VISUAL SENSITIVITY: MODERATE The area is visible from the A259, from New Salts Farm Road and the railway in close public views, with many receptors of medium-low sensitivity. However, there are no public rights of way crossing the area. The open land of the site can be perceived in the background of some distant views from well used public rights/open access land within the National Park at Lancing Ring and Hoe Court Farm, but in other high sensitivity views from the National Park eg from Mill Hill and Lancing College, and from the Adur riverside (the Downs Link on the east side and the PROW on the west side of the river) the area is either seen to only occupy a very small proportion of the view or is wholly screened by intervening Shoreham Airport buildings, existing vegetation, or by the railway embankment.

| VISUAL SENSITIVITY<br>CRITERIA |  | HIGH   |   |   |   |
|--------------------------------|--|--|---|---|---|
| General Visibility             | The area is well<br>contained by existing<br>features- buildings,<br>trees, landform. Low<br>level of visibility             | Occasional views<br>of/across the area<br>where gaps in<br>existing features<br>allow. Low-moderate<br>level of visibility       | Some visibility<br>of/across the area<br>from the surrounding<br>landscape. Moderate<br>level of visibility.  | The area is a<br>component of wider,<br>longer landscape<br>views of/across the<br>area. Moderate-high<br>level of visibility   | Extensive views<br>of/across the area.<br>The area is a major<br>component of wider<br>landscape views. High<br>level of visibility                         |
| Views and<br>Landmarks         | No views of natural<br>and built landmarks,<br>Cluttered skyline<br>character.   | Limited, partial views<br>of natural /built<br>landmarks but there<br>may also be a<br>relatively developed<br>cluttered skyline | Area from which<br>there are some wider<br>views containing<br>natural/built<br>landmarks/, but<br>there may also be<br>some intrusive<br>elements. | Some important views<br>to the wider landscape<br>and of natural/built<br>landmarks are<br>available, and any<br>more intrusive<br>elements are not<br>particularly prominent | Distinctive panoramic<br>views, including<br>prominent natural<br>/built landmarks,<br>and/or major<br>gateway views<br>available from/ across<br>the area. |
| Visual Receptors               | Public views are<br>experienced by a<br>small number of<br>public receptors or by<br>a larger of receptors<br>with a passing | Occasional public<br>views from PROW<br>routes and local<br>transport routes.  | Some public views for<br>visitors and from<br>PROWs. Some<br>visibility from<br>transport routes.   | Frequent public views<br>for visitors enjoying the<br>landscape and from<br>PRoWs.  | Public views are<br>experienced by a high<br>number of visitors to<br>the landscape and/or<br>from long distance or<br>locally important                    |

# TABLE 6B: VISUAL SENSITIVITY CRITERIA

Comparative Landscape Sensitivity and Capacity Assessment of the Proposed Local Green Gap on behalf of Hyde New Homes David Huskisson Associates – April 2016

| VISUAL SENSITIVITY<br>CRITERIA |  |              | EGREE OF SENSITIVITY |               |   |  |
|--------------------------------|--|--------------|----------------------|---------------|---|--|
|                                | interest in their visual<br>environment (e.g.<br>motorists on local<br>transport routes) |              |                      |               | PRoW. Visibility from<br>major transport<br>routes. |  |
| Overall Visual<br>Sensitivity  | Low  | Low-Moderate | Moderate             | Moderate-High | High  |  |

# LG LCA 6A VISUAL SENSITIVITY: MODERATE COMPARISON TO ADUR LANDSCAPE STUDIES (LCA6) 2012: MEDIUM 2016: MEDIUM-HIGH

# TABLE 6C: LANDSCAPE SENSITIVITY

| ШЩ            | High          | High          | High           | High              | High           | High |
|---------------|---------------|---------------|----------------|-------------------|----------------|------|
| ARAC          | Moderate-High | Moderate-High | Moderate -High | Moderate-High     | Moderate -High | High |
|               | Moderate      | Moderate      | Moderate       | Moderate          | Moderate -High | High |
| IDSCAP<br>SEN | Low-Moderate  | Low-Moderate  | Low-Moderate   | Moderate          | Moderate-High  | High |
| IAN           | Low           | Low           | Low -Moderate  | Moderate          | Moderate-High  | High |
|               |               | Low           | Low-Moderate   | Moderate          | Moderate-High  | High |
|               |               |               | V              | ISUAL SENSITIVITY |                |      |

# LG LCA 6A VISUAL SENSITIVITY: MODERATE

COMPARISON TO ADUR LANDSCAPE STUDIES (LCA6) 2012: MEDIUM-LOW 2016: MEDIUM-HIGH

LANDSCAPE VALUE: There are no ecological or historic conservation designations covering or lying immediately adjacent to this area that might confer landscape value and it has no strong perceptual/aesthetic qualities in terms of scenic beauty/ a sense of place/ tranquillity. Whilst the South Downs National Park boundary lies within approximately 1.5km distance and there is some intervisibility it is considered this character area only makes a limited contribution to the setting of the national park, given its markedly urban/urban fringe context.

## TABLE 6D: LANDSCAPE VALUE CRITERIA

| LANDSCAPE VALUE<br>CRITERIA  |  | DE   | GREE OF SENSITIVITY   |  | HIGH  |
|--|--|--|---|--|---|
| Perceptual<br>aspects/qualities<br>(e.g. scenic beauty,<br>sense of place,<br>tranquillity, wildness,<br>rurality) | Not tranquil, much<br>human activity. Lack<br>of a distinctive sense<br>of place or scenic<br>beauty | Limited tranquillity,<br>with significant human<br>detractors from<br>rural/natural qualities.<br>Limited perception of a<br>sense of place. | Some human<br>activity, affecting<br>tranquillity and/or<br>some features that<br>contribute to a sense<br>of place | Relatively tranquil<br>and/or<br>a strong sense of<br>place with some<br>scenic features | Tranquil and remote<br>in character, natural<br>beauty with few<br>human influences.<br>Very distinctive sense<br>of place. |
| Contribution to the<br>setting of the South<br>Downs National Park   | No contribution. No<br>relationship with the<br>Downs.   | Slight contribution.<br>Limited, distant setting<br>to the South Downs   | Moderate<br>contribution. Middle<br>distance setting to<br>the South Downs  | Moderate-Major<br>contribution. Close<br>distance setting to<br>the South Downs.         | Substantial<br>contribution. Close<br>distance setting to<br>the Downs,with<br>boundaries<br>adjoining.                     |

| LANDSCAPE VALUE<br>CRITERIA  |   | D  | EGREE OF SENSITIVITY  |  | HIGH  |
|--|---|--|---|--|---|
| Conservation interests –<br>presence of features of<br>wildlife, archaeological,<br>historic and cultural<br>interest that can add<br>value to the landscape,<br>as well as having value<br>in their own right | Not present. Lack of<br>local or statutory<br>designations within<br>the area or<br>adjacent. | Slight contribution<br>from a few<br>undesignated features<br>of interest. Lack of<br>statutory designations<br>within the area or<br>adjoining. | Some features of<br>interest. Some local<br>designations cover<br>the area or are<br>immediately<br>adjacent. Statutory<br>designation in the<br>vicinity | A number of<br>features of interest.<br>Statutory<br>designations and<br>their settings affect<br>parts of the area. | Statutory/Local<br>designations and<br>their settings affect a<br>high proportion of<br>the area. |
| Overall Relative<br>Landscape Value  | Low   | Low-Moderate   | Moderate  | Moderate-High  | High  |

#### LG LCA 6A LANDSCAPE VALUE: LOW NOT CONSIDERED IN ADUR LANDSCAPE STUDIES 2012 or 2016

LANDSCAPE CAPACITY: MODERATE-HIGH Taking into account its moderate landscape sensitivity and low landscape value it is considered this character area has a moderate-high landscape capacity to absorb housing development ie scope to accommodate an urban extension without significant adverse landscape effects, assuming appropriate mitigation in terms of the precise location and design of development and associated, appropriate landscape treatments to assist in maintaining /enhancing a sense of separation between Lancing and Shoreham, and to enhance landscape setting.

| _      | High          | Moderate      | Low-Moderate  | Negligible/Low  | Negligible/Low | Negligible/Low |
|--------|---------------|---------------|---------------|-----------------|----------------|----------------|
| DSCAPE | Moderate-High | Moderate      | Low-Moderate  | Low-Moderate    | Negligible/Low | Negligible/low |
|        | Moderate      | Moderate-High | Moderate      | Moderate        | Low-Moderate   | Negligible/Low |
| SEN    | Low-Moderate  | Moderate-High | Moderate-High | Moderate        | Low-Moderate   | Low-Moderate   |
|        | Low           | High          | Moderate-High | Moderate        | Moderate       | Low-Moderate   |
|        |               | Low           | Low-Moderate  | Moderate        | Moderate-High  | High           |
|        |               |               |               | LANDSCAPE VALUE |                |                |

# TABLE 6E: LANDSCAPE CAPACITY MATRIX

## LG LCA 6A LANDSCAPE CAPACITY: MODERATE-HIGH NOT CONSIDERED IN ADUR LANDSCAPE STUDIES 2012 or 2016

# LG LCA 6A MITIGATION ISSUES AND OPPORTUNITIES FOR ENHANCEMENT

- Potential, associated with any new development, to soften and significantly enhance the existing poor quality South Lancing urban edge with robust, strategic buffer planting, located outside private curtilages within open space/ communally managed land, thereby contributing to an enhanced landscape setting to the edge of the settlement in this vicinity.
- Retain corridors of undeveloped open space/ green corridors along the northern site boundary with the railway, between the railway and the A259 (running parallel with New Salts Farm Road), and on the A259 edge itself.
- Consideration should be given to the density and height of built development associated with a new settlement
  edge to assist in providing a transition to the retained Green Gap land to the east and north, whilst also taking
  account of flood constraints and existing heights of development in the vicinity.
- The use of green/blue flat roofs should also be considered to allow increased storey heights whilst minimising overall building heights. This would also assist in visually relating the built development to the retained green gap and the to the sea beyond, as seen in more elevated, longer distance views from the Downs as well as providing biodiversity and SUDS/water management value.
- Retain corridors of undeveloped open space/ green corridors along the northern site boundary with the railway, and between the railway and the A259 (running parallel with New Salts Farm Road)

- Take the opportunity to create recreational access from the existing residential development including footpath and cyclepath routes in green corridors.
- Retain the existing ditch/stream network as part of a comprehensive SUDS and green infrastructure strategy and enhance management for biodiversity.

# LG LCA 6A CONTEXT PHOTOGRAPHS









# DHA LG LCA 6B EAST NEW SALTS FARM

# **KEY CHARACTERISTICS**

- Flat, small-medium size, irregularly shaped, rough pasture fields, bounded by sinuous, marshy streams and ditches, with some muddy scrapes and occasional patches of scrubby hedgerow.
- Fairly open, exposed edge of estuary character
- A small cluster of buildings and a car parking area, associated with the Shoreham Dogs Trust, is located at the eastern boundary.
- The landmarks of the Shoreham Airport terminal building, Lancing College Chapel and Lancing Hill are fairly prominent in outward views from the area looking northwards.
- Busy urban fringe character associated with the southern edge of the area, along the A259 Brighton Road, where a large roundabout is also located and an abrupt housing and commercial edge adjoins this road (outside the LCA)
- Historic landscape character of the area is mostly intact, associated with its irregular field pattern and watercourses



LANDSCAPE CHARACTER SENSITIVITY: The mostly intact historic character, foreground setting to the listed terminal building, attractive sinuous streams, the contribution of open 'wild' and undeveloped land to the approach to and setting of Shoreham are all factors that point to a higher landscape character sensitivity, despite the presence of some urban fringe influences and the areas' generally only fair condition.

| LANDSCAPE<br>CHARACTER<br>SENSITIVITY CRITERIA                               |   | DEGREE OF SENSITIVITY  |  |   |  |
|--|---|--|--|---|--|
| Topography/<br>Landform  | Simple, large scale predominantly flat.   | Simple, large to<br>medium scale,<br>predominantly flat to<br>mildly undulating.                 | Occasional variety<br>but lacking strong<br>complexity.  | Complex<br>topographical<br>variation.  | Very complex with<br>strong topographical<br>variety.  |
| Landscape<br>scale/pattern   | Simple large scale<br>pattern, and/or very<br>fragmented,<br>disturbed land<br>cover. | Largely simple, with<br>some disturbance, or<br>mostly fragmented<br>land cover and land<br>use. | Some variety. Limited<br>disturbance, A degree<br>of consistency in<br>pattern of land use<br>and cover. | Varied pattern with<br>some intricacy.<br>Largely undisturbed<br>and coherent land<br>cover. Some historic<br>land use pattern. | Intricate, varied<br>pattern, undisturbed,<br>consistent patterns of<br>land cover and<br>historic layout.   |
| Landscape Condition/<br>Intactness   | Poor  | Poor to Fair   | Fair   | Good  | Very good  |
| Character contribution<br>to the landscape<br>setting of the<br>settlements. | No contribution, i.e.<br>no identifiable<br>landscape setting                         | Partial/minor<br>contribution from<br>landscape<br>features/green<br>spaces.                     | Moderate<br>contribution from<br>landscape features<br>and green spaces.                                 | Important<br>contribution from<br>landscape features<br>and green spaces.   | Substantial<br>contribution to setting<br>from very distinctive<br>landscape features<br>and green spaces at<br>the edge of/on the<br>approaches to the<br>settlements |

# TABLE 6AA: LANDSCAPE CHARACTER SENSITIVITY CRITERIA

| LANDSCAPE<br>CHARACTER<br>SENSITIVITY CRITERIA               |   | DE  | GREE OF SENSITIVITY   |  | HIGH   |
|--|---|---|---|--|--|
| Condition /Quality of<br>the Settlement Edge                 | Harsh, abrupt and<br>unfiltered settlement<br>edge. | Occasional filtered<br>edge but<br>predominantly<br>abrupt. | Variable edge, some<br>historic but modern<br>larger scale also<br>evident. | Variable edge, some<br>modern influence but<br>predominantly well<br>filtered into<br>landscape. | Soft porous settlement<br>edge filtered into<br>historic landscape<br>pattern. |
| Contribution to<br>physical/ visual<br>Settlement Separation | No separation<br>function                           | Provides a partial separation                               | Provides some of a wider area of separation                                 | Important<br>contribution to<br>separation   | Provides the entire<br>extent of the<br>settlement separation                  |
| Overall Landscape<br>Character Sensitivity                   | Low   | Low-Moderate  | Moderate  | Moderate-High  | High   |

## LG LCA 6B LANDSCAPE CHARACTER SENSITIVITY: MODERATE-HIGH COMPARISON TO ADUR LANDSCAPE STUDIES: 2012: MEDIUM-HIGH

2016: MEDIUM-HIGH

VISUAL SENSITIVITY: The area is visible from the A259, from New Salts Farm Road and the railway in close public views, with many receptors of medium-low sensitivity. There is one Public Rights of Way adjoining the area at its eastern boundary. The open land of the site can be perceived in the background of some distant views from well used public rights/open access land within the National Park on the higher land of Mill Hill, from Lancing Ring and from Hoe Court Farm, but in other high sensitivity views from the National Park e.g. from the lower land of Mill Hill and Lancing College, and from the Adur riverside (the Downs Link on the east side and the PROW on the west side of the river) the area is either only seen to occupy a very small proportion of the view or is wholly screened by intervening Shoreham Airport buildings, existing vegetation, or by the railway embankment. There are some views in which the landmarks of Lancing College and the airport terminal building are relatively prominent.

| VISUAL<br>SENSITIVITY<br>CRITERIA |   | D  | EGREE OF SENSITIVITY   |   | HIGH   |
|-----------------------------------|---|--|--|---|--|
| General Visibility                | The area is well<br>contained by existing<br>features- buildings,<br>trees, landform. Low<br>level of visibility  | Occasional views<br>of/across the area<br>where gaps in existing<br>features allow. Low-<br>moderate level of<br>visibility      | Some visibility<br>of/across the area<br>from the surrounding<br>landscape. Moderate<br>level of visibility.                                       | The area is a<br>component of wider,<br>longer landscape<br>views of/across the<br>area. Moderate-high<br>level of visibility   | Extensive views<br>of/across the area. The<br>area is a major<br>component of wider<br>landscape views. High<br>level of visibility  |
| Views and<br>Landmarks            | No views of natural and<br>built landmarks,<br>Cluttered skyline<br>character.  | Limited, partial views<br>of natural /built<br>landmarks but there<br>may also be a<br>relatively developed<br>cluttered skyline | Area from which there<br>are some wider views<br>containing<br>natural/built<br>landmarks, but<br>there may also be<br>some intrusive<br>elements. | Some important<br>views to the wider<br>landscape and of<br>natural/built<br>landmarks are<br>available, and any<br>more intrusive<br>elements are not<br>particularly<br>prominent | Distinctive panoramic<br>views, including<br>prominent natural<br>/built landmarks,<br>and/or major gateway<br>views available from/<br>across the area.                                     |
| Visual Receptors                  | Public views are<br>experienced by a small<br>number of public<br>receptors or by a larger<br>of receptors with a<br>passing interest in their<br>visual environment (e.g.<br>motorists on local<br>transport routes) | Occasional public<br>views from PROW<br>routes and local<br>transport routes.  | Some public views for<br>visitors and from<br>PROWs. Some<br>visibility from<br>transport routes.  | Frequent public<br>views for visitors<br>enjoying the<br>landscape and from<br>PRoWs.   | Public views are<br>experienced by a high<br>number of visitors to<br>the landscape and/or<br>from long distance or<br>locally important<br>PRoW. Visibility from<br>major transport routes. |
| Overall Visual<br>Sensitivity     | Low   | Low-Moderate   | Moderate   | Moderate-High   | High   |

TABLE 6BB: VISUAL SENSITIVITY CRITERIA

### LG LCA 6B VISUAL SENSITIVITY: MODERATE COMPARISON TO ADUR LANDSCAPE STUDIES: 2012: MEDIUM

2016: MEDIUM-HIGH

| ж.     | High          | High               | High           | High          | High           | High |  |  |
|--------|---------------|--------------------|----------------|---------------|----------------|------|--|--|
| RACTI  | Moderate-High | Moderate-High      | Moderate -High | Moderate-High | Moderate -High | High |  |  |
| CHA    | Moderate      | Moderate           | Moderate       | Moderate      | Moderate -High | High |  |  |
| DSCAPE | Low-Moderate  | Low-Moderate       | Low-Moderate   | Moderate      | Moderate-High  | High |  |  |
| SK SK  | Low           | Low                | Low -Moderate  | Moderate      | Moderate-High  | High |  |  |
|        |               | Low                | Low-Moderate   | Moderate      | Moderate-High  | High |  |  |
|        |               | VISUAL SENSITIVITY |                |               |                |      |  |  |

#### TABLE 6CC: LANDSCAPE SENSITIVITY

#### LG LCA 6B LANDSCAPE SENSITIVITY: MODERATE- HIGH COMPARISON TO ADUR LANDSCAPE STUDIES: 2012: MEDIUM-LOW 2016: MEDIUM-HIGH

LANDSCAPE VALUE: The area has some conservation interest which confers landscape value, in terms of the wildlife interest of its marshy watercourses and scrapes, and in terms of the listed airport terminal building lying close to its northern boundary. Whist it is not tranquil and it only provides a limited, distant setting to the Downs some distinctive sense of place can be appreciated from its edge of estuary, untamed semi-wild character and overall it is considered to be of moderate landscape value.

| LANDSCAPE VALUE<br>CRITERIA  |  |  | EGREE OF SENSITIVIT   | r 📥   | HIGH  |
|--|--|--|---|---|---|
| Perceptual<br>aspects/qualities<br>(e.g. scenic beauty,<br>sense of place,<br>tranquillity, wildness,<br>rurality)   | Not tranquil, much<br>human activity. Lack<br>of a distinctive sense<br>of place or scenic<br>beauty | Limited tranquillity,<br>with significant human<br>detractors from<br>rural/natural qualities.<br>Limited perception of<br>a sense of place.     | Some human activity,<br>affecting tranquillity<br>and/or some<br>features that<br>contribute to a sense<br>of place                                       | Relatively tranquil<br>and/or<br>a strong sense of<br>place with some<br>scenic features                          | Tranquil and remote<br>in character, natural<br>beauty with few<br>human influences.<br>Very distinctive sense<br>of place. |
| Contribution to the<br>setting of the South<br>Downs National Park   | No contribution. No<br>relationship with the<br>Downs.   | Slight contribution.<br>Limited, distant setting<br>to the South Downs   | Moderate<br>contribution. Middle<br>distance setting to the<br>South Downs  | Moderate-Major<br>contribution. Close<br>distance setting to the<br>South Downs.                                  | Substantial<br>contribution. Close<br>distance setting to the<br>Downs,with<br>boundaries<br>adjoining.                     |
| Conservation interests –<br>presence of features of<br>wildlife, archaeological,<br>historic and cultural<br>interest that can add<br>value to the landscape,<br>as well as having value<br>in their own right | Not present. Lack of<br>local or statutory<br>designations within<br>the area or<br>adjacent.        | Slight contribution<br>from a few<br>undesignated features<br>of interest. Lack of<br>statutory designations<br>within the area or<br>adjoining. | Some features of<br>interest. Some local<br>designations cover<br>the area or are<br>immediately<br>adjacent. Statutory<br>designation in the<br>vicinity | A number of features<br>of interest. Statutory<br>designations and<br>their settings affect<br>parts of the area. | Statutory/Local<br>designations and<br>their settings affect a<br>high proportion of<br>the area.                           |
| Overall Relative<br>Landscape Value  | Low  | Low-Moderate   | Moderate  | Moderate-High   | High  |

## TABLE 6DD: LANDSCAPE VALUE CRITERIA

#### LG LCA 6B LANDSCAPE VALUE: MODERATE NOT CONSIDERED IN ADUR LANDSCAPE STUDIES 2012 or 2016

LANDSCAPE CAPACITY: Taking into account its moderate-high landscape character sensitivity, moderate visual sensitivity and moderate landscape value it is considered this character area has a low-moderate landscape capacity to absorb housing development. Whilst this could suggest some limited opportunities to accommodate development it is considered, in this case that there is a very high risk any development could result in significant adverse landscape effects on historic landscape character and the landscape setting the area's landscape features provide on a key approach to the settlement of Shoreham. The greater landscape sensitivities and lower landscape capacity of this area is in marked contrast to the moderate-high landscape capacity of LCA6a to the east.

|            |               | LANDSCAPE VALUE |               |                |                |                |  |
|------------|---------------|-----------------|---------------|----------------|----------------|----------------|--|
|            | -             | Low             | Low-Moderate  | Moderate       | Moderate-High  | High           |  |
| <b>I I</b> | Low           | High            | Moderate-High | Moderate       | Moderate       | Low-Moderate   |  |
|            | Low-Moderate  | ModerateHigh    | Moderate-High | Moderate       | Low-Moderate   | Low-Moderate   |  |
| APE SE     | Moderate      | Moderate-High   | Moderate      | Moderate       | Low-Moderate   | Negligible/Low |  |
| NIISN      | Moderate-High | Moderate        | Low-Moderate  | Low-Moderate   | Negligible/Low | Negligible/low |  |
|            | High          | Moderate        | Low-Moderate  | Negligible/Low | Negligible/Low | Negligible/Low |  |
|            |               |                 |               |                | 1              | 1              |  |

#### TABLE 6EE: LANDSCAPE CAPACITY MATRIX

LG LCA 6B LANDSCAPE CAPACITY: LOW-MODERATE NOT CONSIDERED IN ADUR LANDSCAPE STUDIES 2012 or 2016

## LG LCA 6B MITIGATION ISSUES AND OPPORTUNITIES FOR ENHANCEMENT

- Potential to provide a soft hedgerow boundary to the A259
- Potential for appropriate grazing management of the wet pastures
- Take the opportunity to enhance recreational access into the area
- Retain the existing ditch/stream network and enhance management for biodiversity

# LG LCA 6B CONTEXT PHOTOGRAPHS





# LG LCA 7 HASLER FRINGE

# **KEY CHARACTERISTICS**

- Flat, open, medium size, regular and irregular pasture fields with an unkempt character in the north; areas to the south and west are enclosed by dense scrub and regenerating woodland and appears to be well wooded.
- Sinuous tributary stream/ditch forms a historic field boundary
- Textured, transitional quality with a random, natural mosaic of patchy scrub, reedy woodland in the south west, with a more ordered open pattern in the north east.
- Strong urban fringe influences-skyline is cluttered with signs and telegraph poles and a stark interface with the Hasler estate to the south and east- dead end roads at the edge of the fields bounded by chain link fencing.



LANDSCAPE CHARACTER SENSITIVITY: LOW-MODERATE The strong urban fringe influences considerably lower the area's landscape character sensitivity. However, the woodland, scrub and wetland mosaic in the south west of the area is sensitive and makes some contribution to the landscape setting of Lancing, so the area is considered to be of overall low-moderate landscape character sensitivity.

| LANDSCAPE<br>CHARACTER<br>SENSITIVITY  | LOW  |  | DEGREE OF SENSITIVITY  |   | HIGH   |
|--|--|--|--|---|--|
| CRITERIA   |  |  | 1  | Γ   | Γ  |
| Topography/<br>Landform  | Simple, large scale<br>predominantly flat.   | Simple, large to<br>medium scale,<br>predominantly flat to<br>mildly undulating.                 | Occasional variety but<br>lacking strong<br>complexity.  | Complex<br>topographical<br>variation.  | Very complex with<br>strong topographical<br>variety.  |
| Landscape<br>scale/pattern   | Simple large scale<br>pattern, and/or very<br>fragmented, disturbed<br>land cover. | Largely simple, with<br>some disturbance, or<br>mostly fragmented<br>land cover and land<br>use. | Some variety. Limited<br>disturbance, A degree<br>of consistency in<br>pattern of land use<br>and cover. | Varied pattern with<br>some intricacy.<br>Largely undisturbed<br>and coherent land<br>cover. Some historic<br>land use pattern. | Intricate, varied<br>pattern, undisturbed,<br>consistent patterns of<br>land cover and<br>historic layout.   |
| Landscape<br>Condition/<br>Intactness  | Poor   | Poor to Fair   | Fair   | Good  | Very good  |
| Character<br>contribution to the<br>landscape setting of<br>the settlements. | No contribution, i.e.<br>no identifiable<br>landscape setting                      | Partial/minor<br>contribution from<br>landscape<br>features/green<br>spaces.                     | Moderate contribution<br>from landscape<br>features and green<br>spaces.                                 | Important contribution<br>from landscape<br>features and green<br>spaces.   | Substantial<br>contribution to setting<br>from very distinctive<br>landscape features<br>and green spaces at<br>the edge of/on the<br>approaches to the<br>settlements |
| Condition /Quality<br>of the Settlement<br>Edge                              | Harsh, abrupt and<br>unfiltered settlement<br>edge.                                | Occasional filtered<br>edge but<br>predominantly<br>abrupt.                                      | Variable edge, some<br>historic but modern<br>larger scale also<br>evident.                              | Variable edge, some<br>modern influence but<br>predominantly well<br>filtered into<br>landscape.                                | Soft porous settlement<br>edge filtered into<br>historic landscape<br>pattern.   |

# TABLE 7A: LANDSCAPE CHARACTER SENSITIVITY CRITERIA

| LANDSCAPE<br>CHARACTER<br>SENSITIVITY<br>CRITERIA               |                           |                               | DEGREE OF SENSITIVITY                             |   | HIGH  |
|---|---------------------------|-------------------------------|---|---|---|
| Contribution to<br>physical/ visual<br>Settlement<br>Separation | No separation<br>function | Provides a partial separation | Provides some of a<br>wider area of<br>separation | Important contribution<br>to separation | Provides the entire<br>extent of the<br>settlement separation |
| Overall Landscape<br>Character Sensitivity                      | Low                       | Low-Moderate                  | Moderate  | Moderate-High                           | High  |

#### LG LCA 7 LANDSCAPE CHARACTER SENSITIVITY: LOW-MODERATE COMPARISON TO ADUR LANDSCAPE STUDIES: 2012: MEDIUM

2016: MEDIUM

VISUAL SENSITIVITY: The area is not publically accessible, with no PROWs crossing the area. There are glimpsed views from the railway. Generally, the area has a fairly enclosed character although it is visible in some distant views from the Downs- Lancing Ring, Hoe Court Farm, and Mill Hill. However, the land is perceived in the background of these views. At the northern edge there some views outwards to Lancing Chapel and the Downs.

## TABLE 7B: VISUAL SENSITIVITY CRITERIA

| VISUAL SENSITIVITY<br>CRITERIA |   | DEGREE OF SENSITIVITY HIGH   |  |   |  |  |
|--------------------------------|---|--|--|---|--|--|
| General Visibility             | The area is well<br>contained by existing<br>features- buildings,<br>trees, landform. Low<br>level of visibility  | Occasional views<br>of/across the area<br>where gaps in<br>existing features<br>allow. Low-<br>moderate level of<br>visibility   | Some visibility<br>of/across the area<br>from the<br>surrounding<br>landscape.<br>Moderate level of<br>visibility.                                     | The area is a<br>component of wider,<br>longer landscape<br>views of/across the<br>area. Moderate-high<br>level of visibility   | Extensive views<br>of/across the area.<br>The area is a major<br>component of wider<br>landscape views.<br>High level of visibility  |  |
| Views and<br>Landmarks         | No views of natural<br>and built landmarks,<br>Cluttered skyline<br>character.  | Limited, partial views<br>of natural /built<br>landmarks but there<br>may also be a<br>relatively developed<br>cluttered skyline | Area from which<br>there are some<br>wider views<br>containing<br>natural/built<br>landmarks/, but<br>there may also be<br>some intrusive<br>elements. | Some important<br>views to the wider<br>landscape and of<br>natural/built<br>landmarks are<br>available, and any<br>more intrusive<br>elements are not<br>particularly<br>prominent | Distinctive<br>panoramic views,<br>including prominent<br>natural /built<br>landmarks, and/or<br>major gateway views<br>available from/<br>across the area.  |  |
| Visual Receptors               | Public views are<br>experienced by a<br>small number of<br>public receptors or<br>by a larger of<br>receptors with a<br>passing interest in<br>their visual<br>environment (e.g.<br>motorists on local<br>transport routes) | Occasional public<br>views from PROW<br>routes and local<br>transport routes.  | Some public views<br>for visitors and from<br>PROWs. Some<br>visibility from<br>transport routes.  | Frequent public<br>views for visitors<br>enjoying the<br>landscape and from<br>PRoWs.   | Public views are<br>experienced by a<br>high number of<br>visitors to the<br>landscape and/or<br>from long distance<br>or locally important<br>PRoW. Visibility from<br>major transport<br>routes. |  |
| Overall Visual<br>Sensitivity  | Low   | Low-Moderate   | Moderate   | Moderate-High   | High   |  |

### LG LCA7 VISUAL SENSITIVITY: LOW-MODERATE COMPARISON TO ADUR LANDSCAPE STUDIES: 2012: MEDIUM-LOW 2016: MEDIUM-LOW

# TABLE 7C: LANDSCAPE SENSITIVITY

| ж                  | High          | High               | High           | High          | High           | High |  |  |  |
|--------------------|---------------|--------------------|----------------|---------------|----------------|------|--|--|--|
| ARACTI<br>IY       | Moderate-High | Moderate-High      | Moderate -High | Moderate-High | Moderate -High | High |  |  |  |
| RE CH/<br>ASITIVIT | Moderate      | Moderate           | Moderate       | Moderate      | Moderate -High | High |  |  |  |
| IDSCA<br>SED       | Low-Moderate  | Low-Moderate       | Low-Moderate   | Moderate      | Moderate-High  | High |  |  |  |
| <b>₹</b>           | Low           | Low                | Low -Moderate  | Moderate      | Moderate-High  | High |  |  |  |
| •                  |               | Low                | Low-Moderate   | Moderate      | Moderate-High  | High |  |  |  |
|                    |               | VISUAL SENSITIVITY |                |               |                |      |  |  |  |

## LG LCA7 LANDSCAPE SENSITIVITY: LOW-MODERATE COMPARISON TO ADUR LANDSCAPE STUDIES: 2012: MEDIUM 2016: MEDIUM

LANDSCAPE VALUE: There are no ecological or historic conservation designations covering or lying immediately adjacent to this area that might confer landscape value and it has no strong perceptual/aesthetic qualities in terms of scenic beauty/ a sense of place/ tranquillity. Whilst the South Downs National Park boundary lies within approximately 1.5km distance and there is some intervisibility it is considered this character area only makes a limited contribution to the setting of the national park.

| LANDSCAPE VALUE<br>CRITERIA  |  | D  | EGREE OF SENSITIVITY  |  | HIGH  |
|--|--|--|---|--|---|
| Perceptual<br>aspects/qualities<br>(e.g. scenic beauty,<br>sense of place,<br>tranquillity, wildness,<br>rurality)   | Not tranquil, much<br>human activity. Lack<br>of a distinctive sense<br>of place or scenic<br>beauty | Limited tranquillity,<br>with significant human<br>detractors from<br>rural/natural qualities.<br>Limited perception of a<br>sense of place.     | Some human activity,<br>affecting tranquillity<br>and/or some features<br>that contribute to a<br>sense of place  | Relatively tranquil<br>and/or<br>a strong sense of<br>place with some<br>scenic features                             | Tranquil and remote<br>in character, natural<br>beauty with few<br>human influences.<br>Very distinctive sense<br>of place. |
| Contribution to the<br>setting of the South<br>Downs National Park   | No contribution. No<br>relationship with the<br>Downs.   | Slight contribution.<br>Limited, distant setting<br>to the South Downs   | Moderate<br>contribution. Middle<br>distance setting to the<br>South Downs  | Moderate-Major<br>contribution. Close<br>distance setting to<br>the South Downs.                                     | Substantial<br>contribution. Close<br>distance setting to the<br>Downs,with<br>boundaries<br>adjoining.                     |
| Conservation interests –<br>presence of features of<br>wildlife, archaeological,<br>historic and cultural<br>interest that can add<br>value to the landscape,<br>as well as having value<br>in their own right | Not present. Lack of<br>local or statutory<br>designations within<br>the area or<br>adjacent.        | Slight contribution<br>from a few<br>undesignated features<br>of interest. Lack of<br>statutory designations<br>within the area or<br>adjoining. | Some features of<br>interest. Some local<br>designations cover<br>the area or are<br>immediately<br>adjacent. Statutory<br>designation in the<br>vicinity | A number of<br>features of interest.<br>Statutory<br>designations and<br>their settings affect<br>parts of the area. | Statutory/Local<br>designations and<br>their settings affect a<br>high proportion of<br>the area.                           |
| Overall Relative<br>Landscape Value  | Low  | Low-Moderate   | Moderate  | Moderate-High  | High  |

# TABLE 7D: LANDSCAPE VALUE CRITERIA

#### LG LCA7 LANDSCAPE VALUE: LOW-MODERATE NOT CONSIDERED IN ADUR LANDSCAPE STUDIES 2012 or 2016

LANDSCAPE CAPACITY: MODERATE-HIGH Taking into account its low-moderate landscape and visual sensitivity and its low-landscape value it is considered this character area has a moderate-high landscape capacity to accommodate housing development i.e. scope to accommodate an urban extension without significant adverse landscape effects, assuming appropriate mitigation. The wetland, scrub and woodland in the south west of the area is however sensitive to change.

| LANDSCAPE VALUE |               |               |               |                |                |                |
|-----------------|---------------|---------------|---------------|----------------|----------------|----------------|
|                 |               | Low           | Low-Moderate  | Moderate       | Moderate-High  | High           |
| IAN             | Low           | High          | Moderate-High | Moderate       | Moderate       | Low-Moderate   |
| IDSC/           | Low-Moderate  | ModerateHigh  | Moderate-High | Moderate       | Low-Moderate   | Low-Moderate   |
| APE SE          | Moderate      | Moderate-High | Moderate      | Moderate       | Low-Moderate   | Negligible/Low |
| NIIIN           | Moderate-High | Moderate      | Low-Moderate  | Low-Moderate   | Negligible/Low | Negligible/low |
| λTI             | High          | Moderate      | Low-Moderate  | Negligible/Low | Negligible/Low | Negligible/Low |
|                 |               |               |               |                |                |                |

## TABLE 5E: LANDSCAPE CAPACITY MATRIX

LG LCA7 LANDSCAPE CAPACITY: MODERATE-HIGH NOT CONSIDERED IN ADUR LANDSCAPE STUDIES 2012 or 2016

## LG LCA 7 MITIGATION ISSUES AND OPPORTUNITIES FOR ENHANCEMENT

- Potential, associated with any new development, to soften and significantly enhance the existing poor quality South Lancing urban edge with robust, woodland planting, located outside private curtilages within open space/ communally managed land, thereby contributing to an enhanced landscape setting to the edge of the settlement in this vicinity.
- Careful consideration should be given to the density and height of built development associated with a new settlement edge.
- Provide planted open space adjacent to the railway.
- Potential for attractive new wetlands to be created as part of any SUDs provision, reinforcing a wetland character.



#### LG LCA 7 CONTEXT PHOTOGRAPHS



# LG LCA 8 OLD SALT'S FARM FRINGE

# **KEY CHARACTERISTICS**

- Small- scale, irregular pattern of pastures, paddocks, tracks, gardens, a nursery, caravan parks and groups of buildings strung out along the winding lane of Old Salts Road.
- Urban backdrop is a strong visual presence to the east but the area is locally enclosed with groups of trees, hedgerows, fences and buildings.
- Large groups of mature trees on the railway embankment and on the edge of Old Salts Nursery to the north create a distinctly wooded character (in wider views across the gap)
- Old Salts Farm, a Grade II listed building s set within pastures, with some open views westwards.
- Fragmented and rather chaotic character, with a mix of land uses and ownerships.



Cluttered skyline and strong urban fringe influences.

LANDSCAPE CHARACTER SENSITIVITY: The balance of landscape character factors for this LCA point to an overall low-moderate landscape character sensitivity. The generally urban fringe character and poor condition of the landscape lowers sensitivity, but the well treed character of the area is sensitive and contributes to the landscape setting of Lancing.

| LANDSCAPE<br>CHARACTER<br>SENSITIVITY CRITERIA                               |   |  | DEGREE OF SENSITIVI  |   | HIGH   |
|--|---|--|--|---|--|
| Topography/<br>landform  | Simple, large scale<br>predominantly flat.  | Simple, large to<br>medium scale,<br>predominantly flat to<br>mildly undulating.                 | Occasional variety but<br>lacking strong<br>complexity.  | Complex topographical variation.  | Very complex with<br>strong topographical<br>variety.  |
| Landscape<br>scale/pattern   | Simple large scale<br>pattern, and/or very<br>fragmented,<br>disturbed land<br>cover. | Largely simple, with<br>some disturbance, or<br>mostly fragmented<br>land cover and land<br>use. | Some variety. Limited<br>disturbance, A degree<br>of consistency in<br>pattern of land use<br>and cover. | Varied pattern with<br>some intricacy. Largely<br>undisturbed and<br>coherent land cover.<br>Some historic land use<br>pattern. | Intricate, varied<br>pattern, undisturbed,<br>consistent patterns of<br>land cover and<br>historic layout.   |
| Landscape condition/<br>intactness   | Poor  | Poor to Fair   | Fair   | Good  | Very good  |
| Character contribution<br>to the landscape<br>setting of the<br>settlements. | No contribution, i.e.<br>no identifiable<br>landscape setting                         | Partial/minor<br>contribution from<br>landscape<br>features/green<br>spaces.                     | Moderate contribution<br>from landscape<br>features and green<br>spaces.                                 | Important contribution<br>from landscape<br>features and green<br>spaces.   | Substantial<br>contribution to setting<br>from very distinctive<br>landscape features<br>and green spaces at<br>the edge of/on the<br>approaches to the<br>settlements |
| Condition /quality of the settlement edge                                    | Harsh, abrupt and<br>unfiltered settlement<br>edge.                                   | Occasional filtered<br>edge but<br>predominantly<br>abrupt.                                      | Variable edge, some<br>historic but modern<br>larger scale also<br>evident.                              | Variable edge, some<br>modern influence but<br>predominantly well<br>filtered into landscape.                                   | Soft porous settlement<br>edge filtered into<br>historic landscape<br>pattern.   |
| Contribution to<br>physical/ visual<br>settlement separation                 | No separation<br>function   | Provides a partial separation  | Provides some of a wider area of separation  | Important contribution to separation  | Provides the entire<br>extent of the<br>settlement separation  |
| Overall Landscape<br>Character Sensitivity                                   | Low   | Low-Moderate   | Moderate   | Moderate-High   | High   |

# TABLE 8A: LANDSCAPE CHARACTER SENSITIVITY CRITERIA

## LG LCA 8 LANDSCAPE CHARACTER SENSITIVITY: LOW-MODERATE COMPARISON TO ADUR LANDSCAPE STUDIES: 2012: MEDIUM-LOW 2016: MEDIUM-LOW

VISUAL SENSITIVITY: There are few public views within this LCA, with no PROWs crossing the area. It is also generally of low visibility due to its small scale enclosed character. Views from elevated viewpoints in the National Park show a mix of existing trees and buildings rather than open fields, and the area appears essentially wooded.

| VISUAL<br>SENSITIVITY<br>CRITERIA | LOW   |  | DEGREE OF SENSITIV   |   | HIGH   |  |
|-----------------------------------|---|--|--|---|--|--|
| General Visibility                | The area is well<br>contained by existing<br>features- buildings, trees,<br>landform. Low level of<br>visibility  | Occasional views<br>of/across the area<br>where gaps in<br>existing features<br>allow. Low-<br>moderate level of<br>visibility   | Some visibility<br>of/across the area<br>from the<br>surrounding<br>landscape.<br>Moderate level of<br>visibility.                                     | The area is a<br>component of wider,<br>longer landscape<br>views of/across the<br>area. Moderate-high<br>level of visibility   | Extensive views<br>of/across the area. The<br>area is a major<br>component of wider<br>landscape views. High<br>level of visibility  |  |
| Views and<br>Landmarks            | No views of natural and<br>built landmarks,<br>Cluttered skyline<br>character.  | Limited, partial views<br>of natural /built<br>landmarks but there<br>may also be a<br>relatively developed<br>cluttered skyline | Area from which<br>there are some<br>wider views<br>containing<br>natural/built<br>landmarks/, but<br>there may also be<br>some intrusive<br>elements. | Some important views<br>to the wider landscape<br>and of natural/built<br>landmarks are<br>available, and any<br>more intrusive<br>elements are not<br>particularly prominent | Distinctive panoramic<br>views, including<br>prominent natural<br>/built landmarks,<br>and/or major gateway<br>views available from/<br>across the area.                                     |  |
| Visual Receptors                  | Public views are<br>experienced by a small<br>number of public<br>receptors or by a larger<br>of receptors with a<br>passing interest in their<br>visual environment (e.g.<br>motorists on local<br>transport routes) | Occasional public<br>views from PROW<br>routes and local<br>transport routes.  | Some public views<br>for visitors and<br>from PROWs.<br>Some visibility from<br>transport routes.  | Frequent public views<br>for visitors enjoying<br>the landscape and<br>from PRoWs.  | Public views are<br>experienced by a high<br>number of visitors to<br>the landscape and/or<br>from long distance or<br>locally important<br>PRoW. Visibility from<br>major transport routes. |  |
| Overall Visual<br>Sensitivity     | Low   | Low-Moderate   | Moderate   | Moderate-High   | High   |  |

# TABLE 8B: VISUAL SENSITIVITY CRITERIA

#### LG LCA8 VISUAL SENSITIVITY: LOW COMPARISON TO ADUR LANDSCAPE STUDIES 2012: LOW

2016: LOW

## TABLE 8D: LANDSCAPE SENSITIVITY

| TER.        | High          | High          | High           | High              | High           | High |
|-------------|---------------|---------------|----------------|-------------------|----------------|------|
| IARAC       | Moderate-High | Moderate-High | Moderate -High | Moderate-High     | Moderate -High | High |
| 5<br>₩≻     | Moderate      | Moderate      | Moderate       | Moderate          | Moderate -High | High |
| DSCA        | Low-Moderate  | Low-moderate  | Low-Moderate   | Moderate          | Moderate-High  | High |
| N I<br>SENS | Low           | Low           | Low -Moderate  | Moderate          | Moderate-High  | High |
|             |               | Low           | Low-Moderate   | Moderate          | Moderate-High  | High |
|             |               |               | V              | ISUAL SENSITIVITY |                |      |

## LG LCA8 LANDSCAPE SENSITIVITY: LOW - MODERATE COMPARISON TO ADUR LANDSCAPE STUDIES: 2012: MEDIUM

2016: MEDIUM

LANDSCAPE VALUE: Whilst a listed building is present, and some features such as a stream confer landscape value the area is not tranquil, there is no strong sense of place and due to distance there is a lack of any contribution to the setting of the Downs Overall the area is considered to be of low to moderate landscape value.

| TABLE 8C: LANDSCAPE VALUE CRITERIA   |  |   |   |   |   |
|--|--|---|---|---|---|
| LANDSCAPE VALUE<br>CRITERIA  |  | D   | EGREE OF SENSITIVITY  |   | HIGH  |
| Perceptual<br>aspects/qualities<br>(e.g. scenic beauty,<br>sense of place,<br>tranquillity, wildness,<br>rurality)   | Not tranquil, much<br>human activity. Lack<br>of a distinctive sense<br>of place or scenic<br>beauty | Limited tranquillity,<br>with significant<br>human detractors<br>from rural/natural<br>qualities. Limited<br>perception of a sense<br>of place.     | Some human activity,<br>affecting tranquillity<br>and/or some<br>features that<br>contribute to a sense<br>of place                                       | Relatively tranquil<br>and/or<br>a strong sense of<br>place with some<br>scenic features                          | Tranquil and remote<br>in character, natural<br>beauty with few<br>human influences.<br>Very distinctive sense<br>of place. |
| Contribution to the<br>setting of the South<br>Downs National Park   | No contribution. No<br>relationship with the<br>Downs.   | Slight contribution.<br>Limited, distant<br>setting to the South<br>Downs   | Moderate<br>contribution. Middle<br>distance setting to the<br>South Downs  | Moderate-Major<br>contribution. Close<br>distance setting to the<br>South Downs.                                  | Substantial<br>contribution. Close<br>distance setting to the<br>Downs,with<br>boundaries<br>adjoining.                     |
| Conservation interests –<br>presence of features of<br>wildlife, archaeological,<br>historic and cultural<br>interest that can add<br>value to the landscape,<br>as well as having value<br>in their own right | Not present. Lack of<br>local or statutory<br>designations within<br>the area or adjacent.           | Slight contribution<br>from a few<br>undesignated<br>features of interest.<br>Lack of statutory<br>designations within<br>the area or<br>adjoining. | Some features of<br>interest. Some local<br>designations cover<br>the area or are<br>immediately<br>adjacent. Statutory<br>designation in the<br>vicinity | A number of features<br>of interest. Statutory<br>designations and<br>their settings affect<br>parts of the area. | Statutory/Local<br>designations and<br>their settings affect a<br>high proportion of<br>the area.                           |
| Overall Relative<br>Landscape Value  | Low  | Low-Moderate  | Moderate  | Moderate-High   | High  |

# 

### LG LCA8 LANDSCAPE VALUE: LOW-MODERATE NOT CONSIDERED IN ADUR LANDSCAPE STUDIES 2012 or 2016

LANDSCAPE CAPACITY: Taking into account the area's low-moderate landscape character sensitivity, low visual sensitivity and low-moderate landscape value it is considered this character area has an overall moderate-high landscape capacity to accommodate housing development. Clearly however any development would need however to protect the setting of the listed building and conserve and enhance the well treed character.

|             | High          | Moderate       | Low-Moderate  | Negligible/Low  | Negligible/Low | Negligible/Low |  |  |
|-------------|---------------|----------------|---------------|-----------------|----------------|----------------|--|--|
| APE<br>VITY | Moderate-High | Moderate       | Low-Moderate  | Low-Moderate    | Negligible/Low | Negligible/low |  |  |
|             | Moderate      | Moderate-High  | Moderate      | Moderate        | Low-Moderate   | Negligible/Low |  |  |
| SEP         | Low-Moderate  | Moderate -High | Moderate-High | Moderate        | Low-Moderate   | Low-Moderate   |  |  |
|             | Low           | High           | Moderate-High | Moderate        | Moderate       | Low-Moderate   |  |  |
|             |               | Low            | Low-Moderate  | Moderate        | Moderate-High  | High           |  |  |
|             |               |                |               | LANDSCAPE VALUE |                |                |  |  |

## TABLE 8E. LANDSCAPE CAPACITY MATRIX

## LG LCA 8 LANDSCAPE CAPACITY: MODERATE-HIGH NOT CONSIDERED IN ADUR LANDSCAPE STUDIES 2012 or 2016

# LG LCA 8 MITIGATION ISSUES AND OPPORTUNITIES FOR ENHANCEMENT

- Conserve and manage existing hedgerows and tree groups along Mash Barn Lane.
- Conserve the existing stream within a broad green corridor.
- Protect the setting of Old Salts Farm
- Carry out additional native species planting to improve the visual structure of the landscape and the interface with adjacent urban areas.

# LG LCA 8 CONTEXT PHOTOGRAPH



# LG LCA 9 MILL HILL SLOPES

# **KEY CHARACTERISTICS**

- Elevated large field of open pasture on the slopes of Mill Hill, bounded by scrubby hedgerows and trees
- Field is subdivided by temporary fencing and is heavily grazed by horses, with associated typical horticulture paraphernalia of sheds/stable blocks and water troughs.
- Urban fringe character- the field is overlooked by a row of modern houses on the skyline, along Mill Lane to the east, and by other modern houses on the southern boundary.
- A27 is in a cutting at the northern boundary
- Visual connection between the LCA and the open chalkland slopes of Mill Hill to the north perceptible from the wider landscape.



LANDSCAPE CHARACTER SENSITIVITY: The area is considered to have an overall low-moderate landscape character sensitivity taking account of its simple landscape pattern, urban fringe influences, poor landscape condition, and the lack of any separation function in terms of the gap between Shoreham and Lancing, but recognising the open grassland slopes make some contribution to the broad scale landscape setting of Shoreham.

| LANDSCAPE<br>CHARACTER<br>SENSITIVITY<br>CRITERIA                            | LOW DEGREE OF SENSITIVITY  |  |  |   | HIGH  |
|--|--|--|--|---|---|
| Topography/<br>landform  | Simple, large scale<br>predominantly flat.   | Simple, large to<br>medium scale,<br>predominantly flat to<br>mildly undulating.                 | Occasional variety but<br>lacking strong<br>complexity.  | Complex<br>topographical<br>variation.  | Very complex with<br>strong topographical<br>variety.   |
| Landscape<br>scale/pattern   | Simple large scale<br>pattern, and/or very<br>fragmented,<br>disturbed land cover. | Largely simple, with<br>some disturbance, or<br>mostly fragmented<br>land cover and land<br>use. | Some variety. Limited<br>disturbance, A degree<br>of consistency in<br>pattern of land use<br>and cover. | Varied pattern with<br>some intricacy.<br>Largely undisturbed<br>and coherent land<br>cover. Some historic<br>land use pattern. | Intricate, varied pattern,<br>undisturbed, consistent<br>patterns of land cover<br>and historic layout.   |
| Landscape condition<br>/intactness   | Poor   | Poor to Fair   | Fair   | Good  | Very good   |
| Character<br>contribution to the<br>landscape setting of<br>the settlements. | No contribution, i.e.<br>no identifiable<br>landscape setting                      | Partial/minor<br>contribution from<br>landscape<br>features/green<br>spaces.                     | Moderate contribution<br>from landscape<br>features and green<br>spaces.                                 | Important<br>contribution from<br>landscape features<br>and green spaces.   | Substantial contribution<br>to setting from very<br>distinctive landscape<br>features and green<br>spaces at the edge<br>of/on the approaches to<br>the settlements |
| Condition /quality of the settlement edge                                    | Harsh, abrupt and<br>unfiltered settlement<br>edge.                                | Occasional filtered<br>edge but<br>predominantly<br>abrupt.                                      | Variable edge, some<br>historic but modern<br>larger scale also<br>evident.                              | Variable edge, some<br>modern influence<br>but predominantly<br>well filtered into<br>landscape.                                | Soft porous settlement<br>edge filtered into<br>historic landscape<br>pattern.  |

## TABLE 9A: LANDSCAPE CHARACTER SENSITIVITY CRITERIA

| LANDSCAPE<br>CHARACTER<br>SENSITIVITY<br>CRITERIA           | LOW                       |                               | DEGREE OF SENSITIVITY                             |  | HIGH  |
|---|---------------------------|-------------------------------|---|--|---|
| Contribution to<br>physical/visual<br>settlement separation | No separation<br>function | Provides a partial separation | Provides some of a<br>wider area of<br>separation | Important<br>contribution to<br>separation | Provides the entire<br>extent of the settlement<br>separation |
| Overall Landscape<br>Character Sensitivity                  | Low                       | Low-Moderate                  | Moderate  | Moderate-High                              | High  |

#### LG LCA 9 LANDSCAPE CHARACTER SENSITIVITY: LOW-MODERATE COMPARISON TO ADUR LANDSCAPE STUDIES 2012: MEDIUM-HIGH

# 2016: MEDIUM-HIGH

VISUAL SENSITIVITY: The area is highly visible in close distance public views from the PROWs on the northern and western boundaries, and in middle distance views from PROWs on the Downs, from the A27 to the east and from the Downs Link riverside path. As such there are frequent views. There are also outward views westwards to the Downs, although the A27 and its elevated interchange is intrusive.

| VISUAL SENSITIVITY<br>CRITERIA |   | DEG  | REE OF SENSITIVITY   |   | HIGH   |
|--------------------------------|---|--|--|---|--|
| General Visibility             | The area is well<br>contained by existing<br>features- buildings,<br>trees, landform. Low<br>level of visibility  | Occasional views<br>of/across the area<br>where gaps in<br>existing features<br>allow. Low-<br>moderate level of<br>visibility   | Some visibility<br>of/across the area<br>from the<br>surrounding<br>landscape.<br>Moderate level of<br>visibility.                                     | The area is a<br>component of wider,<br>longer landscape<br>views of/across the<br>area. Moderate-high<br>level of visibility   | Extensive views<br>of/across the area.<br>The area is a major<br>component of wider<br>landscape views.<br>High level of visibility  |
| Views and<br>Landmarks         | No views of natural<br>and built landmarks,<br>Cluttered skyline<br>character.  | Limited, partial views<br>of natural /built<br>landmarks but there<br>may also be a<br>relatively developed<br>cluttered skyline | Area from which<br>there are some<br>wider views<br>containing<br>natural/built<br>landmarks/, but<br>there may also be<br>some intrusive<br>elements. | Some important<br>views to the wider<br>landscape and of<br>natural/built<br>landmarks are<br>available, and any<br>more intrusive<br>elements are not<br>particularly<br>prominent | Distinctive<br>panoramic views,<br>including prominent<br>natural /built<br>landmarks, and/or<br>major gateway views<br>available from/<br>across the area.  |
| Visual Receptors               | Public views are<br>experienced by a<br>small number of<br>public receptors or<br>by a larger of<br>receptors with a<br>passing interest in<br>their visual<br>environment (e.g.<br>motorists on local<br>transport routes) | Occasional public<br>views from PROW<br>routes and local<br>transport routes.  | Some public views<br>for visitors and from<br>PROWs. Some<br>visibility from<br>transport routes.  | Frequent public<br>views for visitors<br>enjoying the<br>landscape and from<br>PRoWs.   | Public views are<br>experienced by a<br>high number of<br>visitors to the<br>landscape and/or<br>from long distance<br>or locally important<br>PRoW. Visibility from<br>major transport<br>routes. |
| Overall Visual<br>Sensitivity  | Low   | Low-Moderate   | Moderate   | Moderate-High   | High   |

## TABLE 9B: VISUAL SENSITIVITY CRITERIA

#### LG LCA 9 VISUAL SENSITIVITY: MODERATE-HIGH COMPARISON TO ADUR LANDSCAPE STUDIES: 2012: HIGH

2016: HIGH

# TABLE 9C: LANDSCAPE SENSITIVITY

|            | High          | High          | High           | High              | High           | High |
|------------|---------------|---------------|----------------|-------------------|----------------|------|
| 點版下        | Moderate-High | Moderate-High | Moderate -High | Moderate-High     | Moderate -High | High |
| DSC<br>RAC | Moderate      | Moderate      | Moderate       | Moderate          | Moderate -High | High |
| SEN        | Low-Moderate  | Low-Moderate  | Low-Moderate   | Moderate          | Moderate-High  | High |
|            | Low           | Low           | Low -Moderate  | Moderate          | Moderate-High  | High |
|            |               | Low           | Low-Moderate   | Moderate          | Moderate-High  | High |
|            |               |               |                | VISUAL SENSITIVIT | Y              |      |

#### LG LCA 9 LANDSCAPE SENSITIVITY: MODERATE-HIGH COMPARISON TO ADUR LANDSCAPE STUDIES: 2012: HIGH

2016: HIGH

LANDSCAPE VALUE: The area has no conservation interests present or adjoining the LCA which could confer landscape value, neither wildlife or historic interests. It is also not tranquil and has no strong sense of place. Whilst it is close to the South Downs and it is visually perceived as part of their setting it must be recognised the A27 cutting forms a physical barrier and there is already an abrupt, hard settlement edge extending along the A27 to the north prominent in wider views.

## TABLE 9D: LANDSCAPE VALUE CRITERIA

| LANDSCAPE VALUE<br>CRITERIA  |  |   | DEGREE OF SENSITIVIT  | Y   | HIGH  |
|--|--|---|---|---|---|
| Perceptual<br>aspects/qualities<br>(e.g. scenic beauty,<br>sense of place,<br>tranquillity, wildness,<br>rurality)   | Not tranquil, much<br>human activity. Lack<br>of a distinctive sense<br>of place or scenic<br>beauty | Limited tranquillity,<br>with significant<br>human detractors<br>from rural/natural<br>qualities. Limited<br>perception of a sense<br>of place.     | Some human activity,<br>affecting tranquillity<br>and/or some<br>features that<br>contribute to a sense<br>of place                                       | Relatively tranquil<br>and/or<br>a strong sense of<br>place with some<br>scenic features                          | Tranquil and remote<br>in character, natural<br>beauty with few<br>human influences.<br>Very distinctive sense<br>of place. |
| Contribution to the<br>setting of the South<br>Downs National Park   | No contribution. No<br>relationship with the<br>Downs.   | Slight contribution.<br>Limited, distant<br>setting to the South<br>Downs   | Moderate<br>contribution. Middle<br>distance setting to the<br>South Downs  | Moderate-Major<br>contribution. Close<br>distance setting to the<br>South Downs.                                  | Substantial<br>contribution. Close<br>distance setting to the<br>Downs,with<br>boundaries<br>adjoining.                     |
| Conservation interests –<br>presence of features of<br>wildlife, archaeological,<br>historic and cultural<br>interest that can add<br>value to the landscape,<br>as well as having value<br>in their own right | Not present. Lack of<br>local or statutory<br>designations within<br>the area or adjacent.           | Slight contribution<br>from a few<br>undesignated<br>features of interest.<br>Lack of statutory<br>designations within<br>the area or<br>adjoining. | Some features of<br>interest. Some local<br>designations cover<br>the area or are<br>immediately<br>adjacent. Statutory<br>designation in the<br>vicinity | A number of features<br>of interest. Statutory<br>designations and<br>their settings affect<br>parts of the area. | Statutory/Local<br>designations and<br>their settings affect a<br>high proportion of<br>the area.                           |
| Overall Relative<br>Landscape Value  | Low  | Low-Moderate  | Moderate  | Moderate-High   | High  |

#### LG LCA 9 LANDSCAPE VALUE: LOW - MODERATE NOT CONSIDERED IN ADUR LANDSCAPE STUDIES

LANDSCAPE CAPACITY: Taking into account the area's low-moderate landscape character sensitivity, moderatehigh visual sensitivity and low-moderate landscape value it is considered this character area has an overall lowmoderate landscape capacity to accommodate housing development. Whilst the area makes some contribution to the landscape setting of Shoreham and to setting of the Downs it is considered there is potential to accommodate housing development within approximately the south eastern third of the field without resulting significant adverse landscape impacts.

| High     Moderate     Low-Moderate     Negligible/Low     Negligible/Low     Negligible/Low       Moderate-High     Moderate     Low-Moderate     Low-Moderate     Negligible/Low     Negligible/Low       Moderate     Moderate     Moderate     Low-Moderate     Low-Moderate     Negligible/Low     Negligible/Low       Moderate     Moderate     Moderate     Moderate     Low-Moderate     Negligible/Low     Negligible/Low       Moderate     Moderate     Moderate     Moderate     Low-Moderate     Low-Moderate     Negligible/Low       Low     Moderate     Moderate-High     Moderate-High     Moderate     Low-Moderate     Low-Moderate       Low     High     Moderate-High     Moderate-High     Moderate     Low-Moderate     Low-Moderate       Low     Low     Low-Moderate     Moderate     Moderate     Moderate-High     High |       |               |               |               |                |                |                |
|---|-------|---------------|---------------|---------------|----------------|----------------|----------------|
| High     Moderate     Low-Moderate     Negligible/Low     Negligible/Low     Negligible/Low       Moderate-High     Moderate     Low-Moderate     Low-Moderate     Negligible/Low     Negligible/Low       Moderate     Moderate     Moderate     Low-Moderate     Low-Moderate     Negligible/Low     Negligible/Low       Moderate     Moderate     Moderate     Moderate     Low-Moderate     Low-Moderate     Negligible/Low       Low-Moderate     Moderate     Moderate     Moderate     Low-Moderate     Low-Moderate     Low-Moderate       Low     High     Moderate-High     Moderate     Moderate     Low-Moderate     Low-Moderate  |       |               | Low           | Low-Moderate  | Moderate       | Moderate-High  | High           |
| High       Moderate       Low-Moderate       Negligible/Low       Negligible/Low       Negligible/Low         Moderate-High       Moderate       Low-Moderate       Low-Moderate       Negligible/Low       Negligible/Low         Moderate       Moderate       Moderate       Low-Moderate       Low-Moderate       Negligible/Low         Moderate       Moderate       Moderate       Moderate       Low-Moderate       Negligible/Low         Low-Moderate       Moderate       Moderate       Moderate       Low-Moderate       Low-Moderate         Low-Moderate       Moderate       Moderate       Low-Moderate       Low-Moderate       Low-Moderate  | ¥     | Low           | High          | Moderate-High | Moderate       | Moderate       | Low-Moderate   |
| High     Moderate     Low-Moderate     Negligible/Low     Negligible/Low     Negligible/Low       Moderate-High     Moderate     Low-Moderate     Low-Moderate     Negligible/Low     Negligible/Low       Moderate     Moderate     Moderate     Low-Moderate     Low-Moderate     Negligible/Low     Negligible/Low   | DSC   | Low-Moderate  | Moderate High | Moderate-High | Moderate       | Low-Moderate   | Low-Moderate   |
| High     Moderate     Low-Moderate     Negligible/Low     Negligible/Low     Negligible/Low       Moderate-High     Moderate     Low-Moderate     Low-Moderate     Negligible/Low     Negligible/Low  | APE S | Moderate      | Moderate-High | Moderate      | Moderate       | Low-Moderate   | Negligible/Low |
| <b>F Figh</b> Moder die Low-Moder die Tregligible/ Low Tregligible/ Low Tregligible/ Low  | ENSIT | Moderate-High | Moderate      | Low-Moderate  | Low-Moderate   | Negligible/Low | Negligible/low |
| ► High Madarata Law Madarata Nagligikla/Law Nagligikla/Law Nagligikla/Law   | λIJγ  | High          | Moderate      | Low-Moderate  | Negligible/Low | Negligible/Low | Negligible/Low |

## TABLE 9E: LANDSCAPE CAPACITY MATRIX

LG LCA 9 LANDSCAPE CAPACITY: LOW - MODERATE NOT CONSIDERED IN ADUR LANDSCAPE STUDIES

## LG LCA 9 MITIGATION ISSUES AND OPPORTUNITIES FOR ENHANCEMENT

- Development to be carefully located where it will be more obviously perceived in relation to the existing urban edge along the eastern and southern boundaries, avoiding extending it too far west towards the A27 and the South Downs National Park beyond.
- Provide a substantial planted buffer at the edge of any development outside of private curtilages.
- Ensure low density development of no more than two storeys height.
- Retain and enhance the management of open grassland within approximately the northern and western half the field

#### LG LCA 9 CONTEXT PHOTOGRAPHS





# 6 LANDSCAPE SENSITIVITY AND CAPACITY ASSESSMENT SUMMARY

## Landscape Sensitivity

6.1 Our Landscape Sensitivity Assessment rankings are summarised in the table below and illustrated on mapping on the following pages.

## TABLE G - DHA LANDSCAPE SENSITIVITY ASSESSMENT SUMMARY

| LCA     | Landscape Character<br>Sensitivity | Visual Sensitivity | Landscape Sensitivity |  |  |  |  |  |  |
|---------|------------------------------------|--------------------|-----------------------|--|--|--|--|--|--|
| Worthi  | Worthing – Sompting Gap            |                    |                       |  |  |  |  |  |  |
| SG 1    | Moderate                           | Moderate           | Moderate              |  |  |  |  |  |  |
| SG 2    | Moderate-high                      | Moderate           | Moderate-high         |  |  |  |  |  |  |
| SG3     | Moderate                           | Moderate           | Moderate              |  |  |  |  |  |  |
| SG 4    | Moderate                           | Low-moderate       | Moderate              |  |  |  |  |  |  |
| SG 5    | High                               | Moderate-high      | High                  |  |  |  |  |  |  |
| SG6     | Moderate-high                      | Low-moderate       | Moderate-high         |  |  |  |  |  |  |
| Lancing | g – Shoreham Gap                   |                    |                       |  |  |  |  |  |  |
| LG 1    | Low                                | Moderate           | Moderate              |  |  |  |  |  |  |
| LG 2    | Low-moderate                       | Moderate-high      | Moderate-high         |  |  |  |  |  |  |
| LG 3    | Moderate-high                      | High               | High                  |  |  |  |  |  |  |
| LG4     | Moderate                           | Moderate-high      | Moderate-high         |  |  |  |  |  |  |
| LG5     | Moderate                           | Moderate-high      | Moderate-high         |  |  |  |  |  |  |
| LG 6A   | 6A: Low- moderate                  | 6A: Moderate       | 6A: Moderate          |  |  |  |  |  |  |
| LG6B    | 6B: Moderate-high                  | 6B: Moderate       | 6B: Moderate-high     |  |  |  |  |  |  |
| LG 7    | Low- moderate                      | Low-moderate       | Low-moderate          |  |  |  |  |  |  |
| LG 8    | Low-moderate                       | Low                | Low - moderate        |  |  |  |  |  |  |
| LG 9    | Low-moderate                       | Moderate-high      | Moderate-high         |  |  |  |  |  |  |

## Landscape Character Sensitivity



Comparative Landscape Sensitivity and Capacity Assessment of the Proposed Local Green Gap on behalf of Hyde New Homes David Huskisson Associates – April 2016

## Visual Sensitivity Map



Comparative Landscape Sensitivity and Capacity Assessment of the Proposed Local Green Gap on behalf of Hyde New Homes David Huskisson Associates – April 2016

#### Landscape Sensitivity Map



David Huskisson Associates – April 2016

# Landscape Capacity

6.2 Our Landscape Capacity Assessment rankings are summarised in the table below and illustrated on the mapping on the following pages

| LCA                     | Landscape Sensitivity | Landscape Value | Landscape Capacity |  |  |  |  |  |
|-------------------------|-----------------------|-----------------|--------------------|--|--|--|--|--|
| Worthing – Sompting Gap |                       |                 |                    |  |  |  |  |  |
| SG 1                    | Moderate              | Moderate        | Moderate           |  |  |  |  |  |
| SG 2                    | Moderate – high       | High            | Negligible/low     |  |  |  |  |  |
| SG 3                    | Moderate              | Moderate        | Moderate           |  |  |  |  |  |
| SG 4                    | Moderate              | Moderate        | Moderate           |  |  |  |  |  |
| SG 5                    | High                  | Moderate        | Negligible/low     |  |  |  |  |  |
| SG 6                    | Moderate - high       | Moderate        | Low-moderate       |  |  |  |  |  |
| Lancing – Sho           | reham Gap             |                 |                    |  |  |  |  |  |
| DHA LG 1                | Moderate              | Low - moderate  | Moderate           |  |  |  |  |  |
| LG 2                    | Moderate – high       | Moderate        | Low - moderate     |  |  |  |  |  |
| LG 3                    | High                  | Moderate - high | Negligible / low   |  |  |  |  |  |
| LG 4                    | Moderate – high       | Moderate - high | Negligible / low   |  |  |  |  |  |
| LG 5                    | Moderate – high       | Moderate - high | Negligible /low    |  |  |  |  |  |
| DHA LG 6A               | Moderate              | Low             | Moderate - high    |  |  |  |  |  |
| DHA LG 6B               | Moderate – high       | Moderate        | Low - moderate     |  |  |  |  |  |
| LG 7                    | Low – moderate        | Low - moderate  | Moderate - high    |  |  |  |  |  |
| LG 8                    | Low - moderate        | Low - moderate  | Moderate - high    |  |  |  |  |  |
| LG 9                    | Moderate - high       | Low - moderate  | Low - moderate     |  |  |  |  |  |

## TABLE H- DHA LANDSCAPE SENSIVITY, VALUE AND CAPACITY ASSESSMENT RANKINGS

#### Landscape Capacity Map



Comparative Landscape Sensitivity and Capacity Assessment of the Proposed Local Green Gap on behalf of Hyde New Homes David Huskisson Associates – April 2016

## 7 ANALYSIS OF THE PROPOSED ADUR DISTRICT LOCAL GREEN GAPS

- 7.1 This section of the report extends the analysis carried out as part of the above landscape sensitivity and capacity assessments for each landscape character area to consider the current contribution made by the Local Green Gaps as a whole and by the constituent landscape character areas to preventing settlement coalescence and to protecting the separate character and identities of Adur's settlements.
- 7.2 It then goes onto to test the extent to which each the proposed Local Green Gaps (a local designation) would fulfil their intended planning policy functions, and whether or not they would be undermined by the proposed development (strategic allocations) at their edges. This analysis should be read in conjunction with the comments and observations made in the landscape representation report.
- 7.3 To carry this out the landscape structure, character and effectiveness of the Gaps have been appraised. This takes into account the contribution made to the landscape setting of settlements and to settlement separation which form two of the six criteria used to inform 'Landscape Character Sensitivity' as part of our Landscape Sensitivity and Capacity Assessment set out above. The visual sensitivity considerations identified in this assessment are also taken account of.
- 7.4 The policy background relating to the current Strategic Gaps and proposed Local Green Gaps (Policy 14 of APSALP) is set out in the Landscape Report by DHA which also provides a critique of the APSALP evidence base documents in so far as they relate to the Gap. In summary, APSALP Policy 14 states that:
  - Local Green Gaps between the settlements of Lancing/ Sompting Worthing, and Lancing/Shoreham-by-Sea will be protected in order to retain the separate identities and character of these settlements. Within these areas any development permitted must be consistent with other policies of this plan, and must not (individually or cumulatively) lead to the coalescence of settlements.
- 7.5 The preamble to Policy 14 notes that areas of Local Green Gap have the following characteristics:
  - "The open and undeveloped character of the land (this does not relate to landscape quality although some areas of gaps may happen to be of good quality).
  - they form a visual break between settlements- actual and perceived (from physical development or level of activity)
  - they create a sense of travelling between settlements
  - their boundaries follow physical features on the ground, taking account of the need

to accommodate development requirements of the Plan

 Only land necessary to secure the objectives of the gaps on a long term basis has been included in these gaps."

#### Analysis of the Adur Local Green Gaps

#### Sompting - Worthing Gap

- 7.6 The Sompting Worthing Local Green Gap (SW Gap) covers land to the north of the Worthing Brighton railway line. A small area of the Gap immediately west of Sompting village lies within the adjoining Borough of Worthing. The area of farmland within the Gap extends northwards to the southern edge of the A27 trunk road, and lies between the urban areas of Lancing and Sompting to the east and Worthing/Broadwater (a suburb of Worthing) to the west. The small rural village of Sompting lies within the Gap and is considered to be part of the countryside, without any built up boundaries (BUABs) defined.
- 7.7 The current SW Gap varies in its approximate width from 0.5km in the south to 1.2km in the north, but it is overall noticeably narrower than the Shoreham-Lancing Gap. Given that Sompting village is included within the Gap, this means that the actual existing undeveloped farmland Gaps between the settlements of Sompting and Sompting village and between Sompting village and Broadwater are even narrower, in the order of 0.19km- 0.21km in width.
- 7.8 Generally the farmland within the gap is relatively open in character, with the exception of that lying immediately to the north and south of Sompting village which is more enclosed due to the presence of hedgerows and hedgerow trees or woodland. The perception of a gap between the settlements is best appreciated in public views either from the South Downs to the north, or from West Street, or from the northern, public section of Loose Lane.
- 7.9 There is a degree of intervisibility east-west across the SW Gap (this being more noticeable in winter), both in the central and southern parts and in the northern part between Sompting village and the relatively nearby urban areas. Despite the relative narrowness of the Gap, at a broad scale, it currently functions reasonably effectively to provide physical and visual separation of the settlements, to avoid coalescence, and to maintain their separate characters and identities. However the undeveloped open farmland along West Street, either side of Sompting village, is considered very vulnerable to further development, as is the narrower part of the central area of farmland in the Gap between the railway and between south west corners of Sompting and the north east corner of Worthing.
- 7.10 The SW Gap within the Adur district covers six distinctive landscape character areas, first identified in the Urban Fringe 2006 and in subsequent Sheils Flynn landscape sensitivity studies in 2012 and 2016. Within the SW Gap, these character areas are ones which we have broadly

concurred with in terms of their character and boundaries, although the Urban Fringe Study did not separate Sompting Village from the pasture land to the south.

7.11 Our landscape character assessment considered the contribution made to physical/visual settlement separation and the contribution to the landscape setting of the settlements as two of the assessment criteria. Our assessment rankings for these criteria are summarised for each landscape character area in Table J below:

| SW GAP LANDSCAPE<br>CHARACTER AREA | LANDSCAPE SETTING<br>CONTRIBUTION                     | SETTLEMENT SEPARATION<br>CONTRIBUTION                                    |
|------------------------------------|---|--|
| LCA 1 Loose Lane Fields            | Moderate contribution<br>(Moderate sensitivity)       | Important contribution<br>(Moderate-high sensitivity)                    |
| LCA2 Lower Cokeham Fen             | Important contribution<br>(Moderate-high sensitivity) | Partial contribution<br>(low-moderate sensitivity)                       |
| LCA3 North West Sompting<br>Fringe | Important contribution<br>(Moderate-high sensitivity) | Important contribution<br>(Moderate-high sensitivity)                    |
| LCA 4 Sompting Village<br>Pastures | Important contribution<br>(Moderate-high sensitivity) | Provides some of a wider area of<br>separation<br>(Moderate sensitivity) |
| LCA 5 Broadwater Fringe            | Important contribution<br>(Moderate-high sensitivity) | Provides the entire extent of<br>separation<br>(High sensitivity)        |
| LCA 6 Sompting Village             | Important contribution<br>(Moderate-high sensitivity) | Provides some of a wider area of<br>separation<br>(Moderate sensitivity) |

## TABLE J - SW GAP CONTRIBUTION TO SETTING AND SETTLEMENT SEPARATION

# 7.12 This is illustrated on the mapping below:



#### DHA - Sompting-Worthing Gap - character contribution to the landscape setting of settlements



DHA - Sompting-Worthing Gap - contribution to physical/visual settlement separation

- 7.13 Notwithstanding our concerns about the methodologies used for the background evidence studies, our conclusions above are broadly similar to those reached in the Urban Fringe Study (paragraph 2.9). It is noted however, that this study downplays the contribution made by the Loose Lane Fields area and Lower Cokeham Fen area in respect of their contribution to landscape. Our assessment rankings for the contribution made to the landscape setting of settlements are also broadly comparable to the 2012 and 2016 Sheils Flynn landscape sensitivity studies overall Landscape Sensitivity rankings.
- 7.14 Indeed both the Urban Fringe Study and our Landscape Sensitivity and Capacity Assessment identify some opportunities/capacity for small scale developments within a few, limited areas of the SW Gap, within the framework of strict landscape and visual mitigation criteria.
- 7.15 Neither the 2012 or 2016 Landscape Studies, specifically analyse the importance of the SW Gap as a whole or the importance of each of its constituent individual Landscape Character Areas to maintaining physical and visual separation and preventing settlement coalescence. The studies focus primarily on the contribution made to landscape setting. The only reference to the contribution to settlement separation is a generalised statement in paragraph 5 on page 26 in the 2016 Policy checks document. This lack of analysis is surprising, particularly in view of the identification of Indicative Development Principles in the 2012 study for potential development allocations at 'Sompting North and Sompting Fringe' and given the subsequent proposed local plan strategic allocation Policy 6 for land at West Sompting which covers both of the above areas considered by Sheils Flynn in 2012, albeit the extent of the proposed development area was modified somewhat. Indeed, this would suggest it all-the-more important to fully consider the function of the wider area proposed by Policy 6 in terms of its

contribution to achieving all of the Gap functions. This lack of completeness brings into question the soundness of the evidence base for this policy.

- 7.16 The Urban Fringe Study emphasized that, in relation to the visual sensitivity of the SW Gap "Whilst there are clear views across the gap, hedgerows and tree belts either side of the gap assist in screening views of the housing on the east, and industrial buildings to the west (although these are readily visible through vegetation in winter). As a consequence of the limited width of the gap and its primarily open character, there are few opportunities to accommodate development without eroding the visual separation that the gap currently provides."
- 7.17 It is also noted that the conclusion to the Urban Fringe study advise at paragraph 6.42 that:

"Due to its smaller size and open nature, the Sompting Gap, offers even fewer opportunities to accommodate development without compromising gap function and agricultural viability ( and hence land management)'"

7.18 However, in paragraph 6.43 advises, in line with our precis above:

"..some limited development within the small sites at the edges of the gap (within Landscape Character areas 1 –Loose Lane Fields and 2- Lower Cokeham Fen) if buildings are restricted in height. Existing screening vegetation could be retained and reinforced to enhance the perception of visual separation. Such sites provide an opportunity to bring forward local environmental enhancements."

#### Gap consideration of West Sompting Strategic Allocation (proposed Policy 6)

- 7.19 The proposed Strategic Allocation Policy 6 for land at West Sompting spans SG LCA 1 (Loose Lane Fields) and SG LCA 3 (NW Sompting Fringe). Our assessment considers that both of these LCA have a moderate landscape capacity to accommodate an urban extension without significant adverse effects, taking account of appropriate mitigation and taking into account all of the landscape sensitivity factors, including the overall moderate landscape value of the land.
- 7.20 The proposed built up area boundary (BUAB) of the urban area of Sompting, is proposed to be extended northwards, westwards and southwards into currently open farmland. Whilst we do not consider the northward part of this extension would undermine the overall integrity of the Gap, the extension to the west (north of West Street) is reliant on a proposed landscape buffer that lies outside of the proposed development areas and is shown within the Gap and would result in a significant reduction in the width of the Gap in an area where it is currently acknowledged by Adur in their background evidence to be "critically narrow". Where the proposed BUAB would actually cross West Street, the proposed Gap between Sompting and Sompting village would be reduced to just 0.15 km in width, compared with the current 0.21 km width. No landscape buffer is proposed, and yet this area was clearly identified on Adur's evidence base Urban Fringe Study (Map 9) as having "a narrow visual connection" between areas of open farmland and being "a narrow vulnerable area between settlements".

- 7.21 Continuing south of West Street there is initially a proposed landscape buffer identified within the Gap, which extends westwards as far as an existing hedgerow boundary which is logical. However, the proposed BUAB then turns the corner extending in a south easterly direction, in the currently very open farmland of Loose Lane Fields, and it again does not follow any existing physical defensible boundary, nor does Policy 6 set any requirement to achieve landscape mitigation within the proposed BUAB. As a result of the proposed configuration of the development allocation, this part of the proposed Gap between the south western corner of Sompting and the north eastern corner of Worthing, will be almost halved in width from the current 0.40km to just 0.22km (approximately). This is in a location where industrial buildings are fairly close to the proposed BUAB on the Worthing side and already visually narrow the perception of the Gap somewhat. Furthermore, there would appear to be no protection provided in the proposed APSALP to retain the existing sports field shown within the BUAB at the north east corner.
- 7.22 Whilst in landscape terms, the separation distance between settlements is the not the only factor that needs to be considered in terms of fulfilling Gap functions, this assumes a greater importance where the land is already very open and if there is a lack of certainty in the policy about how effective landscape mitigation will be achieved to either reinforce the landscape edges of the Gap or the landscape structure of the remaining narrower area of the Gap.
- 7.23 Concern is also raised as to whether the proposed "approximately 480 homes" are achievable within the overall identified West Sompting development area, taking account of the required provision for open space including playing fields, SuDS and other development needs as well. No concept masterplan has been provided with the policy or in the evidence base to demonstrate this, nor is there any indication of the envisaged development densities that might be appropriate in a sensitive location next to the Gap. The not-to-scale policies map does not enlighten in this regard and the 2012 Landscape Study's Indicative Development Principles did not identify an appropriate dwelling number that would be achievable. Furthermore it is not clear how the proposal for mitigating *tree clump islands* would be achieved.
- 7.24 The Landscape Study Update 2016 policy update study states at paragraph 5 of page 26 "While the Worthing –Sompting Gap clearly does provide a critically important visual break between these settlements, the overlaps between the landscape settings of the three settlements suggests that the Worthing –Somting Gap is already critically narrow. There is a risk that further development, in addition to that allocated in the Proposed Submission Adur Local Plan, within the gap, would contribute to the coalescence of Worthing, Sompting Village and the urban area of Sompting/Worthing." A key question however that must be asked in respect of this statement is, where is the robust supporting evidence that justifies that the proposed West Sompting allocation itself will not have significant adverse effects on settlement separation? It is considered that this evidence has not been provided.
- 7.25 As a result of the above landscape concerns relating to Policy 6, including those in respect of reduced proposed separation distances between the settlements, it is considered the Policy 6 allocation is in itself inconsistent and at odds with both the Policy 13 and Policy 14 requirements and the evidence base documents. The Policy 6 strategic allocation would both erode the current contribution made by undeveloped open land to the physical and visual separation of West Sompting and Sompting village and that between West Sompting and Worthing, and undermine the ability to maintain their landscape settings. It is considered there would be a high likelihood associated with the proposed Policy 6 West Sompting allocation of a perception of visual coalescence between Sompting and Sompting village and between Sompting village and Worthing, (albeit actual physical coalescence would not occur) and of harm to their current landscape settings.
- 7.26 Whilst we would agree in landscape terms that the Policy 6 strategic allocation provides a potential opportunity to improve the quality of an existing, abrupt poor quality settlement edge adjoining the Loose Lane Fields LCA, we question the extent and scale of the proposed allocation. As a result of the proposed configuration of the Policy 6 allocation, this acknowledged "critically narrow" part of the Gap between the western corner of Sompting and the north eastern corner of Worthing would be almost halved in width.

#### Shoreham- Lancing Gap

- 7.27 The current Shoreham–Lancing Green Gap (SL Gap) within the Adur district, covers land to the north of the A259 and the urban edge of South Lancing (although excluding the development of the Hasler estate) extending northwards over the Brighton to Worthing railway as far as the A27Trunk Road. Shoreham Airport and the Ricardo Technical Centre commercial buildings are washed over by the Gap designation. Moving from east to west across the Gap it incorporates a wide area of open land, extending from the eastern urban edge of Shoreham, along the Adur estuary, to the western urban edge of Lancing.
- 7.28 The relatively recent major development of the Brighton and Hove Albion Academy which has occurred within the present Gap at its western edge, is a dominating urban presence, both in its immediate surroundings and in wider views across the Gap. This is due to the somewhat monolithic size, scale and style of the building and the presence of associated car parking and floodlit, security fenced sports pitches. Along the southern side of the A259 there is continuous built development and here coalescence between the settlements of Shoreham and Lancing has already occurred. On the northern side of the A259, the physical and visual gaps between existing built development areas are physically narrower, as compared with the much wider part of the Gap to the north of the railway.
- 7.29 Generally the farmland, together with the airfield and the Saltings land within the gap is mostly open in character, but the north western and south western corners of the Gap have more of a semi-wooded, enclosed character. The perception of an open undeveloped gap between the

major settlements is best appreciated in public views from the South Downs to the north, and from the riverside paths, including the Downs link adjacent to the Adur Estuary to the east. It is also evident to some extent in northward views from the A259, although views are foreshortened by the east-west railway embankment flanked by a line buildings at the airport so that visual linkages between the wider northern two thirds of the SL Gap and the southern third near the A259 are limited, except as perceived in some more elevated, distant views from the South Downs.

- 7.30 Overall it is considered that, at the broad scale, the existing SL Gap is reasonably effective in providing physical and visual separation of the settlements, to a degree avoiding coalescence and maintaining their separate characters and identities. However, as set out above, the current perception from the A259 of the wider SL Gap extending out to the countryside is more limited and the experience of a distinctive separate character and identity to the settlements is also much harder to discern in this area.
- 7.31 The SL Gap covers nine distinctive Landscape Character Areas identified in the Urban Fringe 2006 and the 2012 and 2016 Landscape Studies. Our Landscape Sensitivity and Capacity Assessment disagrees with the eastern boundary of LCA 1 Monks Farm (and therefore the western boundary of LCA2), and considers that LCA 6 New Salts Farm should be split into two separate, distinctive areas; LCAs 6A and 6B.
- 7.32 Our landscape character assessment considered the contribution made to physical/visual settlement separation and the contribution to the landscape setting of the settlements as two of the assessment criteria. Our assessment rankings for these criteria are summarised for each landscape character area in the SL Gap in **Table K** below. The LCA within which the New Salts Farm site sits (LCA 6A and LCA 7) are highlighted in yellow.

| SL GAP LANDSCAPE CHARACTER<br>AREA | LANDSCAPE SETTING<br>CONTRIBUTION                        | SETTLEMENT SEPARATION<br>CONTRIBUTION                                    |
|------------------------------------|--|--|
| LCA 1 Monks Farm                   | Partial/minor contribution<br>(Low-moderate sensitivity) | Partial contribution<br>(Low-moderate sensitivity)                       |
| LCA2 Salt Works                    | Important contribution<br>(Moderate-high sensitivity)    | Important contribution<br>(Moderate-high sensitivity)                    |
| LCA3 Shoreham Airport              | Substantial contribution<br>(High sensitivity)           | Important contribution<br>(Moderate-high sensitivity)                    |
| LCA 4 Adur Gateway                 | Important contribution<br>(Moderate-high sensitivity)    | Partial contribution<br>(Low-moderate sensitivity)                       |
| LCA 5 Lower Adur Marshes           | Important contribution<br>(Moderate-high sensitivity)    | Provides the entire extent of<br>separation<br>(High sensitivity)        |
| LCA 6A West New Salts Farm         | Partial/minor contribution<br>(Low-moderate sensitivity) | Provides some of a wider area of<br>separation<br>(Moderate sensitivity) |

TABLE K - SL GAP CONTRIBUTION TO SETTING AND SETTLEMENT SEPARATION

| SL GAP LANDSCAPE CHARACTER<br>AREA | LANDSCAPE SETTING<br>CONTRIBUTION                        | SETTLEMENT SEPARATION<br>CONTRIBUTION                                    |
|------------------------------------|--|--|
| LCA6B East New Salts Farm          | Important contribution<br>(Moderate-high sensitivity)    | Provides some of a wider area of<br>separation<br>(Moderate sensitivity) |
| LCA7 Hasler Fringe                 | Partial/minor contribution<br>(Low-moderate sensitivity) | Partial contribution<br>(Low-moderate sensitivity)                       |
| LCA8 Old Salts Farm                | Moderate contribution<br>(Moderate sensitivity)          | Provides some of a wider area of<br>separation<br>(Moderate sensitivity) |
| LCA9 Mill Hill Slopes              | Moderate contribution<br>(Moderate sensitivity)          | No separation function<br>(Low sensitivity)                              |

## 7.33 This is illustrated on the mapping below:



DHA - Lancing-Shoreham Gap - character contribution to the landscape setting of settlements



#### DHA - Lancing-Shoreham Gap - contribution to physical/visual settlement separation

- 7.34 With the proviso about the detailed methodology used and the locations of boundaries to character areas set out above, our conclusions in respect of the LCA's contribution to settlement separation are broadly similar to those reached in the Urban Fringe Study. The main differences relating to the part of the Gap lying immediately north of the A259, where LCA 6 is ranked in the Urban Fringe Study as 'High 'Importance to the Strategic Gap'. We split this character area and consider both area LCA 6A to the west and LCA6B to the east of New Salts Farm Road to make 'some contribution to the wider area of the Gap' and therefore rank moderate in terms of settlement separation. In terms of their contribution to landscape setting, LCA6A (west of New Salts Farm), is considered to make a partial/minor contribution and is therefore ranked low-moderate against this criteria, whilst LCA6B to the east of New Salts Farm Road is considered to make an important contribution (ranked Moderate-High) to the landscape setting of the settlements.
- 7.35 One character area, LCA 9 Mill Hill Slopes was not assessed in the Urban Fringe Study, and although at the edge of the currently designated Strategic Gap, is considered not to make any contribution to settlement separation, due to the relatively small size of the area and it being largely enclosed by existing built development on two sides.
- 7.36 Both the Urban Fringe Study and our Landscape Sensitivity and Capacity Assessment consider whether there could be some opportunities for development without harming gap functions and in that regard we would not disagree with the potential opportunities identified in the Urban Fringe Study respect of sites referenced #5, #6, #7,#8 and #9, albeit, as advised in

the Landscape Report by DHA, the Urban Fringe Study does not constitute a proper Landscape Capacity Study.

7.37 In addition, similar to our comments above in respect of the Worthing –Sompting Gap, neither the 2012 or 2016 Landscape Studies specifically assess the importance of the Gap as a whole or of its constituent individual Landscape Character Areas to maintaining physical and visual settlement separation. There are brief mentions of separation in the 'Contribution to Landscape Setting' paragraphs of the 2012 study for the Saltworks LCA 2 and in the revised 2016 Saltworks LCA 2 and New Salts Farm LCA 6 but no comparable analysis across the Gap. Again, this is surprising, both in view of the identification of Indicative Development Principles in the 2012 study for potential development allocations at Land NW of the Hasler Estate-Old Salts Farm, for Land NE of the Hasler Estate –Off New Salts Farm Road, for Monks Farm and for Shoreham Airport, as well as in view of the subsequent proposed local plan strategic allocations for several of these sites.

#### Policy 5 New Monks Farm Strategic Allocation

- 7.38 The Policy 5 allocation site spans LG LCA 1 (New Monks Farm) and LG LCA 2 (Saltworks) in our Landscape Sensitivity and Capacity Assessment. Our assessment considers that LCA 1 has a moderate landscape capacity to accommodate an urban extension without significant adverse effects, taking account of appropriate mitigation and taking into account all of the landscape sensitivity factors, including the overall low-moderate landscape value of the land. LCA 2 is assessed as having a Low-Moderate landscape capacity to accommodate an urban extension without significant adverse effects, taking account of appropriate landscape value of the land. LCA 2 is assessed as having a Low-Moderate landscape capacity to accommodate an urban extension without significant adverse effects, taking account of appropriate mitigation and all of the landscape sensitivity factors and allowing for its overall moderate landscape value.
- 7.39 It is considered that the part of the development area lying to the west of Mash Barn Lane (which is an existing clear green edge and could have provided an appropriate defensible development boundary, subject to appropriate reinforcement), if considered in isolation, would be unlikely to have a harmful impact on the separation function of that part of the Gap within our LCA1 Monks Barn Farm or the overall integrity of the Lancing–Shoreham Gap, especially in view of the previously approved and implemented football academy to the south.
- 7.40 However, the proposal to extend the BUAB approximately up to 300m further east of Mash Barn Lane, together with a new, major roundabout junction on the A27 indicated approximately 500m further east, together with associated principal access roads, into the open Gap landscape, would be likely to be significantly harmful to that part of the existing Gap (which covers the Saltings LCA2 as defined in our Landscape Sensitivity and Capacity Assessment), and to the overall integrity of the Gap. The built development area would extend into the central part of the 'countryside edge' of the overall Gap and the current visibility/perception of an open Gap in this area from certain open views from the South Downs

National Park, approach on the A27, and from the River Adur riverside paths would be adversely affected.

- 7.41 This development allocation lies in an area which is described by the 2012 Landscape Study (page 17) as: "The central part of the Lancing strategic gap makes an important contribution to the strategic gap because of its open, green, natural character and its lack of development. The views to open green landscape from the A27 are valuable and contribute to the perception of the gap and the separation between Shoreham and Lancing." This is not carried forward in the 2016 Landscape Study Update, although it is not apparent why not. Whilst the football academy is now a feature of the adjoining LCA 1, this lies in a different character area. To further complicate matters, the 2016 Landscape Study Update, revises the character area boundary between New Monks Farm LCA1 and the Saltworks LCA2 to incorporate the entire New Monks Farm development allocation a change that seems to run contrary to the 2016 Study's own findings and is not justified. Our comments on this are provided in the Landscape Report.
- 7.42 On the basis of the above and in terms of Gap consideration, the strength of the evidence base for the Monks Farm strategic allocation has noticeable inconsistencies within it.
- 7.43 Finally, the same criticism can be levelled at this allocation, as was the case for the West Sompting allocation, in that with a lack of a concept masterplan or any supporting evidence there can be no certainty that 600 dwellings, 10000m2 of employment land and all the other identified development requirements can be accommodated within the proposed BUABs without potential further extension into the Gap.

#### Policy 7 Shoreham Airport Strategic Allocation

- 7.44 The Policy 7 allocation site spans LG LCA 3 (Shoreham Airport). Our assessment considers that LCA 3 has a negligible/low landscape capacity to accommodate development without significant adverse effects, taking account of appropriate mitigation and taking into account all of the landscape sensitivity factors, including the overall moderate-high landscape value of the land.
- 7.45 This proposed allocation of approximately 15000 m2 of employment space, including a mix of B1 business use, B2 general industry and B8 storage /hanger uses is located on the north eastern side of the airport, immediately to the south of the existing Ricardo Technical Centre. No defined BUAB boundaries are identified. The allocation is identified in an area in which both the Urban Fringe Study and our Landscape Sensitivity and Capacity Assessment consider to be of moderate-high importance to the Green Gap and considered by our own assessment and the 2012/2016 Landscape Studies to make a high contribution to Landscape Setting.
- 7.46 Whilst the allocation is indicated to only occupy a very small proportion of the existing SL Gap, with a fairly large area of open land shown to be maintained between the development area

and the existing buildings of Shoreham Airport (which run parallel with the railway to the south) concern must be expressed that this development could represent a significant intrusion on the green Gap. There is a risk of damaging the perception of the current very open, green qualities in this location, particularly as perceived in very close views both from the River Adur riverside paths and from the historic listed toll bridge, that would erode the overall visual integrity of this part of the SL Gap. This is of all the more concern when the likely cumulative adverse effect of the allocation on the Gap is considered in combination with the Monks Farm allocation, and bearing in mind the impact the Football Academy has already had on this part of the Gap.

- 7.47 The following matters raise these concerns:
  - The lack of any BUABs to limit the extent of the development allocation;
  - No concept masterplan is associated with the policy or included in the evidence base to demonstrate how and whether 15000m2 of floorspace is achievable within the area, together with any landscape mitigation measures.
  - The lack of any identified detailed landscape mitigation measures included in the policy.
- 7.48 This is further exacerbated in a context where storage/hanger buildings are proposed which are likely to be tall buildings and there is no restriction on the building height of the B1 use.
- 7.49 Taking these issues into account, it is therefore not at all clear how the impact on the openness of this part of the green gap could be minimised.

#### Gap consideration of potential development at New Salts Farm

- 7.50 The New Salts Farm site lies in part within the Hasler Fringe LCA7 and in part within Land East of New Salts Farm Road LCA6A. The landscape contribution made by these areas both to the landscape setting of the settlement and to settlement separation in the Gap is assessed as minor/ partial in our assessment of landscape character sensitivity.
- 7.51 It is considered that the existing Green Gap is already compromised in its physical and visual separation functions by the particular configuration and character of existing development adjoining to the east, south and north. It is noted, that the New Salts Farm site forms part of the southern edge of the SL Gap that has close distance views across it from the nearby A259, looking across the Gap to the backdrop of the South Downs. The extent of the Gap visible in views from the A259 varies, with the railway line and airport buildings being perceived as an east-west linear strip of development across the Gap generally preventing views of the more open northern area of the Gap from the eastern extent of the A259.
- 7.52 The SL Gap adjoins the A259 for a distance of just over 1km on its northern side. The proposed New Salts Farm allocation would extend development no more than 200m into the

eastern side of this (depending upon highways requirements). Although this would clearly result in a loss of part of the green gap, we would be keen to work with Adur Council to minimise the extent of this (in line with highways design requirements) and mitigate any impact through the design of strong landscape boundaries and a green frontage treatment that would replace the existing harsh built edges.

- 7.53 Our assessment considers that both the Hasler Fringe LCA7 and the West of New Salts Farm LCA6A have a moderate-high landscape capacity to accommodate an urban extension without significant adverse effects, taking account of appropriate mitigation and taking into account all of the landscape sensitivity factors, including the low landscape value of the land.
- 7.54 Both the Urban Fringe Study and the Landscape Study 2012 Indicative Development Principles previously contemplated the possibility of some development within this part of the Gap and specifically on our proposed allocation site (although the Urban Fringe study site did not extend into LCA6A).
- 7.55 Our landscape capacity judgements for the two LCAs within our site contrasts strongly with that for our LCA6B Land to the east of New Salts Farm Road which was judged to have an overall moderate-high landscape sensitivity, a moderate value and therefore to have only a lowmoderate capacity to accommodate development. It is also emphasized in particular that this LCA was judged to make an important (moderate-high) contribution to landscape setting, as well as providing some of a wider area of separation (moderate contribution). It is therefore suggested that this LCA would be the most logical and sensible area to be retained undeveloped in the southern part of the SL Gap, combined with some smaller areas retained immediately west of New Salts Farm Road and in the Adur Recreation ground within LCA 5 Lower Adur Marshes.
- 7.56 A concept masterplan and landscape strategy is provided in Appendix B of the Landscape Report to demonstrate how development could be accommodated on the New Salts Farm site. This also draws upon the Indicative Development Principles in the 2012 Landscape Study. The proposed development areas illustrated on the concept masterplan are based upon a realistic calculation of the number of dwellings that could be achieved taking account of the likely space required for highways, open space provision, SUDs, and key landscape and ecological mitigation measures etc, providing Adur DC with a sound evidence base for a potential additional policy allocation.
- 7.57 Whilst our proposed BUABs would not in all cases follow existing physical features, they are visually strongly related to the existing railway line and the existing groups of dwellings along New Salts Farm Road, with generous planting buffers proposed between them. We have been critical in respect of the proposed West Sompting and Monks Farm allocations because of the failure to follow existing defensible boundaries, however it should be emphasized in the case of our site, that the BUABs would be located in a much less open landscape in comparison with

both of the above sites. The overall lengths of proposed BUAB that do not follow existing physical features are also considerably less for our site.

7.58 The area of Local Green Gap that would remain should the New Salts Farm Site also be allocated for development is indicated on the mapping below. This demonstrates that there would still be significant area of the Gap remaining that would continue to physically separate Lancing and Shoreham and contribute to the setting of the settlements.



Potential extent of Green Gap remaining after Adur Strategic Site Allocations and proposed New Salts Farm development

- 7.59 In terms of the overall impact of a potential allocation on that part of the SL Gap lying to the south of the railway, this is considered to constitute only relatively minor erosion in Gap terms and there will be no physical coalescence of settlements as a result of the allocation (unlike in the case of the land immediately to the south).
- 7.60 Furthermore, in terms of the sequence of the closest views of the green gap moving east to west or west to east, looking northwards from the A259 it is considered, on balance, that development as suggested would only affect any existing impression of green gap openness to a very minor degree. The combination of the development and our new proposed strong green edge would have the effect of masking the existing views across the gap at this point which, despite these views extending to the Downs in the distance, are already intruded upon in the foreground by an existing clutter of varied fences, overhead lines and the existing commercial buildings of Shoreham. Moving past or towards the proposed improved green development

edge, associated with the proposed site allocation, the impression of more attractive open northward views associated with LCA6b would be reinforced. At this point it is considered that the views towards the landmarks of the airport terminal building, Lancing Chapel are better appreciated with a less cluttered foreground landscape. As a result of the above it is not considered that any perception of visual coalescence would be created.

- 7.61 Indeed bearing in mind the poor quality of the existing urban edge, in the vicinity of the New Salts Farm site, there is a clear opportunity for a substantial enhancement of the quality of this edge through this allocation, both in urban design and landscape terms including provision of much a stronger long term soft green edge to an amended green gap area. These were also considered by the Landscape Study 2012 to be potential positive impacts of developing the New Salts Farm Site.
- 7.62 Whilst some concern is raised about the allocated strategic sites in landscape and visual terms, their inclusion in the APSALP means that Adur DC have accepted the likely level of landscape, visual and Gap effects likely to result from them. On this basis, it is considered that the New Salts Farm Site would require far less extensive infrastructure requirements than for example New Monks Farm and would result in less far reaching landscape and visual effects.

#### 8 CONCLUSIONS

- 8.1 This comparative assessment has applied a detailed methodology to the assessment of both landscape sensitivity and landscape capacity. Alongside the supporting Landscape Report, it demonstrates that different conclusions can be drawn with regard to the landscape sensitivity of parts of the Green Gap when a detailed methodology is followed and when landscape sensitivity is considered in relation to a specific type of development and the assessment extended to consider landscape capacity. Specifically in relation to the landscape character areas within which the New Salts Farm site lies, a finer grain of study has been applied (that reflects the findings of the Adur Landscape Studies but is not actually reflected in the character area boundaries defined within them), splitting LCA6 into two character areas either side of New Salts Farm Road to draw out the differences across the wider area.
- 8.2 With regard to the New Salts Farm site, which lies within LCA 6A and LCA 7 of the Lancing-Shoreham Gap, our assessment considers that LCA 6 to the west of New Salts Farm has an overall moderate landscape sensitivity to housing (in comparison to the Adur Landscape Study 2016 consideration of moderate-high overall inherent landscape sensitivity across a wider area), whilst LCA 7 has a low-moderate sensitivity to housing (compared to a similarly ranked assessment of inherent overall landscape sensitivity in the Adur Landscape Studies). When this assessment is extended to also take into consideration landscape value and the type of development proposed, LCA 6A and LCA 7 are assessed as having a moderate-high capacity to accommodate housing. This equates to a situation where "Few of the key characteristics of the landscape are vulnerable to change. The landscape is likely to be able to accommodate development with only minor-moderate adverse change in character taking account of appropriate mitigation. May be suitable for urban extensions, but potentially a need to take account of/to ensure care with locating development in relation to specific characteristics/factors eg. settlement separation/settings". Whilst no landscape capacity assessment is provided by the Adur Landscape Studies, the 2012 Landscape Study illustrates Indicative Development Proposals for the New Salts Farm site that suggest a similar ability of the landscape to accommodate development.
- 8.3 Our assessment demonstrates that landscapes with a relatively high inherent sensitivity do not automatically have no or low capacity to accommodate change and vice-versa (a common underlying principle of landscape assessment methodology).
- 8.4 The landscape sensitivity and landscape capacity assessment has been expanded to provide an analysis has been provided of the existing contribution of the Green Gap as a whole and of the constituent landscape character areas within it to achieving the policy functions of the proposed Policy 14 relating to Local Green Gaps. This concludes that at a broad scale, the existing Green Gap is reasonably effective in providing physical and visual separation of the settlements, to a degree avoiding coalescence and maintaining their separate characters and

identities. However, with regard to the Lancing-Shoreham Gap, the current perception from the A259 of the wider Gap extending out to the countryside is more limited and the experience of a distinctive separate character and identity to the settlements is also much harder to discern in this area due to the essentially continuous presence of development between the two settlements on the southern side of the road. In terms of the constituent landscape character areas, those lying to the north of the railway line are generally considered to make a stronger perception of openness and a physical sense of separation between the two settlements when viewed view the South Downs National Park and on approach to the two settlements from the A27 and from the River Adur recreational paths. This is not a pristine tract of countryside, as is largely rare in urban fringe areas, however in the case of the Lancing-Shoreham Gap, Shoreham airport, the coastal railway line and the more recent football academy south of Monks Farm form significant built forms that foreshorten many views. Our assessment considers that housing development could be accommodated within the New Salts Farm site and the policy functions of the Gap still be maintained. Indeed bearing in mind the poor quality of the existing urban edge, in the vicinity of the New Salts Farm site, there is a clear opportunity for a substantial enhancement of the quality of this edge through this allocation, both in urban design and landscape terms including provision of much a stronger long term soft green edge to an amended green gap area.

# **FINAL**



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# ADUR DISTRICT COUNCIL SHLAA 'CALL FOR SITES' SUBMISSION FOR NEW SALTS FARM, SHOREHAM-BY-SEA

LANDSCAPE AND VISUAL STATEMENT on behalf of THE HYDE GROUP

March 2016

Date of Issue: 31/03/16 Status/Revision: FINAL File ref: 734/DHA /REPORTS /CURRENT /Landscape Statement FINAL Checked and Approved: NB/DH

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> Landscape and Visual Statement: New Salts Farm, Shoreham-By-Sea Adur District Council SHLAA Call for Sites David Huskisson Associates – March 2016

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FIGURES: DHA 1 Location and Landscape Context

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## 1 INTRODUCTION

- 1.1 David Huskisson Associates (DHA) is a firm of Chartered Landscape Architects, established in 1987 and registered since then with the Landscape Institute. DHA has been a member of the Institute of Environmental Management and Assessment since 1992. The practice is Quality Assured to BS EN ISO 9001:2008. Both directors of the practice are Chartered Members of the Landscape Institute.
- 1.2 DHA has undertaken a range of environmental planning and landscape and visual assessment and design work for many clients including public bodies, private companies and individuals on projects including commercial, industrial, retail, recreational, healthcare, agricultural, infrastructure and residential schemes. DHA also has experience in providing development control advice to Local Planning Authorities.
- 1.3 DHA is now retained by The Hyde Group to provide landscape consultancy and assist in the promotion of their potential housing site at New Salts Farm in Shoreham-by-Sea in which they have a freehold interest. The Hyde Group are seeking consideration of their site in the Adur District Council (Adur DC) Strategic Housing Land Availability Assessment 2015 (SHLAA) 'Call for Sites' exercise.
- 1.4 This report has been prepared to consider the landscape sensitivity of the site and the potential for it to accommodate residential development. The report provides a review of the landscape and visual baseline, drawing upon desktop review and analysis of the range of published studies and supported by site visits, to consider landscape and visual sensitivities and potential landscape constraints to development. It also comments on the contribution that the site makes to the Local Green Gap. It describes in landscape and visual terms, how development might be accommodated on the site and references an Illustrative Masterplan (drawing number 15.003\_010 by HGP Architects) for the site, identifying a landscape strategy for mitigating potential landscape and visual impacts and identifying any opportunities to secure landscape and visual enhancements.
- 1.5 Visits to the site and surrounding area were carried out during February and March 2016 in sunny weather conditions.
- 1.6 This report addresses the following issues:-
  - Landscape planning policy context
  - Landscape character
  - Site Location and baseline content
  - Landscape and Visual Considerations

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- Illustrative Masterplan scheme and landscape strategy
- Summary and Conclusion
- 1.7 The following documents and sources are considered to be the primary ones of relevance to the landscape and visual context of the site and its immediately surrounding area.
  - National Planning Policy Framework, March 2012;
  - National Planning Practice Guidance;
  - National Character Area Profiles 126 and 120, Natural England, first published by the Countryside Commission inv1999 and now extensively updated;
  - A Strategy for the West Sussex landscape, West Sussex County Council, October 2005;
  - The Landscape Character Assessment of West Sussex, Chris Blandford Associates for West Sussex County Council, 2003;
  - Local Distinctiveness Study of West Sussex, West Sussex County Council;
  - Adur District Local Plan 1996;
  - Proposed Submission Adur Local Plan 2014 and Amendments to the Proposed Submission Adur Local Plan 2016;
  - Landscape and ecological surveys of key sites within the Adur District, Sheils Flyn for Adur DC, November 2012;
  - Adur Landscape Study Update Local Green Gap & Built-Up Area Boundary policy checks for the emerging Adur Local Plan, Sheils Flyn for Adur DC, January 2016;
  - Assessment of landscape sensitivity Adur Local Plan area, Sheils Flyn for Adur DC, January 2016
  - Urban Fringe Study, 2006
  - MAGIC website;
  - English Heritage website;
  - Google maps and Google Earth;
  - An Approach to Landscape Character Assessment, Natural England, October 2014;
  - Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA3) published in April 2013 by the Landscape Institute and the Institute of Environmental Management and Assessment
  - Topic Paper 6: Techniques and Criteria for Judging Capacity and Sensitivity, 2002, The Countryside Agency and SNH

# 2 LANDSCAPE PLANNING POLICY CONTEXT

2.1 A summary of planning policy relevant to the landscape and visual context of the site and the proposed development is set out below.

## National Planning Policy Framework (NPPF)

2.2 The NPPF identifies three dimensions to sustainable development: economic, social and environmental. The environmental role is stated as:

"contributing to protecting and enhancing our natural, built and historic environment: and, as part of this, helping to improve biodiversity, use natural resources prudently, minimise waste and pollution, and mitigate and adapt to climate change including moving to a low carbon economy."

- 2.3 The NPPF sets out the overarching roles that the planning system ought to play which are described in 12 principles that should underpin both plan-making and decision-taking. Amongst these, the following are relevant to landscape and visual matters;
  - always seek high quality design and a good standard of amenity for all existing and future occupants of land and buildings....;
  - take account of the different roles and characters of different areas,...protecting the Green Belt,...recognising the intrinsic character and beauty of the countryside...;
  - contribute to conserving and enhancing the natural environment;
- 2.4 In section 11, the NPPF deals with conserving and enhancing the natural environment noting at paragraph 109 that the planning system should contribute to, and enhance, the natural and local environment by "protecting and enhancing valued landscapes".
- 2.5 Paragraph 113 requires that "distinctions should be made between the hierarchy of international, national and locally designated sites so that protection is commensurate with their status and gives appropriate weight to their importance and the contribution that they make ...".

#### National Planning Practice Guidance (NPPG)

2.6 The NPPG supports and informs the NPPF and replaces a number of earlier planning practice guidance documents and government circulars. In relation to 'Design', Reference ID: 26-007-20140306, paragraph 007 states that "Planning should promote local character (including landscape setting)".

# Adur District Local Plan 1996

2.7 Pending adoption of the emerging Local Plan (the Proposed Submission Adur Local Plan 2014, Amendments to the Proposed Submission Adur Local Plan 2016), the current development plan is the Adur District Local Plan 1996. The following 'saved' policies from the Local Plan are of relevance to the site and its landscape context:

- <u>AC4 The Strategic Gaps</u> "...development will not normally be permitted. This is in order to prevent coalescence and to retain the separate identities and amenities of the settlements. Only in compelling circumstances will development be permitted ..... Where circumstances are regarded to be compelling, planning permission will be subject to control over siting and design so as to minimise any impact on the landscape and subject to access and environmental criteria."
- <u>AB27 Landscaping</u> "Planning permission for new development which could appropriately accommodate landscaping will only be granted subject to a scheme forming an integral part of the proposal and the scheme being appropriate to the coastal environment of Adur District..."
- 2.8 Although of limited weight in advance of formal adoption, the emerging Local Plan provides a clear indication of Adur DC's intended strategy for development across the district. Emerging Local Plan <u>Policy 2: Spatial Strategy</u> states that "Development which would result in the coalescence or loss of identity of settlements will be resisted".
- 2.9 Emerging Local Plan Policy 13: Adur's Countryside and Coast states that "Outside of the Built Up Area Boundary, development will only be permitted where the need for a countryside location is essential...Improvements to green infrastructure, including enhanced pedestrian, cycle, and equestrian (where appropriate), and better access for those with mobility difficulties will be supported...The landscape character of Adur and other areas of countryside, the coast, river, and settlement pattern will be protected and where possible enhanced. Any development or activities within the countryside must respect and where appropriate reinforce the distinctiveness and sense of place of the above areas, taking into account the various elements which contribute to their distinctiveness...The setting of the South Downs National Park must be respected".
- 2.10 Emerging Local Plan <u>Policy 14: Local Green Gaps</u> designates Local Green Gaps which will succeed the current Strategic Gaps, stating that:

"Local Green Gaps between the settlements of Lancing/ Sompting – Worthing, and Lancing/Shoreham-by-Sea will be protected in order to retain the separate identities and character of these settlements. Within these areas any development permitted must be consistent with other policies of this plan, and must not (individually or cumulatively) lead to the coalescence of settlements".

- 2.11 Other policies in the emerging Local Plan of relevance to the site include:
  - Policy 15: Quality of the Built Environment and Public Realm
  - Policy 31: Green Infrastructure

- Policy 33: Open Space, Recreation and Leisure
- Policy 37: Flood Risk and Sustainable Drainage

#### Adur SHLAA Update December 2015

- 2.12 Although not a statement of policy, the 2015 SHLAA Update forms part of the wider evidence base used to inform the preparation of Adur DC's emerging Local Plan and helps to identify specific sites that may be suitable for allocation for housing development. The site falls within two sites considered and rejected in the 2015 SHLAA Update:
  - Site ID ADC/129/13 Land north west of the Hasler Estate, Lancing (which extends to the eastern edge of South Lancing and includes the western side of the site)
  - Site ID ADC/106/13 Land north east of the Hasler Estate, Lancing (which covers the eastern side of the site)
- 2.13 Site ID ADC/106/13 was rejected on the basis of "various constraints, including flood risk and landscape impact have not been addressed to the satisfaction of the local planning authority", with an added constraints of transport being included in the consideration of Site ID ADC/129/13. With regard to both sites, it was noted that "Although the site is not being taken forward in the SHLAA at this time, as (sic) it is considered that it may offer development potential in the longer term and, as such, it should be monitored on a regular basis".

## 3 LANDSCAPE CHARACTER

3.1 Landscape character is defined in the Guidelines for Landscape and Visual Impact Assessment 3<sup>rd</sup> Edition (GLVIA3) as:

> "A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse."

3.2 The general hierarchy of the published landscape character studies relevant to the site and its location are set out below.

## Regional landscape character

3.3 At a regional level, the site lies within National Character Area 126, South Coast Plain as defined by Natural England (February 2014). NCA 126 is described as a broadly flat, coastal landscape with an underlying geology of flinty marine and valley gravels extending several miles inland to the dip slope of the South Downs. In places, streams and rivers flow south from the higher land of the South Downs to the sea. The NCA 126 profile describes that

> "The lower coastal plain is heavily urbanised. In between development and transport links is a farmed landscape of large open fields with few trees or hedgerows. Drainage ditches, wire fences or low banks are more usual as field boundaries" and that "Generally the impression is of an overwhelmingly urban landscape" (both page 7)

3.4 The South Downs NCA 120 (April 2013) adjoins NCA126, north of the A27 and just over 1km north of the site at its closest point.

# County-wide landscape character

- 3.5 The Character of West Sussex Partnership Programme has carried out a series of character studies of the county which are published in the following separate but linked documents:
  - "A Strategy for the West Sussex Landscape" (WSCC October 2005)
  - "The Landscape Character Assessment of West Sussex" (Chris Blandford Associates for WSCC, 2003) with supporting Land Management Guidelines.
  - "Local Distinctiveness Study of West Sussex" (WSCC)
- 3.6 The Strategy sets out the vision for the landscape of the County and defines strategies "to protect and enhance the landscape of West Sussex as an asset for future generations" (Para 1.5). In relation to NCA126, "A vision for the landscape of the South Coast Plain" (Chapter 2) includes:
  - High quality new development is well-integrated with existing towns and the wider landscape.
  - The urban fringe combines a distinctive landscape character (including a combination of

Landscape and Visual Statement: New Salts Farm, Shoreham-By-Sea Adur District Council SHLAA Call for Sites David Huskisson Associates – March 2016 open spaces, woodlands, and hedgerows) with well-managed land uses which benefit residents and visitors in town and country alike.

- A strong network of woodlands and hedgerows forms green corridors within the gaps between the coastal towns, providing informal recreational opportunities and helping to connect the towns and their residents with the wider landscape.
- The historic and inspiring long views so characteristic of the Coastal Plain,... to other church towers and spires,...and from the coast to the downs, are maintained.
- 3.7 The Strategy also includes countywide landscape guidelines for general development and land use change and in addition, landscape guidelines for residential development on the rural urban fringe. These include:
  - "Ensure that buildings and infrastructure are located to avoid loss of important on-site views, and off-site views ..., as well as avoiding intrusion onto sensitive ridgelines, prominent slopes, and damage to settlement settings;
  - Seek new development of high quality which fits well within the landscape and reflects local distinctiveness and characteristics in terms of settlement form, height, scale, plot shape and size, elevations, roofline and pitch, overall colour and texture and boundary treatments (walls, fences, hedges, gates);
  - Integrate new development on the edges of settlements into the wider landscape. Use open space and planting in keeping with local character to provide a visual link to the countryside and an attractive backdrop and foil to new development."
- 3.8 The Local Distinctiveness Study of West Sussex is an ongoing study by the County Council looking at the type and distribution of locally distinctive landscape features in the county, based upon the National Character Areas. The site falls within the South Coast Plain, for which the study considers Key Settlements Characteristics, and identifies the following key features to maintain, protect and enhance where possible: "The sympathetic integration of larger settlements into the landscape, allowing open views out where the existing pattern allows" and "Green gaps between the coastal towns and villages".
- 3.9 The Landscape Character Assessment of West Sussex identifies 42 unique landscape character areas within West Sussex and provides Land Management Guidelines for each character area. The site lies within Landscape Character Area SC13 Worthing and Adur Fringes. Relevant Key Characteristics of SC13 include:
  - Low lying flat open landscape.
  - Dominant urban fringe with major conurbations of Littlehampton, Worthing, Lancing and Shoreham. Settlement edges often sharply contrast with adjacent open countryside.

- Frequent urban fringe influences of horse paddocks, light industry, airport, and recreational open space.
- Meandering rifes and straight drainage ditches.
- Occasional farmsteads along roads, and on dead-end tracks.
- Long views to the Downs.
- Busy minor and major roads.
- South Coast railway line links the areas.
- 3.10 "Extension of coastal conurbation" and "Recreational pressures from urban population" are noted under "Change, Key Issues", with the following key 'Landscape and Visual Sensitivities' noted:
  - Urban development pressures, especially in the gaps between settlements.
  - Closing of open views between settlements.
  - Planting of hedge and tree boundaries with unsympathetic exotic species such as Leyland Cypress.
- 3.11 The main Landscape Management Guideline for SC13 is to "Restore and strengthen the landscape of the gaps between settlements".

## Local landscape character

- 3.12 Adur DC have commissioned several studies which consider the landscape character of the Strategic Gaps in order to identify potential development opportunity areas and assess their capacity and as part of landscape sensitivity assessments.
- 3.13 The "Urban Fringe Study of Adur District" forms part of the evidence base to the emerging Local Plan. It was carried out by Baker Associates & Enderby Associates for Adur DC in August 2006, its intention being to provide Adur DC with a number of choices on where residential and employment development could be located outside of the existing urban areas. It considers areas of land on the urban fringe in terms of their general openness and aims of the Strategic Gap through landscape character assessment. The site spans parts of two character Areas identified in the study:
  - Area 6 (covering land on the eastern side of the site and extending to the east of New Salts Farm Road to Adur recreation ground);
  - Area 7 (covering the western side of the site as well as scrub and woodland areas to the south-west of the site).
- 3.14 The Urban Study describes Area 6 as:

"Flat, open, featureless tract of land extending north of Brighton Road to the railway

located on embankment.

Brighton Road busy and intrusive along southern edge.

Crossed by New Salts Farm Road linking, below railway, to airport with some property scattered along it. New Salts Farm is an interesting building that is prominent within the central part of the area.

Dog refuge on eastern side, partially screened.

Most of area is pasture with wetter land in north east containing wetland vegetation and apparently unfarmed (potential bio-diversity value).

Settlement edge to south and west is prominent.

Recreation ground (north of Orient Road) lies within gap.

Expansive long distance views available, over railway line and airport buildings, to distant Downs. Lancing Chapel forms distinctive landmark and reference point.

Airport buildings are strong detracting elements and, combined with railway embankment, curtail visual connections to the land within the gap on the north side.

Conclusions: The area makes a significant contribution to the Strategic Gap both in the northsouth and east-west views and can be seen from afar as a prominent feature contributing to the setting of nearby settlements.

Contribution to Landscape: Medium.

Importance to the Strategic Gap: High"

#### 3.15 Area 7 is described in the Urban Study as:

"Area of level land largely contained from land to east by northward protrusion of Broadway Park mobile home/caravan site.

Land in central and western parts appears unmanaged rough grass, with significant areas of scrub reversion, especially in western part. Some small copses and tree belts.

Northern field appears to form continuation of managed farmland from New Salts Farm to east.

Development on southern and eastern boundaries creates stark boundary.

Railway on slight embankment forming northern boundary.

Views generally local and contained although distant views possible above railway to Downs in vicinity of Mill Hill and Lancing chapel.

No public access although significant evidence of trespass.

Landscape and Visual Statement: New Salts Farm, Shoreham-By-Sea Adur District Council SHLAA Call for Sites David Huskisson Associates – March 2016 Conclusion: The area is screened from long distance views and is west of the caravan park which extrudes north of South Lancing meaning it makes little contribution to the east – west gap. The site holds some potential for development.

Contribution to Landscape: Medium – Low.

Importance to the Strategic Gap: Low"

- 3.16 The 'Landscape and ecological surveys of key sites within the Adur District Report November 2012' (Landscape Study 2012) prepared by Sheils Flyn and The Ecology Consultancy for Adur DC forms part of the evidence base for the emerging Local Plan and builds upon the earlier work of the Urban Study. The Landscape Study 2012 provides landscape and ecological assessments of the areas six areas identified in the Urban Study. It draws upon those findings to provide indicative development principles for each of the areas and assess the potential resulting impacts on the landscape and ecology of the Strategic Gaps to inform decisions on site allocations. Technical Annex A provides an Assessment of Overall Landscape Sensitivity.
- 3.17 Two updates have very recently published to the Landscape Study 2012, these being the 'Adur Landscape Study Update Local Green Gap & Built-Up Area Boundary policy checks for the emerging Adur Local Plan' January 2016 (Landscape Study Update 2016) and 'Assessment of landscape sensitivity Adur Local Plan area', January 2016. Both are lodged as evidence to the emerging Local Plan. Whilst both reports are recorded as updates to the 2012 study, the objectives and specific tasks for the Landscape Study Update 2016 relate to focusing the assessment upon areas within the Adur Local Plan area and providing policy-based checks rather than updating or seemingly replacing the full content of the 2012 study (for example, the Landscape Study Update 2016 provides no update to the indicative development principles). Reference is therefore made to both studies in the commentary below.
- 3.18 The site falls within parts of 'Lancing-Shoreham Gap LCA 6 New Salts Farm' and 'Lancing-Shoreham Gap LCA 7 Hasler Fringe', the boundaries of the LCAs being coincident with the Urban Study Areas 6 and 7. Technical Annex A of the 2012 Study and the updated 2016 Assessment of Landscape Sensitivity describe the key characteristics of LCA 6, including the following of relevance to the site:

LCA6:

- Flat, relatively open farmland with a mixture of arable and pasture fields subdivided by wooden/wire fences and scrubby hedgerows.
- Exposed, slightly unkempt condition of pastures reflects the edge of estuary character.
- Trees along the railway embankment to the north and belts of trees on the eastern boundary of the LCA provide some enclosure to the north and east, but overall, the farmland feels exposed and there are views to Shoreham Airport, the Downs and Lancing

College Chapel to the north; to the south, there is an abrupt interface with housing in South Lancing.

- New Salts Farm Road crosses the centre of the farmland, marking the alignment of the historic flood embankment (constructed by 1723); the distinctive, sinuous alignments of other historic flood defences are visible within the farmland to the east of the road.
- Clustered groups of buildings at New Salts Farm and the Dog's Trust. New Salts Farm and the historic Shoreham Airport terminal building are distinctive local landmarks.
- Busy, urban fringe character, with views to houses, roads and airport buildings, and the constant movement of traffic and buss of aircraft.

LCA7:

- Flat, medium-sized fields with an unkempt character; areas to south and west are well enclosed, with dense scrub and regenerating woodland.
- Tributary stream/ditch follows historic field pattern to north.
- Textured, transitional quality with a random, natural mosaic of patchy scrub, reedy wetland scrapes, woodland and groups of trees, which contrasts with the more ordered pattern of open fields to north.
- Woodland on the fringes of the Hasler estate and groups of mature trees/scrub cumulatively create a distinctly wooded character (in views across the Gap) and a strong sense of enclosure.
- Views generally local and contained, although the Downs provide a backdrop to some longer views to the north.
- Urban fringe influence skyline is cluttered with signs and telegraph poles and there is a stark interface with the Hasler estate to the south and east.
- No public access; roads that 'dead-end' at edge of the fields and woodlands within the LCA provide opportunities for views across the area.
- 3.19 Vulnerability to change for LCA6 is recorded as:

"The historic field patterns and sinuous watercourses within the pastures to the east of New Salts Farm Road and the alignment of this road, are historic landscape elements which are vulnerable to change. The winding marshy field ditches and scrapes are also sensitive to change, as is the slightly scruffy, estuary-edge character of this eastern area and its relationship to the buildings of New Salts Farm.

- 3.20 The Landscape Study Update 2016 adds to this consideration: "The open fields within this LCA contribute to the landscape setting of the Shoreham Airport terminal building (Grade II\* listed building) which is a striking local landmark in northward views from the A259."
- 3.21 Vulnerability to change for LCA7 is identified as:

"The natural, irregular patterns and richly textured character of the scrub and grassland mosaic contrasts with adjacent urban areas and this 'wild' quality is vulnerable to change. The relatively enclosed 'wooded' character of the area is distinctive and also sensitive - it contributes a contrast in character to other parts of the Gap. Other <u>specific</u> landscape elements and features that are sensitive to change are the groups of mature trees, the winding, open channel of the ditch/stream, contrasting patterns of enclosure and the framed views to the Downs, <u>but all these characteristics could be integrated within a planned programme of change, which could bring benefits in the form of an enhanced urban/ landscape interface, public access and sustainable landscape management."</u> (Underlining denotes text included in the Landscape Study 2012 and subsequently deleted from the Landscape Study Update 2016.)

3.22 Landscape quality and condition is recorded as:

LCA6:

"Scrubby, textured farmland, with partial hedgerows. Its scruffy condition is an inherent part of local landscape character. However the interface between the farmland and the A259 and Hasler estate is exceptionally poor quality and some landscape boundaries, particularly the conifer belt along the edge of the Adur Recreation Ground, seem anomalous"

LCA7:

- "An unkempt, transitional landscape, which appears to have been left unmanaged. There
  is an ongoing transition from grassland to woodland in some parts of the area which is
  creating an urban edge landscape which could be perceived as unsafe".
- 3.23 The LCA7 assessment is amended in the Landscape Study Update 2016 to: "The east part of the area is open fields; the west part is an area of regenerating scrub and woodland. The whole area has an unkempt character".
- 3.24 In relation to LCA6, 'Contribution to landscape setting' is described in the Landscape Study Update 2016 as:
  - "The fields on either side of New Salts Farm Road provide a strategically important open greenspace which maintains a sense of separation between the buildings of Shoreham Airport and Shoreham (the neighbourhood north of Shoreham Beach). Views across this

area also make a strong contribution to the sense of 'openness' and 'greenness' in the Lancing-Shoreham Gap, particularly in southward views from Lancing Ring, in which the gap appears to extend almost to the sea, and in northward views from the A259, in which the gap is the foreground to views to the Downs. The fields also contribute to the setting of the River Adur and form part of the gateway western approach to Shoreham-by-Sea.

- This is the only part of the Lancing-Shoreham Gap where there are direct views across open green fields from the A259, which runs along the southern fringes of the historic terminal building of Shoreham Airport are local landmarks in these views.
- 3.25 LCA 7 is assessed as making the following 'Contribution to landscape setting' in the Landscape Study Update 2016:

"This landscape has an odd relationship with the adjacent Hasler estate. There is no public access, but there are views from the ends of streets deadending onto the fields across the greenspaces to the wider landscape context of the Downs to the north. This area is an inaccessible backland, which makes minimal contribution to the amenity of the Hasler estate. However the LCA appears to be well wooded in views to the Lancing-Shoreham Gap from the Downs, across the Gap from the north and east and from trains crossing the Gap. It provides a striking contrast to the more open landscapes elsewhere in the Lancing-Shoreham Gap. This well treed character contributes to the distinctive landscape setting of Lancing"

- 3.26 Landscape character sensitivity is assessed as Medium-high for LCA6 and Medium for LCA7 and overall landscape sensitivity (which combines judgements of landscape character sensitivity and visual sensitivity) is assessed as Medium-high for LCA6 and Medium for LCA7 in the Landscape Study Update 2016. The 2012 Landscape Study concludes similar rankings for LCA7 but assesses a lower 'Medium-low' overall landscape sensitivity for LCA6, albeit character sensitivity and visual sensitivity are the same rankings as assessed in 2016.
- 3.27 The 2012 Landscape Study includes Indicative Development Principles for each of the LCAs and an assessment of potential landscape and visual impacts. These are considered further in Section 5 of this report.
- 3.28 The Landscape Study Update 2016 describes the 'local landscape character' of the Lancing-Shoreham Gap at paragraph 2.1:

"The gateway view across the Lancing-Shoreham Gap from the A27 bridge over the River Adur is a unique, dramatic vista. The River Adur meanders loosely across a wide floodplain, flanked by the open green turf of Shoreham Airport and backed by the rising folds of the South Downs. The over-scaled nave of Lancing College Chapel is silhouetted against the sky on the edge of the Adur valley at the point where the river cuts through the Downs. Rolling back 100 years, this landscape between the foot of the chalk downlands and the south coast was a disjointed, oddly scaled network of fields, dykes and marsh, broken by the broad, winding River Adur.... A rush of built development associated with the advent of the railways and the popularity of the south coast holiday resorts transformed this landscape from the 1880s, but the key structuring landscape elements of chalk downland, river and angular fields remain distinctive components of local landscape character. They are also important aspects of the landscape setting of Lancing and Shoreham-by-Sea.

•••

There is a broad transition between the relatively small-scale landscape of farms, smallholdings and scrub to the south of the railway to the busy riverside/harbour zone towards the mouth of the Adur in the south west. North of the railway, the Lancing-Shoreham Gap is dominated by the open grassland of Shoreham Airport, with a change at the western edge of the airport to the hummocky scrub of an area that has been reworked and tipped with aggregates (Saltworks) and the farmland of the New Monks Farm development site. The River Adur curves along the east margin of the airport within a broad channel of water, mudflats and marsh. To the north of the Tollbridge the landscape of the chalk downs becomes the dominant influence; the north-west fringes of Old Shoreham are bordered by the massive A27/A283 junction and the slopes of Mill Hill. Lancing College Chapel is a focal point for local views here, and throughout the Lancing Shoreham Gap.

3.29 The landscape setting of settlements is also analysed within the Landscape Study Update 2016 and discussed further in Section 5 of this report.

#### 4 LOCATION AND BASELINE CONTEXT

4.1 The site and its local context is illustrated on Figure **DHA 1**.

#### Local context and site description

- 4.2 The site is located on the urban fringe between Shoreham-by-Sea and Lancing and forms part of a wider area of generally undeveloped open land between the two settlements that is designated as the Lancing-Shoreham Strategic Gap.
- 4.3 The site covers an area of approximately 28.2 hectares, comprising five flat and generally large regular shaped fields which wrap around the northern and eastern edges of West Beach housing estate (previously known as the Hasler estate), and the adjoining Broadway Park retirement park homes site and East Lancing recreation ground.
- 4.4 To the north, the site addresses the Worthing to Brighton railway line which runs east-west and bisects the Lancing-Shoreham Gap. Brighton City (Shoreham) Airport lies to the north of the railway line and north-east of the site, the airport runway extending north almost to the A27.



Photograph 1 - View looking north-west from the site to the railway line on embankment

4.5 New Salts Farm Road lies to the east of the site and provides access off of the A259 to the airport. The eastern site boundary for the most part follows the close-board timber boundary fences to the rear gardens of properties on the western side of the New Salts Farm Road, save for at its southern end, where the boundary is separated from New Salts Farm Road by an intervening field. Beyond New Salts Farm Road to the east, the pastoral field pattern is more irregular and divided by sinuous and historic watercourses. The Dogs Trust Shoreham Rehoming Centre sits within this landscape, with Adur recreation ground and associated buildings including BMX tracks and an outdoor activities centre located further east, extending to the lower reaches of the River Adur approximately 750m north-east of the site.



Photograph 2 – View looking from the site north-east towards New Salts Farm Road

4.6 The southern site boundary joins the busy A259 Shoreham Road in the south-east but otherwise wraps around the irregular form of the development edge to the Hasler estate/West Beach and the adjoining park homes and the East Lancing recreation ground.



Photograph 3 – View looking south from the site to housing adjoining the southern site boundary



Photograph 4 – View looking south from the site to the southern site boundary with Broadway Park homes
4.7 To the west, the site boundary follows the line of a wooded stream which separates the site from the cluster of buildings at Old Salts Farm and on the Old Salts Farm Nursery site, the southern

Landscape and Visual Statement: New Salts Farm, Shoreham-By-Sea Adur District Council SHLAA Call for Sites David Huskisson Associates – March 2016 part of the western boundary adjoining a large area of woodland and dense scrub.

4.8 There is no means of public access into the site. Private access to the site is obtained from a field gate off New Salts Farm Road.

#### Local Topography

- Situated on the lower coastal plain which extends between Shoreham and Lancing and north to the A27, the site is generally flat, lying at levels between 1.0m Above Ordnance Datum (AOD) and 1.9m AOD.
- North of the A27, and over 1.2km from the site, the sweeping chalk downland landscape of the South Downs rises to a several local high points, from east to west; Mill Hill at 104m AOD, Lancing Hill at 81m AOD and Lancing Ring at 110m AOD. The South Downs forms a distant backdrop to the coastal plain and is bisected by the Adur Valley.

#### Local Built Context

4.11 There are no built forms on the site, but the site is bordered by the A259 and estate development on its indented southern boundary and by clustered commercial and residential properties on New Salts Farm Road, including two large agricultural barns currently accessed from within the site. A number of overhead lines and telegraph poles also run across the site.



Photograph 5 - overhead lines on the site and offsite agricultural barns. Properties on New Salts Farm Road and Shoreham airport beyond.

4.12 New Salts Farmhouse is an attractive white painted Georgian farmhouse, set back from New Salts Farm Road along an access track. Immediately north-east of New Salts Farmhouse, Old Farm Court is a large complex of fourteen converted barns and new-build homes set around two courtyards and parking garages whilst 'Brooklands' is a large white-painted detached former club-house building now converted to apartments. Further north, a cluster of five detached properties lead almost up to the railway bridge and entrance to Shoreham airport. At Shoreham airport, the large scale hangars and commercial units are a noticeable built feature within the

Strategic Gap.



Photograph 6 - View south west to New Salts farmhouse from New Salts Farm Road

- 4.13 To the south, West Beach (the Hasler estate) is a post 1930's development of mixed styles but predominantly brick and white render houses and bungalows, arranged along a series of culde-sacs off of a main access road (The Broadway) and a main east-west axis (West Way/Orient Road); both of these also being cul-de-sacs. The cul-de-sacs terminate at the site boundary, creating an odd and rather abrupt development edge.
- 4.14 Broadway Park is located on the northern edge of West Beach and is a park homes site comprising approximately 100 retirement park homes, all of which are painted in white or pale pastel colour.
- 4.15 The A259 is a busy lit coast road that links between Folkestone in Kent to the east and Portsmouth in Hampshire to the west. The A259 meets New Salts Farm Road at a roundabout junction approximately 100m north-east of the site where the is also a public house 'The Long Shore' with parking forecourt and a large petrol station. From this section of the A259 and the roundabout junction, New Salts Farmhouse and Brooklands are prominent buildings with the roofscape of Court Farm and large-scale buildings of the airport also being noticeable. Lancing College is also noted as a distant landmark.
- 4.16 The busy lit A259, Brighton City Airport and the Worthing-Brighton railway line (which lies mostly on embankment across the Gap) create activity and noise and are generally intrusive influences on the landscape
- 4.17 Opposite the site on the A259, properties are two storeys and of varied age and style but are mostly set back from the road behind closeboard timber fences with some low walls. Looking back to this development edge from within the site, several residential tower blocks can be seen above the general depth of development.
- 4.18 From this section of the A259 and from within the eastern part of the site, the built form of North

Lancing is noticeable to the north-west, extending beyond the coastal plain and rising up the South Downs towards Lancing Ring.

#### **Vegetation**

- 4.19 The site is open pasture comprising generally large regular fields, and is sparsely vegetated. The majority of field boundaries are marked by post and wire fencing or scrub-filled ditches, with some scrubby hedgerows in the south eastern part of the site. The western side of the site becomes more heavily vegetated towards its western and southern boundaries, with a wooded stream and scrub/woodland blocks on the western site boundary and linking to an area of dense scrub and woodland to the south. Such features give a more enclosed and wooded feeling to this area.
- 4.20 The railway embankment to the north of the site includes some scattered groups of trees becoming more dense towards the western side of the site.
- 4.21 A conifer belt on the eastern side of the East Lancing recreation ground is a prominent feature in this part of the site.
- 4.22 There is a low and patchy windswept conifer hedge and timber close board fencing separating New Salts farmhouse from the site and there are a number of other mixed and conifer hedges, windswept Monterey Pines and smaller ornamental and exotic trees within the gardens to properties on New Salts Farm Road. Offsite to the east of New Salts Farm Road, the farmland has a more distinctive, irregular field pattern with meandering watercourses and marshy scrapes within the pasture.

#### 4.23 Public Rights of Way and recreation

- 4.24 There are no Public Rights of Way on or adjacent to the site. The closest right of way to the site is footpath 2051, which passes through the residential development of Seahaven Gardens on the southern side of the A259 and links to Lancing Beach, albeit access to this footpath was obstructed at the time of the site visits.
- 4.25 To the east and north-east, footpath 2048 follows the western side of the lower reaches of the Adur estuary, linking the A259 in the south (approximately 300m north-east of the site) to the Old Shoreham Road west of Old Shoreham Bridge (over 1km north-east of the site). The Old Shoreham Bridge is bridleway 2048/1.
- 4.26 There are several public footpaths and bridleways on the upper coastward facing slopes of the South Downs over 2km north of the site, with panoramic views towards Shoreham and Lancing.
- 4.27 There is no Open Access Land in the immediate vicinity of the site although parts of the South Downs National Park, including Mill Hill (2km + to the north-east of the site) and Lancing Ring (2km + to the north-west of the site) allow open access.

4.28 East Lancing recreation ground borders the site on the eastern edge of West Beach (Hasler estate). Adur recreation ground lies approximately 250m to the north east off of the A259.

#### Landscape and Environmental Designations

- 4.29 The site lies outside of but adjacent to the Built-Up Area Boundary and falls within the Lancing-Shoreham Strategic Gap.
- 4.30 The South Downs National Park is located to the north of the site, with the A27 for the most part, forming the southern boundary, over 1km north of the site. This is a designation of national importance and indicates that the countryside so designated is of the highest quality.
- 4.31 The Adur estuary is designated a Site of Special Scientific Interest (SSSI) for its wildlife and geological interest. There are other locally designated SNCI and Local Nature Reserves at Lancing Ring, Shoreham Reach and Widewater Lagoon.
- 4.32 The Revision to the Ancient Woodland Inventory for West Sussex, January 2010, prepared by the Weald and Downs Ancient Woodland Survey, shows that the immediate area is devoid of recorded ancient woodland.

#### Historic Landscape and Cultural Heritage

- 4.33 Shoreham Airport, includes two listed buildings; the Grade II\* Listed Art Deco Terminal Building, and the Grade II Listed hangar and the Shoreham Airfield Dome Trainer which is a Scheduled Ancient Monument. Old Salts Farm to the west of the site is a Grade II listed building whilst Old Shoreham Bridge to the north west is Grade II\* listed. Further afield, Lancing College includes 3 listed buildings, notably a Grade I listed Chapel (open to the public) which forms a striking landmark on the Downs. To the south-west of the college, Hoe Court Farmhouse sits on the lower slopes of the Downs adjacent to a byway and is Grade II listed.
- 4.34 New Salts Farm Road follows the alignment of the town's historic sea defences and off-site land to the east of the road retains some of the historic pattern of meandering rifes and drainage channels.

#### <u>Visibility</u>

- 4.35 At a local level, there are limited views available looking to and across the site but there are distant views available to site from locations within the South Downs National Park to the north.
- 4.36 The western side of the site is relatively enclosed by the higher level of vegetation cover, with close distance public views only available from the adjoining dead-end residential roads that end at the site.



Photograph 7 – View looking north along George V Avenue, West Beach

4.37 Despite the generally more open nature of the eastern side of the site, close distance public views are limited to the adjoining section of the A259 and from the undeveloped sections of New Salts Farm Road.



Photograph 8 – View looking north-west through north-east across the site from the A259

- 4.38 Travellers using the Worthing to Lancing railway line would also have views across the site as they pass immediately to the north of it.
- 4.39 Private views are available to residents in several dwellings adjoining the site and on the opposite side of the A259.
- 4.40 There are wide panoramic views from the South Downs looking across the lower coastal plain towards Shoreham and Lancing, including at Lancing Ring where the extent of the wider Shoreham-Lancing Gap can be appreciated, the large scale buildings at the airport and the white painted lodges of Broadway Park being noticeable features in the direction of the site. From other local high points and viewpoints on the Downs, the site is not discernible beyond the airport buildings.



Photograph 9 – View looking southeast from open access land at Lancing Ring on the South Downs

4.41 The South Downs forms a backdrop to views looking north from within the site, where the Lancing College Chapel forms a prominent landmark flanking the shoulder of the Downs and the Adur Valley. Mill Hill and Lancing Ring are also prominent landform features in views from the site to the Downs.



Photograph 10 – View looking north towards the South Downs from the northern edge of the site

- 4.42 The Landscape Study 2012 and the Landscape Study Update 2016 include an assessment of Visual Sensitivity, based upon analysis of the fifteen "most important views of the landscapes within the Lancing-Shoreham and Worthing-Sompting Gaps". Whilst the location of the viewpoints changes between the two studies, nine of those viewpoints relate to the Lancing-Shoreham Gap.
- 4.43 General visibility for LCA 6 is described in the Landscape Study Update 2016 as:

"This farmland is highly visible in local views from roads. The open character of the landscape contributes to its overall visibility. [sic] In long distance views from the Downs (eg View 8) and give a sense of depth to the north-south views across the Gap. The open fields provide a valuable 'slice of green' separating the urban areas to the south from the buildings of Shoreham Airport."
### 4.44 General visibility for LCA7 is described in both of the Adur DC Landscape Studies as:

"Relatively enclosed landscape character, with trees and scrub along railway, woodland on fringes of Hasler estate and trees within field boundaries providing a sense of enclosure. The relatively enclosed 'wooded' character of the area is distinctive and also sensitive - it contributes a contrast in character to other parts of the Lancing-Shoreham Gap. Visibility is moderate-low, but more visible in sensitive views from Downs to the north. These high sensitive views show the LCA in the distance and the 'layers' of field and vegetation contribute to the sense of an extensive gap."

4.45 The analysis within the Adur DC Landscape Studies includes an assessment of the relative sensitivity of each viewpoint. Areas of visibility from viewpoints which are judged to have high sensitivity are highlighted with a hatch on the visibility plans. A visual sensitivity assessment is then carried out for each of the LCAs, taking account of the extent to which it is visible, the relative sensitivity of the viewpoints from which it is visible and the accessibility of the views to members of the public. This is discussed further in Section 5 of this report.

### 5 LANDSCAPE AND VISUAL CONSIDERATIONS

### Contribution of the site to the Strategic Gap /Local Green Gap

- 5.1 Local Plan policy AC4 states that the purpose of the Strategic Gaps is "to prevent coalescence and to retain the separate identities and amenities of the settlements".
- 5.2 The emerging Local Plan states in the preamble to draft Policies 13 and 14 that Local Green Gaps are designated to "avoid coalescence and preserve the separate characters and identities of Adur's settlements by providing physical and visual breaks.".
- 5.3 The 'Background Evidence Document' (p16-29) to the emerging Local Plan amplifies that the Local Green Gaps have been defined based upon identifying land that meets criteria including:
  - Open and undeveloped character of land (this does not relate to landscape quality although some areas of gaps may happen to be of good quality).
  - Form a visual break between settlements actual and perceived (from physical development or level of activity).
  - Create a sense of travelling between settlements.
- 5.4 The contribution that the land on the urban fringe and countryside edges of Adur district makes to the Strategic Gap/Local Green Gap has been considered in several studies for Adur DC; the Urban Fringe Study 2006, the Technical Annex to the Landscape Study 2012 and the Landscape Study Update 2016.
- 5.5 The "Urban Fringe Study of Adur District" draws the following conclusions about the contribution of the area within which the site lies, to the Strategic Gap:

Area 6 (which includes the eastern side of the site)

"The area makes a significant contribution to the Strategic Gap both in the north south and east-west views and can be seen from afar as a prominent feature contributing to the setting of nearby settlements. Contribution to Landscape: Medium. Importance to the Strategic Gap: **High**"

Area 7 (which includes the western side of the site)

"The area is screened from long distance views and is west of the caravan park which extrudes north of South Lancing meaning it makes little contribution to the east – west gap. The site holds some potential for development. Contribution to Landscape: Medium – Low. Importance to the Strategic Gap: **Low**"

5.6 The Landscape Study Update 2016 considers that the Local Green Gap is "the area required to provide an effective landscape setting for the settlements on either side of the gap" and therefore describes the landscape character, features, edges and views/visual attributes which define the landscape setting of Lancing and Shoreham-by-Sea. It then considers how these landscapes are perceived and the relationships between the component aspects of local landscape character and the contribution that each part of the Local Green Gap landscape makes to the landscape setting of Adur's towns.

- 5.7 The settings of Lancing and Shoreham are loosely defined, based on the broad zones of visual influence of accessible local views and the character of the landscape edges. The Landscape Study Update 2016 considers that the landscape setting of both settlements extends north into the South Downs National Park as the elevated backdrop to views. The setting to Lancing extends across the entire width of the gap to the east bank of the River Adur, and the landscape setting to Shoreham extends across the centre of the gap to Mash Barn Lane and the new football academy. It describes that there is an extensive overlap between the landscape settings of Shoreham and Lancing, which covers the central part of the Lancing-Shoreham Gap, including parts of the eastern side of the site.
- 5.8 Figure 6 of the Landscape Study Update (copied below) shows key landscape features, landmarks, and views which are considered to be distinctive within the Lancing - Shoreham Gap and also shows the 'landscape edges' which help to structure the way we perceive the landscape.



5.9 The features described as defining the setting of Lancing and Shoreham, include:

Landscape and Visual Statement: New Salts Farm, Shoreham-By-Sea Adur District Council SHLAA Call for Sites David Huskisson Associates – March 2016

- The importance of the River Adur as a key landscape feature within the Lancing-Shoreham Gap. The majority of the publicly accessible viewpoints within the gap are from the bridges across or paths alongside the river and the sinuous river corridor provides a striking and distinctive focus for local views
- The skyline of the chalk downs as the 'landform edge' and a backdrop to northward views across the Lancing-Shoreham Gap.
- At a local scale, the margins of the Lancing-Shoreham Gap are defined by the 'built edges' of roads, bridges and urban development and/or the 'green edges' of tree belts.
- The views along the River Adur and across the Lancing-Shoreham Gap from the A27 road bridge contribute to the landscape settings of Shoreham and Lancing because they are part of a dramatic sequence of views from the Downs to the Adur valley and coastal plain.
- Lancing Chapel is a striking landmark on the flank of the chalkland valley slopes.
- Other key views are from the elevated footpaths and open access land within the South Downs National Park, from which there are long views across the Lancing-Shoreham Gap, the railway line, which slices across the centre of the Gap, and the A259 near New Salts Farm.
- It is notable that there are very few opportunities for views across the Lancing-Shoreham Gap from local roads as views from the A27, A283 and A259 are typically constrained by built development (which provides a permanent screen) and/or vegetation (which may change with the seasons and could be removed). Within this context, the long, open views from the A27 Adur road bridge and the railway are particularly important.
- 5.10 The Updated Landscape Study 2016 Assessment of Landscape Sensitivity provides further analysis of the contribution that each of the Lancing-Shoreham Gap landscape character areas makes to the landscape settings of the settlements. In relation to the character areas within which the site lies, 'Contribution to landscape setting' is assessed as:

LCA6:

"The fields on either side of New Salts Farm Road provide a strategically important open greenspace which maintains a sense of separation between the buildings of Shoreham Airport and Shoreham (the neighbourhood north of Shoreham Beach). Views across this area also make a strong contribution to the sense of 'openness' and 'greenness' in the Lancing-Shoreham Gap, particularly in southward views from Lancing Ring, in which the gap appears to extend almost to the sea, and in northward views from the A259, in which the gap is the foreground to views to the Downs. The fields also contribute to the setting of the River Adur and form part of the gateway western approach to Shoreham-by-Sea.

- This is the only part of the Lancing-Shoreham Gap where there are direct views across open green fields from the A259, which runs along the southern fringes of the historic terminal building of Shoreham Airport are local landmarks in these views.
- LCA 7:

"This landscape has an odd relationship with the adjacent Hasler estate. There is no public access, but there are views from the ends of streets deadending onto the fields across the greenspaces to the wider landscape context of the Downs to the north. This area is an inaccessible backland, which makes minimal contribution to the amenity of the Hasler estate. However the LCA appears to be well wooded in views to the Lancing-Shoreham Gap from the Downs, across the Gap from the north and east and from trains crossing the Gap. It provides a striking contrast to the more open landscapes elsewhere in the Lancing-Shoreham Gap. This well treed character contributes to the distinctive landscape setting of Lancing"

### Landscape and Visual Sensitivity

- 5.11 An assessment of landscape and visual sensitivity of the LCAs within the Gap is made in the Adur DC Urban Fringe and Landscape Studies.
- 5.12 The Urban Fringe Study (paragraphs 6.28-6.30) assesses that within the Lancing-Shoreham Gap:

"Any major new development in the area north of the railway line would be readily visible in the views from the AONB/National Park, and be visible from other parts of the gap. This would adversely affect the integrity of the gap, reduce the sense of separation between settlements, and have a negative effect on the landscape of the area.

In landscape terms there are some opportunities to accommodate development. However, these should incorporate measures to mitigate the visual impacts of adjoining housing and, perhaps as part of a wider landscape improvement fund, strengthen the landscape structure of the gap and screen other features that detract from it.

<u>The least visible section of the gap is in the south west</u>. In this location, vegetation associated with the railway line, and the land to the north, screen the area in views from much of the gap and the Downs. Existing residential development to the east largely separates this area from the gap at New Salts Farm." (DHA emphasis)

5.13 The Urban Study identifies Area 7 on the western side of the site (alongside the adjoining Area 8 west of Old Salts Road) as one of ten sites overall which have potential as development sites. The two sites are merged into one larger area (Site Ref #6) which is investigated in more detail

and an assessment made as to the potential for development assessed in Section 7 of the study. This is reported in a Site Summary Table, which considers that: "Development here offers the opportunity to fund a package of landscape improvement works that could reinforce the quality of the remaining section of the gap, and provide benefits for the adjoining community. It would be desirable to provide a connection to the playing fields in the southern part of site five."

5.14 The following conclusion is drawn for the wider Site Ref #6:

"In planning and landscape terms building on the site is justified, and the site could play a very significant part in satisfying the district's housing requirements and deliver some employment land..... the area along the railway could yield employment land along with a rough estimation of 1150 homes, of course more detailed masterplanning work would be required." (DHA emphasis)

- 5.15 The Landscape Study 2012 and Landscape Study Update 2016 assess the Landscape Character Sensitivity as *Medium-high* for LCA6 (including the eastern side of the site) and *Medium* for LCA7 (including the western side of the site).
- 5.16 In terms of visual sensitivity, the Landscape Study 2012 assessed LCA6 as having Medium visual sensitivity and LCA7 as having Medium low visual sensitivity. The Landscape Study Update 2016 considers LCA6 to have an increased visual sensitivity, now assessed as Medium high with LCA7 assessment of visual sensitivity remaining as Medium low. No clear justification is provided for this increase.
- 5.17 Figure 9 of the Landscape Study Update (Assessment of Landscape Sensitivity) illustrates the Visual Appraisal for the Lancing-Shoreham Gap and is copied below for ease of reference.



Adur District boundary LCA boundary Areas visible from 1 viewpoint Areas visible from 2 viewpoints Areas visible from 3 viewpoints Areas visible from 4 viewpoints Areas visible from 5 viewpoints Areas visible from 7 viewpoints Areas visible from 8 viewpoints Areas visible from 9 viewpoints

Figure 9 - Visibility analysis: Lancing-Shoreham Gap

Landscape and Visual Statement: New Salts Farm, Shoreham-By-Sea Adur District Council SHLAA Call for Sites David Huskisson Associates – March 2016 5.18 It can be seen from Figure 9 that on the basis of the nine viewpoints analysed in the Landscape Study Update 2016, (these being considered by the reports' authors to represent "the most important views of the landscapes within the Lancing-Shoreham and Worthing-Sompting Gaps") that when compared against the Gap as a whole, the majority of the site is visible from relatively few of the viewpoints. The western side of the site is visible from five viewpoints, whilst parts of the eastern side of the site are visible from four of the viewpoints. It is also notable that the site is not prominent in the views considered by the authors of the Landscape Studies to be the most important.

### 5.19 LCA6 is assessed as:

"This farmland is highly visible in local views from roads. The open character of the landscape contributes to its overall visibility. In long distance views from the Downs (eg View 8) and give a sense of depth to the north-south views across the Gap. The open fields provide a valuable 'slice of green' separating the urban areas to the south from the buildings of Shoreham Airport.

Limited potential for to [sic] mitigate the effects of development in views across the gap in which these fields provide a valuable separation between existing urban areas. <u>Good</u> <u>potential for planting to improve the existing landscape structure, reinforcing the local</u> <u>landscape pattern and helping to integrate the adjacent poor quality built edges.</u>

Visual sensitivity **Medium high**" (DHA emphasis)

### 5.20 LCA7 is assessed as:

"Relatively enclosed landscape character, with trees and scrub along railway, woodland on fringes of Hasler estate and trees within field boundaries providing a sense of enclosure. The relatively enclosed 'wooded' character of the area is distinctive and also sensitive - it contributes a contrast in character to other parts of the Lancing-Shoreham Gap. Visibility is moderate-low, but more visible in sensitive views from Downs to the north. These high sensitive views show the LCA in the distance and the 'layers' of field and vegetation contribute to the sense of an extensive gap.

Good potential for mitigation, with additional planting providing potential to improve interface between housing in South Lancing (Hasler estate) and adjacent landscape to north. Scope to soften the poor quality edge of these urban edges in the sensitive views from Lancing Ring with additional planting along northern edges of LCA.

Visual sensitivity: Medium low" (DHA emphasis)

5.21 Landscape character sensitivity is then combined with visual sensitivity to give an assessment of overall landscape sensitivity. This is assessed as *Medium-Low* for LCA6 and *Medium* for LCA7 in the Landscape Study 2012. With regard to LCA6, it is noted that by reference to the rather brief

methodology provided for the assessment, the matrix illustrated for combining landscape character sensitivity and visual sensitivity to rank Overall Landscape Sensitivity suggests that a Medium-high ranking should have been applied at this stage. The Landscape Study Update 2016 indeed shows an increased *Medium-high* overall landscape sensitivity for LCA6.

5.22 It is significant that the Landscape Study 2012 identified Indicative Development Principles for LCA6 and LCA7, indicating potential development areas as well as new public greenspaces, planting and SUDs opportunities within the site. Potential landscape and ecological impacts were assessed based on the Indicative Development Principles. Resulting landscape impacts for LCA6 (referenced as Land NE of Hasler Estate) being assessed as:

"This development would be highly visible from local roads (A259 and New Salts Farm Road) and is in a relatively open landscape towards the fringes of the Adur Estuary. It would result in a change to the inherent landscape character, <u>but with positive benefits</u> in terms of public access and the development of an enhanced built/landscape interface in this part of South Lancing. There are not predicted to be detrimental impacts on key views across the Lancing Gap. Development here could provide the catalyst for the sustainable management of land to the east of New Salts Farm Road for public access and nature conservation purposes, with further scope for enhancements to the adjacent Adur Recreation Ground and the footpaths on the edge of the Estuary". (DHA emphasis)

5.23 Resulting landscape impacts for LCA7 (referenced as land NW of Hasler Estate) being assessed as:

"Development on this site could be accommodated without detriment to the landscape and visual character of this relatively enclosed part of the Lancing Gap. Development areas could be 'slotted' between areas of retained woodland/scrub and new belts of woodland would screen views to housing while conserving landscape character. <u>There</u> would be opportunities to provide an excellent multi-functional GI corridor, with much needed public access". (DHA emphasis)

5.24 Notwithstanding some confusion regarding the ranking of Overall Landscape Sensitivity for LCA6, the Indicative Development Principles were prepared on the basis of the site-specific considerations of landscape character and visual sensitivity and therefore, even if the Overall Landscape Sensitivity ranking was wrongly recorded in the Landscape Study 2012, the recommendation for development still stands.

### Landscape and visual recommendations:

5.25 The Adur DC studies provide a general indication of the intrinsic landscape and visual sensitivities and the potential constraints and attributes relating to the wider site area. They also indicate that

a development proposal in line with the Indicative Development Principles, could be accommodated on the site without significant detriment to the landscape and visual character of the Gap and with some positive benefits.

- 5.26 The Adur DC studies are based upon an assessment of inherent sensitivity; that is that they do not consider the sensitivity of the landscape to a specific development proposal or scale of change. Whilst this might not be considered an unreasonable approach to informing strategic decision making, clearly there is also scope for different judgements to be made when sensitivity is assessed in relation to specific development proposals such as required for Environmental Impact Assessment.
- 5.27 In addition, the assessments are made against landscape character areas that extend far wider than the site and therefore there is an inevitable 'averaging out' of assessment rankings across each area. This is pertinent in relation to the site as many of the features which contribute to its sensitivity, whilst falling within the local site setting are outside of the site itself and would not be directly affected by development of parts of the site. Significant proportions of LCA6 and LCA7 lie outside of the site and would remain unaltered and therefore continue to provide their existing function within the Gap as open and undeveloped areas which form a visual break between the settlements and assist with a sense of travelling between the settlements but with a better urban edge established by a comprehensive development with appropriate landscape treatment.
- 5.28 Whilst the eastern side of the site when considered within its wider setting of LCA6 is assessed in the Adur DC studies as having a Medium-high overall landscape sensitivity, this should be considered in the context of the majority of the LCAs within the Lancing-Shoreham Gap also having medium high or even high overall landscape sensitivity. As the site does not include the whole of LCA6 and LCA7, it is considered that the key landscape and visual sensitivities noted in the studies, could be addressed as part of an appropriate design scheme without compromising the distinctiveness and integrity of the Lancing Shoreham Gap. In particular, retaining a sense of the direct open views from the A259 across the Gap and to Shoreham Airport as well as a perception of a depth of green space extending almost to the coast when viewed from the Downs.
- 5.29 The western part of the site as part of LCA7 is one of four LCAs with Medium overall landscape sensitivity. With regard to the western side of the site (within LCA7), this sits within the perceived well treed character recognised as contributing to the landscape setting of Lancing. Development of the site could be accommodated without compromising the overall impression of a well wooded landscape that contrasts with the more open landscapes elsewhere within the Gap.
- 5.30 Whilst development of any greenfield site would result in a direct loss of landscape resource, it is considered that there is scope to accommodate a degree of development on the site broadly based upon the Indicative Development Principles and Landscape Strategy that would address

the key landscape and visual sensitivities identified as contributing to the Gap and the overall landscape sensitivity of the LCAs within which the site sits.

5.31 The Illustrative Masterplan and Landscape Strategy are considered to show how these objectives could be met and are described in the following Section.

### 6 ILLUSTRATIVE MASTERPLAN SCHEME AND LANDSCAPE STRATEGY

- 6.1 An Illustrative Masterplan (Drawing no: 15.003\_010 by HGP Architects) has been prepared to demonstrate how one possible arrangement of development could be accommodated on the site. In particular, the Illustrative Masterplan has sought to integrate landscape and other environmental mitigation as a driver of the scheme design; through developing an illustrative layout that seeks to avoid then reduce potential adverse impacts, in particular addressing the sensitivities identified in the Adur DC Landscape Studies.
- 6.2 The Illustrative Masterplan accommodates 455 residential units located across the site and broadly reflects the 'Indicative Development Principles' for LCA6 and LCA7 presented at Figure 14f and 15f of the Adur Landscape Study 2012. These are copied below for ease of reference:





Figure 14f - Land NW Hasler Estate/Old Salt's Farm: Indicative development principles

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Figure 15f - Land NE Hasler Estate: Indicative development principles

- 6.3 Notably the Illustrative Masterplan incorporates the following green infrastructure and development principles that were recommended in the Landscape Study 2012:
  - "The network of ditches and riparian habitats across the site is retained as a GI corridor, connecting the urban fringe with habitats along the railway embankments and beyond. This corridor also provides extensive opportunities for SUDs, which will be essential on this low lying site." This has been incorporated through the retention of the existing ditch network with a minimum 8m buffer retained as an undisturbed wildlife corridor on either side of the ditch. These would link to areas of retained woodland and scrub and a new open space corridor with tree planting along the northern boundary linking to a wet meadow SUDs area and open space buffers to the eastern boundary.
  - "There may be potential opportunities for pedestrian connections between the development areas and the existing adjacent residential areas, as well as for circular walks along the GI corridor". This has been incorporated through providing pedestrian routes with footbridge across the ditch corridors to link between the parts of the site lying in LCA6 and those lying in LCA7 and through providing pedestrian routes linking to the A259, New Salts Farm Road and the currently dead-end roads in West Beach.
  - "The existing isolated wetland area in the fields to the west of New Salts Farm Road is incorporated as part of a chain of new wetlands along the road, which provide a distinctive landscape setting for the new development and a functional SUDS". This has been incorporated through linking to a wet meadow SUDs area and the retained network of drainage ditches and their buffer zones. An undeveloped corridor of open space and landscaping is proposed along the eastern boundary with New Salts Farm Road.

Landscape and Visual Statement: New Salts Farm, Shoreham-By-Sea Adur District Council SHLAA Call for Sites David Huskisson Associates – March 2016

- "By keeping the development edge to the west of New Salts Farm Road, the historic outer edge of the floodplain is legible in the wider landscape and the fields which form the gateway to the Adur Estuary are retained as a key part of the landscape setting of Lancing and Shoreham. This area of 'trapped' estuary land also retains its distinctive and sensitive historic field pattern, with traces of former water channels/flood embankments visible within the fields". This is achieved as the site does not include land to the east of New Salts Farm Road.
- "The new wetlands alongside New Salts Farm Road create a distinctive entrance to the development, appropriate to its edge of estuary site. New Salts Farm Road would be perceived as a 'causeway', with wetlands on either side, giving prominence to the landmark building." Fields to the south-east of New Salts Farm Road are excluded from the site. An undeveloped corridor of open space and landscaping is proposed along the eastern boundary with New Salts Farm Road.
- "The farmland to the east of New Salts Farm Road is particularly visible in longer views (eg from Lancing Ring) and this will be retained, but the smaller area of greenspace to the NW of New Salts Farm Road will be perceived (in long views from the north) as an extension of this 'slice' of greenspace, retaining the sense that there is a depth of greenspace beyond the railway/airport buildings and preventing a perceived coalescence of development". Farmland to the east is excluded from the site. This is otherwise achieved through the creation of an open space and landscape corridor along the northern and western boundaries of the site, expanding out in the north east corner to create a sense of retaining a depth to the Gap.
- "New woodland planting along the railway embankment screens and integrates the new housing edge, extending the existing chain of woodland/scrub habitats along the railway." This is achieved planting within the proposed open space corridor along the northern site boundary. Planting would need to be arranged to allow the retention of key views to Lancing College and the Downs and also agreed with Network Rail.
- "New housing to the north of Broadway Park could link to (and/or form part of) new development off Old Salts Farm Road (Land NW of Hasler Estate)". This is achieved through the site encompassing part of LCA6 and LCA7(Land NW of the Hasler Estate also recorded as Hasler fringe)
- 6.4 The following design principles have also been incorporated into the Illustrative Masterplan to address some of the site-specific opportunities and constraints identified in the Adur DC Landscape Studies and as part of our baseline appraisal:
  - Provision of a network of a corridor of green and public open spaces to the northern and eastern edges of the site to act as a buffer to the development and help to retain the

perception of a visual break between settlements and prevent a perceived coalescence of built development between the airport buildings, West Beach and South Lancing and Shoreham Beach. This would also retain an area of green space south of the railway line in views of the Gap from the Lancing Ring.

- The site does not extend east of New Salts Farm Road and also excludes two fields in the south-east corner of LCA6 adjoining the A259 roundabout. Subject to the respective landowners continuing with existing land management practices, existing views would be retained from the A259 across open fields of the Gap to the listed terminal building at the airport and the backdrop of the South Downs and would continue to contribute to the sense of travelling between settlements on the A259 coastal road. This also assists with retaining the perception of New Salts Farm Road as a line within an open landscape.
- Creation of public open space to the north of Bristol Avenue in West Beach which would provide public access from existing residential areas and link to the wider areas of open space on the site with potential for linkages to be created to the wider countryside beyond the site. This space, in tandem with the public open space at the northern edge of the site, would allow opportunities to retain key views to the South Downs and Lancing College through the careful positioning of tree planting at the detailed design stage.
- Provision of public access between the site and the East Lancing recreation ground.
- Extension of the current dead-end roads in West Beach to link to the proposed development, creating a more appropriate street and development pattern and providing increased access, permeability and a sense of completion.

### Landscape Strategy

- 6.5 The proposed landscape strategy is illustrated on Figure DHA 2 and set out in the text below. The overarching objective of the landscape strategy is to integrate the proposed development into the existing landscape and to ensure the proposed development provides a more appropriate treatment to the rural/urban edge. The landscape strategy outlines a number of landscape recommendation to achieve this:
  - Soft boundary treatments to be incorporated including hedgerows and tree planting to create a more robust and softer interface between the urban edge and the countryside and mitigate the visual impacts of adjoining housing. A more open boundary treatment should be incorporated to locations on the eastern boundary with New Salts Park Farm and to the northern boundary open space to retain a sense of an open landscape in these areas.
  - Planting to the site boundaries and other structural planting should lie outside of private curtilages to ensure retention and ongoing management in the longer term.

Landscape and Visual Statement: New Salts Farm, Shoreham-By-Sea Adur District Council SHLAA Call for Sites David Huskisson Associates – March 2016

- Open spaces to provide informal amenity space with a natural appearance, including incorporating existing ditches/streams and new SUDs wet meadow areas.
- The open space on the northern boundary should incorporate increased tree planting to help mitigate the visual impacts of the railway whilst still allowing for views into and out of the development. The detailed design of this area should allow for retaining key views to the South Downs and Lancing College.
- Road frontage to A259 would include a wide landscape verge to provide habitat linkage and create a perception of approaching open green space when traveling east towards Shoreham.
- There is limited existing vegetation on the site, but existing ditches, trees to the railway
  embankment and the wooded stream and woodland/scrub blocks in the western part of
  the site would be retained and augmented with additional native planting.
- Formal hedge planting and small-medium size trees to private front gardens along the main access roads through the site to soften its appearance and provide structure, defining private front garden frontages. Open grass verges onto public realm areas addressing the access roads to retain a feeling of openness.
- All planting to be of local provenance, with an emphasis upon native and maritime species and selected for its interest and benefit to wildlife and aesthetic appeal as well as suitability to the microclimate.
- Play facilities to be incorporated into the open space corridors to meet Adur DC requirements but with an overall natural appearance such as using natural play features and timber furniture.
- Consideration should be given to the height of the development to ensure building heights respond to nearby properties whilst allowing for flood constraints. The use of green/blue flat roofs should also be considered to help limit visual impact and provide biodiversity and landscape benefit.
- The use of block paving should be considered to provide permeable surfacing and soften the impact of hard surfaced areas.
- The use of local materials and features would also assist in integrating any development into the local landscape. In this respect the West Sussex Local Distinctiveness Study could be an appropriate basis from which to develop architectural detail design proposals.
- 6.6 All of the above would be set within a long term Landscape and Ecological Management Plan (LEMP), secured by legal agreement. The LEMP would address the appropriate maintenance and management of the landscape features of the site such as the open spaces, wet meadow, ditches

and boundary treatments and other structural landscape including trees and woodland, grassland, hedgerows and SUDs areas.

### Potential landscape and visual impacts

- 6.7 The 2012 Landscape Study summarises the potential landscape and ecological impacts of the Illustrative Development Principles (as taken forward in the Illustrative Masterplan now being submitted), with the resulting landscape impacts being noted as:
  - "LCA6: This development would be highly visible from local roads (A259 and New Salts Farm Road) and is in a relatively open landscape towards the fringes of the Adur Estuary. It would result in a change to the inherent landscape character, but with positive benefits in terms of public access and the development of an enhanced built/landscape interface in this part of South Lancing. There are not predicted to be detrimental impacts on key views across the Lancing Gap. Development here could provide the catalyst for the sustainable management of land to the east of New Salts Farm Road for public access and nature conservation purposes, with further scope for enhancements to the adjacent Adur Recreation Ground and the footpaths on the edge of the Estuary.

And:

- LCA7: Development on this site could be accommodated without detriment to the landscape and visual character of this relatively enclosed part of the Lancing Gap. Development areas could be 'slotted' between areas of retained woodland/scrub and new belts of woodland would screen views to housing while conserving landscape character. There would be opportunities to provide an excellent multi-functional GI corridor, with much needed public access."
- 6.8 It is considered that the Illustrative masterplan scheme now presented alongside appropriate landscape measures as defined in the landscape strategy would be likely to result in similar potential landscape effects, including the noted positive enhancements of providing public access (where none currently exists) and the creation of an enhanced built/landscape interface.
- 6.9 Whilst development of the site would clearly result in a direct loss of the landscape resource, simply by taking green fields for development, (as would be the case for any greenfield development), the layout shown on the Illustrative Masterplan and described in the landscape strategy has been developed to respond to the sensitivities of the local landscape character and distinctive qualities of this part of the Strategic Gap.
- 6.10 It is considered that within an appropriate and robust landscape strategy, residential development could be accommodated on the site as shown on the Illustrative Masterplan, and landscape strategy to minimise landscape and visual effects whilst safeguarding the qualities of the Strategic Gap and managed for the long term through a legal agreement.

### 7 SUMMARY AND CONCLUSION

- 7.1 This statement sets out the landscape and visual context of the site, which lies within the Lancing-Shoreham Strategic Gap.
- 7.2 The site forms part of two wider character areas assessed in the 2006 Adur Urban Fringe Study, the 2012 Adur Landscape Study and the very recent Adur Landscape Study Update 2016. These are:
  - LCA6, covering the eastern side of the site and fields to the east of New Salts Farm Road, and
  - LCA7 covering the western part of the site and wooded/scrub areas beyond this to the south and west.
- 7.3 LCA6 was assessed as having Medium low overall landscape sensitivity in the 2012 Landscape Study, subsequently increasing to Medium-high overall landscape sensitivity in the Landscape Study Update 2016. LCA7 was assessed as having Medium overall landscape sensitivity. The 2012 study includes Indicative Development Principles for LCA6 and LCA7 that take account of the wider findings in the reports.
- 7.4 The Adur DC studies provide a general indication of the intrinsic landscape and visual sensitivities and the potential constraints and attributes relating to the wider site area. They also indicate that a development proposal in line with the Indicative Development Principles, could be accommodated on the site without detriment to the landscape and visual character of the Gap and with some positive benefits.
- 7.5 The Adur DC studies are based upon an assessment of inherent sensitivity; that is that they do not consider the sensitivity of the landscape to a specific development proposal or scale of change. Whilst this might not be considered an unreasonable approach to informing strategic decision making, clearly there is also scope for different judgements to be made when sensitivity is assessed in relation to specific development proposals such as required for Environmental Impact Assessment.
- 7.6 In addition, the assessments are made against landscape character areas that extend wider than the site and therefore there is an inevitable 'averaging out' of assessment rankings across each area. This is pertinent in relation to the site as many of the features which contribute to its sensitivity, whilst falling within the local site setting are outside of the site itself and would not be directly affected by development of parts of the site. Significant proportions of LCA6 and LCA7 lie outside of the site and would remain unaltered and therefore continue to provide their existing function within the Gap as open and undeveloped areas which form a visual break between the settlements and assist with a sense of travelling between the settlements.

- 7.7 Whilst the eastern side of the site when considered within its wider setting of LCA6 is assessed as having a Medium-high overall landscape sensitivity, this should be considered in the context of the majority of the LCAs within the Lancing-Shoreham Gap also having medium high or even high overall landscape sensitivity. As the site does not include the whole of LCA6 and LCA7, it is considered that the key landscape and visual sensitivities noted in the studies, could be addressed as part of an appropriate design scheme without compromising the distinctiveness and integrity of the Lancing Shoreham Gap. In particular, retaining a sense of the direct open views from the A259 across the Gap and to Shoreham Airport as well as a perception of a depth of green space extending almost to the coast when viewed from the Downs.
- 7.8 The western part of the site as part of LCA7 is one of four LCAs with Medium overall landscape sensitivity. With regard to the western side of the site (within LCA7), this sits within the perceived well treed character recognised as contributing to the landscape setting of Lancing. Development of the site could be accommodated without compromising the overall impression of a well wooded landscape that contrasts with the more open landscapes elsewhere within the Gap.
- 7.9 An Illustrative Masterplan has been prepared to demonstrate how one possible arrangement for residential development could be accommodated on the site. In tandem with the landscape strategy, this illustrates how a scheme could be implemented in a way that would ensure that landscape and visual issues are suitably addressed. It is broadly based upon the Indicative Development Principles.
- 7.10 A landscape strategy is also proposed and is described in Section 5 of this report and illustrated on Figure **DHA 2**.
- 7.11 The overarching objective of the landscape strategy is to integrate the proposed development into the existing landscape and to ensure the proposed development provides a more appropriate treatment to the rural/urban edge. The landscape strategy outlines a number of landscape recommendation to achieve this.
- 7.12 The Landscape Study 2012 considers potential landscape impacts, noting several potentially positive enhancements. It is considered that the Illustrative masterplan scheme now presented, alongside appropriate landscape measures as defined in the landscape strategy, would be likely to result in similar potential landscape impacts, including the positive enhancements noted.
- 7.13 Whilst development of any greenfield site would inevitably result in a direct loss of landscape resource, it is considered that there is scope to accommodate a degree of development on the site broadly based upon the Indicative Development Principles and Landscape Strategy that would address the key landscape and visual sensitivities identified as contributing to the Gap and the overall landscape sensitivity of the LCAs within which the site sits.

7.14 The site lies within landscape character areas assessed by Adur DC as making a contribution to the Strategic Gap/Local Green Gap. It is considered however, that development of the site as envisaged would not be perceived as materially eroding the Strategic Gap/Local Green Gap in this area which would continue to provide a green and open setting, with the potential benefit of landscape management that could be secured for the long term by legal agreement. The fundamental role of the Strategic Gap/Local Green Gap in this vicinity would not be compromised by its release for development adopting the principles identified on the Illustrative Masterplan and landscape strategy.



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#### GREEN INFRASTRUCTURE AND DEVELOPMENT PRINCIPLES

1 Retention of a GI corridor with SUDs - Network of existing ditches to be retained with a minimum am buffer as an undisturbed wildlife control to be any other side of the dilch. These would link to areas of retained woodland and scrub and new open space corridor with free planting along the northern boundary linking to a wet meadow SUDs area and open space buffers to the eastern boundary.

Improve pedestrian conections - Pedestrian routes proposed with footbridges across the ditch corridors to link between the parts of the site lying in LCA6 and those lying in ICA7. Creation of a public open space to the onth of Bristal Avenue in West Beach, Pedestrian routes also proposed to link to the East lancing recreation ground, A259, New Salts Form Road and the existing residential areas on currently dead-end roads in West Beach, with potential for linkages to be created to the wider countryside beyond the site.



(3) Incorporate existing isolated wetland area to provide a distinctive landscape setting for the new development and a functional SUDS - A wet meadow SUDs area is proposed to link with the retained network of drainage ditches and their buffer zones. An undeveloped corridor of open space and landscaping is proposed along the eastern boundary with New Salts Farm Road.

A Perception of New Salts Farm Road as a 'causeway', with wetlands on either side, to give prominence to the farm building - An undeveloped corridor of open space and landscaping is proposed along the eastern boundary with New Salts Farm Road.

(5) Retain the sense that there is a depth of greenspace beyond the railway/airport buildings and prevent a perceived coalescence of development - A proposed network of areen corridors and public open space to the northern, eastern and vestern boundaries of the site, to act as a buffer to development and help

#### GENERAL LANDSCAPE NOTES:

All planting to be of local provenance, with an emphasis upon native and maritime species and selected for its interest and benefit to wildlife and aesthetic appeal as well as suitability to the microclimate.

Play facilities to be incorporated into the open space corridors to meet Adur DC requirements but with an overall natural appearance such as using natural play features and timber furniture.

act of hard surfaced area The use of local materials and features should be incorporated to help

integrate the development into the local landscape Consideration should be given to the height of the development to ensure building heights respond to nearby properties whilst allowing for flood

retain the perception of a visual break between settlements and prevent a

coalescence of built development. This would also retain an area of green space south of the railway line in views of the Gap from the Lancing Ring. The open space would expand out in the north east corner to allow a sense of retaining a depth to the Gap.

(6) New woodland planting along the railway embankment to screen and integrate the new housing edge and extend the existing chain of woodland/scrub habitats along the railway - Planting is proposed within the proposed open space along the northern site boundary and would be arranged to allow the retention of key views to Lancing College and the Downs (subject to agreement with Network Rail).

constraints. The use of green/blue flat roofs should also be considered to

Block paving should be considered to provide permeable surfacing and

help limit visual impact and provide biodiversity and landscape benefit

### LANDSCAPE RECOMMENDATIONS

2 A more open boundary treatment should be incorporated to locations or the eastern boundary with New Salts Park Farm and to the northern boundary open space to retain a sense of an open landscape in these

appearance, including incorporating existing ditches/streams and new SUDs wet meadow areas.

LANDSCAPE MANAGEMENT A long term Landscape and Ecc should address the approp management of the site's land open spaces, wet meadow treatments and other structural and woodland, grassland, hed would be secured by legal ag

| ological Management Plan<br>riate maintenance and<br>scape features such as the<br>, ditches and boundary<br>landscape including trees<br>gerows and SUDs areas. This<br>tement. |
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FOR ILLUSTRATIVE PURPOSES ONLY

- Soft boundary treatments including hedgerows and tree planting to create a more robust and softer interface between the urban edge and the countryside and mitigate the visual impacts of adjoining housing. Planting to the site boundaries should generally lie outside of pirvate currliages to ensure retention and ongoing management in the longer term. planting to help mitigate the visual impacts of the railway whilst still allowing for views into and out of the development. The detailed design of this area should
  - 5 Road frontage to A259 would include a wide landscape verge to provide habitat linkage and create a perception of approaching open green space when traveling east towards Shoreham.
  - (6) Existing ditches, trees to the railway embankment, wooded stream and woodland / scrub areas to be retained and augmented with additional native planting.
- (3) Open spaces to provide informal amenity space with a natural (7) Formal hedge planting and small-medium size trees to private front gardens along the main access roads through the site to soften its appearance and provide structure, defining private front garden frontages. Open grass verges onto public realmarreas addressing the accessroads to retain a feeling of openness.

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Feasibility Research

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Structural Design

Eco and MMC Focused Flood Risk Assessment Issue 3 New Salts Farm - Shoreham 11649 For The Hyde Group

Engineering at its Best



## **Report For**

The Hyde Group

Scheme No: 11649

New Salts Farm Road Land -Shoreham

Flood Risk Assessment Issue 3

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23rd March 2016

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### Flood Risk Assessment Issue 3

## **1.0 Introduction**

1.1 Tully De'Ath have been commissioned by Hyde Group to undertake a Flood Risk Assessment (FRA) for a detailed planning application of Phase 1 of the New Salts Farm development in Shoreham.

To enable the whole of the New Salts Farm to be considered for inclusion within the Local Development Plan this report will also review the flood risks across the development area and will demonstrate how these risks can be mitigated.

It is anticipated that as each future phase is developed a phase specific FRA will be provided to accompany each planning application.

1.2 The purpose of the report is to demonstrate to the Planners, the Environment Agency (EA) and West Sussex County Council as Lead Local Flood Authority that the proposed development is subject to an acceptable level of flood risk and should not increase the likelihood of flooding elsewhere.

The report has been prepared in accordance with the National Planning Policy Framework (NPPF) and the 2014 Planning Practice Guidance – Flood Risk & Costal Change, which has recently superseded the Technical Guidance document to the NPPF.

The surface water drainage principles will follow the guidance, Water.People.Places. - prepared by the Lead Local Flood Authorities of the South of England.

The FRA will make reference to the Adur and Worthing Strategic Flood Risk Assessment (SFRA) and the Lancing Surface Water Management Plan (SWMP).

## 2.0 Site Location

- 2.1 New Salts Farm is located to the west of Shoreham and covers an area of 28.2Ha. The Farm is bounded by the railway line to the north, New Salts Farm Road to the east and West Park Estate to the south. The south eastern corner of the site fronts onto the A259, Brighton Road. Shoreham Airport is located to the north and the River Adur to the East.
- 2.2 Phase 1 is located in the south eastern corner of the farm and covers an area of 1.89 Ha.

Refer to Appendix A for a location plan.



## 3.0 Existing Conditions

3.1 The Farm comprises agricultural fields which are currently used for grazing.

### 3.2 <u>Topography</u>

A topographical survey (Appendix B) shows the site levels across the Farm are relatively flat, typically ranging from 1.8m AOD to 1.2m AOD.

The levels within Phase 1 range between 1.6m AOD to 1.9mAOD along the southern boundary and fall gently to the north western corner with levels typically 1.2m AOD. Adjacent to this boundary a ditch extends to the west toward the West Park Estate, with levels ranging between 0.6-0.8m AOD.

### 3.3 <u>Water Features</u>

There are a number of drainage ditches across the development area which are part of the Lancing Brooks drainage system. The majority of these ditches drain to the northern boundary, adjacent to the railway line, before ultimately discharging into the River Adur to the east. These ditches are linked to sluice gates (the Lancing Brooks Outfall) on the eastern side of New Salts Farm Road which stop tidal flows from the Adur flowing back into the ditches. Consequently, during high tides the ditches hold water until the levels in the Adur drop.

From the Phase 1 site the sluice gates of the River Adur are approximately 200m to the east, with the main river channel of the Adur a further 300m beyond.

Widewater Lagoon is a manmade feature which lies to the south of Brighton Road, approximately 100m from the south western corner of Phase 1. It is a landlocked brackish Lagoon (approximately 1.2 km long and 50m wide) bordered on its south side by the sea defenses and shingle beach. Water levels rise following high tides and heavy rainfall events.

The coast is located 250m to the south of the most southerly section of the site (Phase 1).

### 3.4 <u>Sewerage System</u>

Based upon the Southern Water sewer records (Appendix C) there is an existing adopted 200 dia. foul sewer located adjacent to the western boundary of Phase 1 which drains the buildings on the western side of New Salts Farm Road. A rising main crosses part of the site adjacent to the southern boundary linking the foul drainage from Wenceling Cottages to the adopted sewer in Orient Road.

The sewer records indicate that there are no adopted surface water sewers on the Farm

### 3.5 <u>Geology</u>

The geological maps indicate that the natural site geology consists of Alluvium/Marine Deposits over Newhaven Chalk.

Intrusive testing has established that beneath a thin layer of top soil a depth (0.35m-1.85m) of sandy clay overlies sand (0.9m-1.65m) which in turn overlies gravels which was proven to a thickness in excess of 3.5m.

Ground water was struck during the fieldwork between a depth of 0.7m and 1.7m below ground level. Ground water monitoring wells and dataloggers were installed which established that the ground water levels on the eastern part of the farm are significantly influenced by the tide, although there appears to be a 1.5 - 2 hour time lag between high tide and high water level. Ground water monitoring results are included within Appendix D.



Within Phase, 1 ground water levels were generally recoded at 0.4m - 1.0m bgl at high tide, which dropped to 1.7m - 2.4m bgl at low tide. However one of the dataloggers located adjacent to the southern boundary was consistently recorded above ground level which suggests that groundwater is periodically artesian. Based upon these findings this part of the site should periodically flood, however this has not been witnessed, neither are we are aware that this area routinely floods, which could be as a result of the impermeable clay area that covers the site and prevents ground water rising to the surface.

Ground water levels to the western side of the farm showed little fluctuation and has therefore negligible tidal influence. This is believed to be as a result of lower permeable geology.

Within the SWMP the relationship between the Lancing Brook Ditches and the ground water is discussed. It states that due to the characteristics of the superficial deposits the high ground water levels may provide some base flows to the surface water ditches. However, it is likely to be only a relatively small contribution to the overall flow in the drainage ditches.

The EA's Ground Water Vulnerability map shows the site is not within a source protection zone but overlays a Minor Aquifer High Vulnerability.

### 4.0 Development Proposals

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4.1 The New Salts Farm development is targeting up to 455 new homes split across a number of phases. Phase 1 will provide 49 houses with a mix of new hard and soft landscaping. Refer to Appendix E for details of the Phase 1 site layout, unit type plans and a future phasing plan.

All the units will have flat roofs incorporating green roofs with integral attenuation below. Permeable paving will be provided to all roads, parking courts and hard paved areas.

Access to the site will be via a new access road from the Brighton Road.

### 4.2 <u>Sequential and Exception Tests</u>

The Hyde Group are looking to promote the New Salts Farm through the Local Plan process for a development allocation of up to 455 units. It is recognised that the New Salts Farm is located within a flood risk area and if the site is to be identified on the Development Plan then a Sequential and Exception test will be required.

The purpose of the Sequential Test is to demonstrate that there are no sequentially preferable available sites at a lower flood risk within a defined search area which could deliver the proposed development.

On the basis that a Sequential Test has been passed, the site could be considered suitable for residential development where the Exception Test is also passed.

For the Exception Test to be passed it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, and a site specific flood risk assessment must demonstrate that the development will be safe for its lifetime.

Within Appendix F Boyer Planning have undertaken a Sequential and Exception Test which demonstrates that both tests are passed and therefore the development site can be considered for residential development to deliver much needed new homes in the Local Plan area to meet housing need.



# **5.0 Flooding Assessment**

### 5.1 <u>Historic Flood Data</u>

With reference to the SFRA Historic Flood Maps (Appendix G) there are areas of surface water flooding indicated to the western side of the development area, which appear to follow the lines of the existing ditches/drains. West Beach Estate and the adjacent south western corner of the development areas are noted as having tidal flooding incidents. The nearest recorded sewer flooding incident within the SFRA has been recorded in West Way, to the south of the site.

No historic flood events have been noted within the Phase 1 site.

The Lancing SWMP (Appendix H) also provides data of historic flooding over the winter of 2013/14 which was the wettest winter on record. During this period regular flooding on the highway occurred on the Broadway, West Way and Prince Avenue.

West Beach Estate suffers from regular surface water and ground water flooding. As part of the wider SWMP, a separate drainage report was produced by CH2M HILL to review the existing drainage issues within the West Beach Estate. The findings indicated that much of the flooding issues on the estate were associated with poor maintenance of the existing drainage system. However, there were ground water flooding incidents associated with high tide events. In addition, it has been established that a number of the estate roads drainage systems were not connected into the adjacent Lancing Brook ditches and as a consequence had no formal outfall.

A number of reports (undertaken in 1994, 2010 and as part of the SWMP) have also reviewed the condition and effectiveness of the Lancing Brook ditches, which form an integral part of the surface water drainage system within Lancing. The reports found that the ditches were poorly maintained which severely reduced their effectiveness (Appendix H).

Over recent years the ditches have been cleaned out, an obstruction has been removed near the outfall and the Lancing Brook Outfall was redesigned to increase its capacity. Consequently, the effectiveness of the ditches have significantly improved. Anecdotal evidence form local residents also suggests that the drainage ditches are working more effectively.

### 5.2 Flood Maps and Modelling

Within the SFRA, the New Salts Farm site has been assessed as one of the Core Strategy Sites, however it is referred to as 'Land North East of the Hasler Estate'. These details are included within Appendix G. Additional flood maps from the EA were also obtained and are appended within Appendix I.

To summerise the maps:

- Fluvial Flood Risk Zone 3a for the whole of the New Salts Farm site with a residual risk associated with a breach of the River Adur west bank defences.
- Tidal Flood Risk Generally Zone 3a although there are areas (39% of the site to the north and west) which lies within a Zone 3b. There is a residual risk of breaching of the defenses along the River Adur and wave overtopping along the costal frontage.
- Ground Water Flooding susceptible to ground water emergence is more than 75%. The geological data indicates that there are 'windows' of ground water emergence on the site.
- Surface Water Flood Risk Low, as the limited areas highlighted as being susceptible to flooding can be aligned to the existing drains/ditches on the site.
- Sewer Flooding Low, with no reported incident of sewer flooding within the site although there is recorded flooding issues in West Way, to the south east of the site.

The EA have provided flood model data for the New Salts Farm site for a series of storm events which include a 1:75, 1:200, 1:200 plus climate change (CC) and a 1:1000 event for both defended and undefended scenarios (Appendix I). The 1:200 event with an allowance for climate change was



the more onerous value with a maximum flood height of 5.391m AOD for the undefended event and 5.050m AOD defended scenario.

The condition of the existing defences has been assessed as relatively good (i.e. not poor), consequently the defended 1 in 200 +CC flood level will be used when assessing flood levels.

## 6.0 Flood Management & Mitigation

### 6.1 To reduce the flood risk a number of mitigation measures are proposed.

### Unit Types

All units will provide accommodation at first floor level only and the ground floor areas will be allowed to flood in extreme conditions. This will provide a safe refuge area above the flood level.

The units will be constructed using flood resilient materials and will be structurally designed to withstand the potentially significant flood depths. The ground floors will be incorporate robust material so that the units can be easily reinstated to a habitable standard. Refer to Appendix E for details of the units.

### 6.2 Floor Levels

The first floor level will be set at a level 300mm above the 1 in 200+CC tidal event. This equates to a minimum floor level of 5.35m AOD which is in the order of 3.0m above existing ground level.

The ground floor levels will also be locally raised 300mm above the existing ground level to mitigate against the risk of ground and surface water flooding. The surrounding ground levels will be designed to divert flood waters away from the buildings.

### 6.3 <u>Surface Water Run-off Rates</u>

Where infiltration into the sub-soils are not appropriate surface water run-off will be restricted to match greenfield run-off rates via the use of flow control devices.

### 6.4 Surface Water Attenuation

Attenuation will be provided to accommodate a 1 in 100+CC pluvial event via a variety of devices which will include roof top attenuation, permeable paving and swales

### 6.5 <u>Exceedance Events</u>

The attenuation within the permeable paving will be designed to hold a 6hr 100+CC event within the sub-base material, assuming no filtration. This will replicate a high ground water event coinciding with a heavy rainfall event. Should the capacity of the attenuation within the hard paved areas be exceeded, any overflow will be directed to the adjacent swales/ditches. These ditches will provide additional attenuation as well a means of conveyance and surface water disposal via the Lancing Brooks Outfall. As discussed in Chapter 3, the water levels in the ditches are only partially influenced by ground water.



### 6.6 <u>Safe Access and Egress</u>

Due to the topography of the surrounding area, it may not be possible to provide a dry means of escape from the buildings in the event of a flood. To overcome this the units will have direct access to the first floor, which will be the primary area for refuge in the event of a major flood event.

All units will be linked to the EA's flood warning system and a site specific Flood Evacuation Plan will be provided, which gives guidance and advice to the residents with regards to the flood risks. The plan will also give details of the flood warnings, how the plan is triggered and what actions are required.

The Flood Evacuation Plan will need to be agreed with the local Emergency Planning Team.

### 6.7 <u>Floodplain Compensation</u>

The main flood risk associated with the site is from tidal/coastal flooding, consequently floodplain compensation will not be required. However, the existing drainage ditches will be extended and new ditches added which will provided additional surface water flood storage.

### 6.8 Other Sources of Flooding

### Reservoirs

There are no reservoirs in the vicinity of the site and consequently this type of flooding is not applicable to.

### Foul Sewers

There are no recorded foul sewer flooding issues on the site, however there is an existing adopted foul sewer which dissects the Phase 1 area. As part of the development this sewer will be diverted under a section 185 agreement with Southern Water.

It is unlikely that the existing foul sewerage system would be able to accommodate a development of 455 units without the need for sewer upgrade works. A capacity enquiry has been issued to Southern Water to cover both Phase 1 in isolation and with the later phases.



# **N** 7.0 Sustainable Drainage Options

- 7.1 Many existing drainage systems can cause problems of flooding, pollution or damage to the environment and are proving unsustainable. Sustainable drainage systems (SuDS) are an alternative approach to conventional drainage design and implementation; they replicate natural drainage and deal with run-off where it occurs
- 7.2 Appropriately designed, constructed and maintained SuDS are more sustainable than conventional drainage systems and can help to:
  - Reduce run-off rates
  - Reduce the risk of flooding
  - Encourage natural groundwater re-charge
  - Reduce volume of surface water run-off
  - Provide habitats for wildlife

However, there are many site-specific factors which will influence the choice of any SuDS devices used within a development. The primary factors are:

- How the land is to be used- whether it be domestic, commercial or industrial
- Soil contamination
- Existing soil conditions i.e. ground permeability, water table levels
- Site topography e.g. steeply sloping
- Space availability urban or non-urban
- 7.3 Most advice on the use of sustainable drainage techniques recommends the utilisation of ground infiltration, which may take the form of permeable paving, swales, infiltration basins or soakaways. However, these systems are dependent on the subsoil suitability, unsaturated soil zone to an adequate depth and the absence of leachable contaminants in the subsoil.
- 7.4 Within this development there is the potential to use a mixture of SuDS devices which could include:
  - Water Butts
  - Green Roof
  - Geocellular Roof Attenuation System
  - Permeable Paving
  - Swales and Infiltration Ditches



### 7.5 <u>Water Butts</u>

Although not a primary SuDS device, when incorporated into other surface water management systems, water butts can reduce the total volume of storm water run-off and may also provide some additional storm water attenuation.

### 7.6 Green Roof

Green roofs have the benefit of providing an element of storm water attenuation and reducing the volume of surface water run-off, as well as the removal of air pollutants and dust.

Green roofs will be used across all roofs.

### 7.7 Geocellular Roof Attenuation Systems

These are plastic modular systems with a high void ratio that can be used to create a storage structure. They have the advantage of being flexible, lightweight and the flow control devices are integral with the system.

This system is to be used beneath the green roof system.

### 7.8 <u>Permeable Paving</u>

Permeable paving provides a pavement suitable for pedestrians and vehicles whilst allowing rain water to infiltrate through the surface and into the underlying layers. The water is temporarily stored before infiltrating into the sub-soils. As well as providing surface water attenuation, they are also efficient at removing urban run-off pollutants, making them ideal for use in car park areas.

All hard paved areas, parking courts and access roads will constructed using permeable paving.

### 7.9 Swales, Infiltration Ditches and Basins

Infiltration basins and ditches are broad, shallow, soft landscaped areas designed to convey, store and infiltrate surface water run-off.

On this particular site infiltration into the ground will be permitted and these devices will be used to direct surface and ground water away from the buildings in the event of a flood. Where appropriate these diches will also connect into the adjacent the Lancing Brooks drainage system which directly discharges into the River Adur.



## 8.0 Surface Water Drainage Proposals

- 8.1 Guidance within The SuDS Manual states that surface water runoff from new developments should be dealt with in the following order of preference:
  - 1. Discharge to the ground
  - 2. Discharge to a surface water body
  - 3. Discharge to a surface water sewer
  - 4. Discharge to a combined sewer

With reference to the indicative drainage drawing in Appendix J. The proposed method of surface water disposal from Phase 1 will be via shallow infiltration. Other SuDS devices will be incorporated within the drainage design and include:

- All units will incorporate roof attenuation below a green roof system, which will restrict the outflows to the minimum practical value of 0.2 l/s. The attenuation system will be designed to accommodate a 1 in 100 return period which includes a 30 % allowance for climate change.
- The discharge from the roof attenuation system will connect into the sub-base of the permeable roads.
- The new access road, parking courts and hard paved areas will be permeable with base infiltration.
- The sub-base thickness within the roads and hard paved areas will be designed to accommodate a 1 in 100 return period with a 30% allowance for climate change. The design of the sub-base thickness will include the design flows from the houses.
- New infiltration trenches/swales will be introduced either side of the new access road which will be linked into the existing ditch system on the site.
- Bioretention areas will be introduced within the landscaping design to provide additional exceedance event storage.

### 8.2 <u>Surface Water Treatment</u>

To protect the quality of the ground water all surface water run-off from the roof and hard paved areas will receive an element of surface water treatment before discharging into the ground.

The tables below make reference to Chapters 26 within The SuDS Manual (Appendix K) which demonstrate that the proposed Pollution Mitigation Measures exceeds the Pollution Hazard Index, which as a consequence satisfies the level of treatment recommended within The SuDS Manual.



| Land Use  | Pollution<br>Hazard Level | Total<br>Suspended<br>Solids (TSS) | Metals  | Hydrocarbons |
|---|---------------------------|------------------------------------|---|--------------|
| Residential Roofs   | Very low                  | 0.2                                | 0.2   | 0.05         |
| Other roofs (typically commercial/ industrial roofs)  | Low                       | 0.3                                | 0.1 (up to 0.8<br>where there is<br>potential for<br>metals to<br>leach from the<br>roof) | 0.05         |
| Individual property<br>driveways, residential car<br>parks, low traffic roads (e.g.<br>cul de sacs, homezones and<br>general access roads) and<br>on-residential car parking<br>with infrequent change 9eg<br>schools, offices) i.e. <300<br>traffic movements/day. | Low                       | 0.5                                | 0.4   | 0.4          |
| Commercial yards and<br>delivery areas, non-<br>residential car parking with<br>frequent change (e.g.<br>hospitals, retail) all roads<br>except low traffic roads and<br>trunk roads/ motorways.  | Medium                    | 0.7                                | 0.6   | 0.7          |

Table1: Pollution hazard indices for different land use classifications

Table 2: Indicative SuDS mitigation indices for discharge to groundwater

| Characteristics of the material overlying the<br>proposed infiltration surface, through<br>which the runoff percolates  | TSS | Metals | Hydrocarbons |
|---|-----|--------|--------------|
| Constructed permeable pavement (where a suitable filtration layer is included that provides treatment and including a geotextile at the base separating the foundation from the subgrade) underlain by a soil with good contaminant attenuation potential of at least 300mm in depth. | 0.7 | 0.6    | 0.7          |

As each phase is developed the level of treatment prior to discharging will need to satisfy the above criteria.



## 9.0 Phased Development

The flood risks for the whole of the New Salts Farm site are discussed within Chapter 5, where the primary flood risk is associated with coastal flooding. The ground levels across the site are very similar, consequently the mitigation methods proposed in Phase 1 (Chapter 6) will be used across the development area.

In addition, the drainage principles developed for Phase 1 will also be used throughout the later phases. However, the ground conditions for each phase will need to be reviewed as the intrusive ground investigations undertaken to date has established that the geology and ground water levels across the development area do vary. If intrusive testing identifies that infiltration may not be appropriate, then surface water will discharge into the adjacent Lancing Brook drainage ditches.

Across the development phases new drainage ditches/swales will be introduced to provide additional surface water attenuation when the Lancing Brooks outfall becomes tide locked. If infiltration is not appropriate within any area, these swales can be used as a means of surface water disposal as they will be linked into the Lancing Brook ditch system. The new swales will be designed to accommodate the additional volume associated with a tide lock period during a 100+CC event.

An indicative drainage strategy drawing has been developed (Appendix J) which provides details of how the drainage principles proposed within Phase 1 could be incorporated within the later phases. They included rooftop attenuation, permeable surfacing to all hard paved areas, new swales/drainage ditches and large bioretention areas.

The ground floor levels will be locally raised to reduce the risk of ground water flooding accommodation will only be permitted at first floor level, which will be set at the 1 in 200+CC level with an additional 300mm freeboard allowance.

Those areas which are currently located within a Flood Zone 3b (39% of the site) will not be developed until the Adur Tidal Wall scheme has been constructed which would then place these areas within a Flood Zone 3a.

### 10.0 Maintenance

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Maintenance of any drainage scheme is essential to ensure that it continues to perform as designed. The SWMP notes that in the past the Lancing Brooks drainage system has been poorly maintained which has created a number of flooding issues.

The Lancing Brook ditches within the New Salts Farm site are an integral part of the drainage strategy and as a consequence will require regular maintenance to prevent silt build-up and plant over growth in order to maintain an effective cross-sectional area of the ditch system.

The new surface water drainage system will require regular inspection/clearing to prevent blockages due to accumulation of silt. It is recommended that the system is initially inspected and cleared by a suitable trained person every 6 months for at least the first 2 years of operation to establish a long-term inspection/clearing interval appropriate for this site. Inspection/clearing should also be carried out after every major storm and flood event.

The SuDS features proposed within this development will be in areas that are visible and can be accessed without the need to access private land.

Details of the type and frequency of maintenance required for each element of the drainage system (including the Lancing brooks) will be noted within the site Health, Safety and Maintenance file which will be managed for the long term by Hyde.


## 11.0 New Flood Defences

It should be noted that the above mitigation measures are based upon the current flood data and does not take into account the benefits of the Adur Tidal Wall Scheme, which has recently been submitted for a planning application. These defenses are programmed to start construction in Spring 2016 and are due to be completed in 2018.

Upon completion, the Adur Tidal Wall Scheme will provide up to a 1 in 300 level of flood protection from tidal events to the New Salts Farm development site. This will reclassify the areas which are currently Flood Zone 3b to Flood Zone 3a. Details of the flood scheme are included in Appendix L.

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### 12.0 West Beach Estate Drainage

The surface water drainage issues on the West Beach Estate are well documented. The historic plans suggest that it was the intension to drain the West Beach Estate roads onto the New Salts Farm. Though it appears that the final connections were never made. The CH2M Hill report states that residents on two of the estate roads have made an informal connection onto the New Salts Farm land, whilst a number of the other roads haven't, (Appendix M).

The development of the New Salts Farm will look to formalise the surface water drainage connections from the West Beach Estate into the development proposals. Consequently, this would help to reduce the existing flooding issues currently experienced on the estate. As an interim measure, new ditches have recently been constructed adjacent to the site boundary (Appendix M), however these ditches will be subject to realignment during the detailed design stage of the adjacent construction phase.

## 13.0 Conclusion

The Phase 1 of the development area lies entirely within a Flood Zones 3a area, however a Sequential and Exception Test has been undertaken which demonstrates that the wider benefits of the proposed development outweigh the flood risks.

The Lancing Brooks drainage ditches cross the development site, collecting surface water from the surround areas. They ultimately discharge to the River Adur via the Lancing Brooks Outfall. Historically these ditches have been poorly maintained which has caused a number of flooding issues. Recently these ditches have undergone a number of improvements/repairs thought the Lancing Brooks network to improve their capacity and effectiveness.

The main flood risk for the development is associated with coastal flooding. To overcome this, no accommodation will be provided at ground floor level and the first floor level will be set 300mm above the 1 in 200+CC tide event. The units will be constructed using flood resilient materials and will be structurally designed to withstand potentially high flood depths.

Ground water levels are high and fluctuate with the tides. To reduce the risk of ground water flooding to the units the ground floor levels will be locally raised.

All units will have green roofs with integral surface water attenuation which is designed to accommodate a 1 in 100+CC event. The run-off from these areas will be restricted to the minimum flow rate, which will in turn connect into the permeable sub-base of the roads.

All roads and hard standings will be permeable with base infiltration. With high ground water levels fluctuating with the tides, the sub-base thickness of the permeable paving will be designed to hold a 6 hour 100+CC event to replicate a tide lock situation.



Where the local ground conditions dictate that infiltration is not appropriate, the surface water will discharge into new ditches/swales which will link into the Lancing Brooks drainage system. The diches will be designed to accommodate a 1 in 100+CC storm event during a 6 hour tide lock scenario.

To reduce the risk of pollution all surface water run-off will receive the necessary level of treatment to accord with the requirements of The SuDS Manual.

A detailed maintenance strategy will be developed to ensure the drainage system continues to work as designed. The long term maintenance will be undertaken by a management company controlled by the Hyde Group.

There are areas on the New Salts Farm which lie within a Flood Zone 3b, however when the Adur Tidal Wall is completed the whole of the Farm will have improved flood protection. Those areas which currently fall within a Flood Zone 3b will be re-categorized as 3a. The mitigation methods proposed do not rely on the completion of the Adur Tidal Walls.

As part of the New Salts Farm development new drainage diches will be implement to formally collect the surface water run-off the part of the West Beach Estate. This will help to reduce the surface water flooding issues currently experienced across part of the estate.

The principles developed in Phase 1 to reduce the flood risks both within and beyond the site will be used when developing the later phases. However, those areas which currently lie in Flood Zone 3b will not be brought forward until the Adur Tidal Wall scheme has been implemented.

The mitigation measures proposed for Phase 1 and the later phases will provide significant flood protection for the lifetime of the development.

Extending the drainage ditches within the development area and providing an enhanced level of maintenance will also help to improve the efficiencies of the Lancing Brook Ditches. This, combined with improving the drainage to the West Beach Estate will also help to reduce the risk of flooding beyond the site.



## Appendix A – Site Location Plan

### Site Location Plan

New Salts Farm Road, Shoreham-by-Sea, West Sussex, BN43 5FE





## Appendix B – Topographical Survey



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## Appendix C – Southern Water Sewer Records





## Appendix D – Ground Monitoring Results

### Our Ref: AH/BC/J12495

24 February 2016

Hyde Housing c/o Tully De'Ath Consultants Sheridan House Hartfield Road Forest Row East Sussex - RH18 5EA

### For the attention of Mr Andrew Picton

Dear Sirs,



 Keeble House, Stuart Way

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### Re: Groundwater Monitoring Investigation at: New Salts Farm, Shoreham National Grid Reference: TQ 204 045 Geology: Alluvium/Marine Deposits over Newhaven Chalk

### Introduction

The site comprises a grass covered rural plot, and it is proposed to develop the site with housing.

A ground investigation has been undertaken for the proposed development (our ref: J12495) to which the reader is referred. The investigation included the installation of groundwater monitoring wells and dataloggers (instruments used to automatically measure groundwater level), in 3 No. boreholes (WLS4 to 6).

It was also requested that groundwater monitoring wells be installed in the grass covered area to the north and northwest of the proposed development plot (WLS1 to 3), to determine the groundwater regime for this area. During the drilling of the first borehole in this area (WLS 1), the ground conditions were found to comprise running sands, and unfortunately, due to these ground conditions, and having to allow for the borehole to be scanned for UXO, and redrilled, the drilling equipment became 'locked' together, and the installation of groundwater monitoring wells at these positions were not completed.

We returned to site on 10<sup>th</sup> February to install 3 No. drive-in (hand driven) monitoring wells. These monitoring wells have a narrower diameter than the dataloggers, so the depth to groundwater was manually measured over the course of a day, to determine if the groundwater is influence by the tide.

Presented here are the results thus far from the dataloggers installed in WLS 4 to 6, and the results from a day's monitoring of WLS1 to 3.

### Findings

A graph (fig 2) has been produced showing the results of the day's monitoring carried out on WLS1 to 3. It can be clearly seen that groundwater level in both WLS2 and 3 are influenced by the tide. The groundwater level in WLS 1 shows little fluctuation, and is therefore shown to have negligible tidal influence.

The time of high tide at Shoreham-by-Sea Harbour has been shown on the graph. There is a clear time lag between high tide and the peak groundwater level in WLS2 and 3. An approximate time lag of +131min and +163min has been calculated for WLS3 and WLS2 respectively.



Northampton Office - ST Consult: t 01604 500020 Registered Office: Southern Testing Laboratories Limited, Keeble House, Stuart Way East Grinstead West Sussex. RH19 40A. Registered No. 2183217 VAT No. 367 4740 26 It is unclear at this stage why there is no apparent tidal influence at WS1, but this may be due to lower permeability geology.

Graphs (fig 3, 4 and 5) have also been included showing the groundwater level between mid December 2015 and mid February 2016 for WLS 4, 5 and 6. The groundwater level in these trial holes can also be seen to have a tidal influence. From these graphs, the groundwater levels at high tide for WLS 4 and 6 generally fluctuates between around 0.4m and 1.0m below ground level. The groundwater level at high tide in WLS 5 consistently rose above ground level, indicating that groundwater is periodically artesian.

Groundwater during low tide is generally between 1.7m and 2.4m below ground level in WLS 4 and 6, and 1.2m and 1.5m in WLS5.

A graph (fig 6) has also been included that shows the groundwater levels for WLS 4, 5 and 6 over the course of a single day, and the time of high tide at Shoreham-By-Sea Harbour. The time lag between the high tide and the high groundwater in the boreholes is approximately +111min, +106min and +101min for WLS 4, 5 and 6 respectively.

Based on these findings, the ground around WLS5 should be periodically flooded. We have not witnessed, neither are we aware that this area routinely floods, which could be the result of the impermeable clay layer that covers the site preventing the groundwater from rising to the surface. There is therefore, a risk that any development that penetrates this clay 'cap' could form a pathway for groundwater, and thus could instigate flooding.

The influence of storm surges or high spring tides has not been investigated. It is possible that higher groundwater levels than that measured in this investigation, may become evident under certain climatic or tidal conditions.

We hope that the information is useful. Should you require any further information, please do not hesitate to contact us.

Yours faithfully,

Andrew Holley MSc FGS Senior Geological Engineer For and on behalf of Southern Testing Laboratories Limited

















## Appendix E – Development Proposals



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## Appendix F – Sequential and Exception Test

# New Salts Farm - Phase 1

Sequential and Exception Test



Prepared on behalf of The Hyde Group | March 2016

### Report Control

| Project: New Salts Farm Phase 1 |  |
|---------------------------------|--|
| Client: The Hyde Group          |  |
| Reference: 14.455               |  |
| File Origin:                    | http://lucas/sites/Boyerplanning/twickenham/14.455/4 Boyer<br>Planning/4.02 Reports/S and E test/160322 S and E Test<br>PHASE 1 FINAL.docx |
| Primary Author Dinny Shaw       |  |
| Checked By: Philip Allin        |  |

| Issue | Date       | Status | Checked By   |
|-------|------------|--------|--------------|
| 1     | 17/03/2016 | DRAFT  | Philip Allin |
| 2     | 22/03/2016 | FINAL  | Dinny Shaw   |
|       |            |        |              |

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## **EXECUTIVE SUMMARY**

This report has been prepared by Boyer on behalf of The Hyde Group in support of the redevelopment of part of their site at New Salts Farm for residential development. The site is located in the South East Corner of the wider New Salts Farm site, fronting Brighton Road. It is being promoted as Phase 1 of the development of the wider site and is proposed to deliver around 49 new homes. The site is located within Flood Zone 3a.

This report comprises a Sequential and Exception Test for the site to demonstrate that both tests have been passed and the site is suitable for residential development.

Adur District Council is not meeting its objectively assessed housing need in the Emerging Adur Local Plan (Amendments to the Proposed Submission Adur Local Plan 2016). It is therefore necessary for additional housing to be delivered within the plan period to meet housing need.

The Sequential Test has considered alternative sites within Adur District, having regard to the Strategic Housing Land Availability Assessment 2014 and Update 2015. The report has found that there were no other available sites within Adur District of a similar capacity which could provide the development proposed at New Salts Farm Phase 1 and which would fall into an area with a lower probability of flooding. Therefore the Sequential Test has been passed.

The Exception Test comprises a review of the development site against the sustainability objectives of the Adur Local Plan Sustainability Appraisal (2016). The results show that the development site scores positively in regard to the sustainability objectives and therefore would provide wider sustainability benefits to the community that outweigh flood risk, in particular the provision of new homes. The second part sets out what measures could be included in the development to manage and mitigate flood risk to demonstrate that it could remain safe for its lifetime, supported by a site specific Flood Risk Assessment prepared by Tully De'Ath. Therefore the two parts of the Exception Test have also been passed.

The Adur Planning Committee resolved to grant planning permission, subject to conditions, at the committee meeting on the 15<sup>th</sup> March 2016 for the Shoreham Adur Tidal Walls scheme, a scheme for improved flood defences in the River Adur. When implemented these will have a positive impact at the New Salts Farm Phase 1 site by partly addressing concerns regarding tidal and fluvial flooding.

The Sequential and Exception Tests have been carried out in accordance with the National Planning Policy Framework and Planning Practice Guidance. It has demonstrated that the proposed development would pass both the Sequential and Exception Tests and therefore can be considered suitable for residential development.

## 1. INTRODUCTION

1.1 This report has been prepared by Boyer on behalf of The Hyde Group in support of the redevelopment of Phase 1 of their site at New Salts Farm (see figure 1) for residential redevelopment.



Figure 1 – New Salts Farm identifying Phase 1 (pre-app site)



Figure 2 - Phase 1 Illustrative Plan

1.2 It is considered that this site could accommodate approximately 49 dwellings together with associated car parking and landscaping (as demonstrated through the illustrative masterplan at Figure 2) and would represent a positive and beneficial contribution towards meeting housing need in Adur District.

- 1.3 The site is bounded by Brighton Road to the South, New Salts Farm road to the East, the remainder of New Salts Farm site to the North and existing residential properties to the west. It is within Flood Zone 3a.
- 1.4 The Council has previously raised concerns over flood risk issues at the site, and a lack of evidence to demonstrate that these can be overcome. The site was excluded from the Council's own Sequential and Exception Test for the Emerging Adur Local Plan on that basis. We have therefore prepared a site specific Sequential and Exception Test for the development site.
- 1.5 This report relates to the Phase 1 site for development of 49 homes. A concurrent report relating to the wider site has also been prepared.

## 2. POLICY CONTEXT

2.1 The National Planning Policy Framework (NPPF) states at paragraph 100 that:

'inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere'.

2.2 Paragraph 101 continues saying that:

'The aim of the Sequential Test is to steer new development to areas with the lowest probability of flooding. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower probability of flooding'.

2.3 Para 102 of the NPPF states that:

'If, following application of the Sequential Test, it is not possible, consistent with wider sustainability objectives for the development to be located in zones with a lower probability of flooding, the Exception Text can be applied if appropriate. For the Exception Test to be passed:

it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by a Strategic Flood Risk Assessment where one has been prepared; and

a site specific flood risk assessment must demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and where possible will reduce flood risk overall.'

2.4 Further guidance at paragraph 103 states that:

When determining planning applications, local planning authorities should ensure flood risk is not increased elsewhere and only consider development appropriate in areas at risk of flooding where, informed by a site-specific flood risk assessment following the Sequential Test, and if required the Exception Test, it can be demonstrated that:

within the site, the most vulnerable development is located in areas of lowest flood risk unless there are overriding reasons to prefer a different location; and

development is appropriately flood resilient and resistant, including safe access and escape routes where required, and that any residual risk can be safely managed, including by emergency planning; and it gives priority to the use of sustainable drainage systems.'

2.5 Paragraph 033 of the Planning Practice Guidance (PPG) provides further guidance to the application of the Sequential Test. It states that:

'The area to apply the Sequential Test across will be defined by local circumstances relating to the catchment area for the type of development proposed'. It goes on to say that 'when applying the Sequential Test, a pragmatic approach on the availability of alternatives should be taken'.

2.6 Paragraph 023 of the PPG provides guidance on the Exception Test and states that:

'Essentially, the two parts to the test require proposed development to show that it will provide wider sustainability benefits to the community that outweigh flood risk, and that it will be safe for its lifetime, without increasing flood risk elsewhere and where possible reduce flood risk overall.'

- 2.7 The PPG defines the flood risk vulnerability classifications of which residential development falls within the 'More Vulnerable' classification.
- 2.8 Table 1 below sets out the flood risk vulnerability and Flood Zone compatibility:

| Flood Zones | Flood Zone – Vulnerability Classification |                               |                               |                    |                     |  |  |  |  |  |  |
|-------------|---|-------------------------------|-------------------------------|--------------------|---------------------|--|--|--|--|--|--|
|             | Essential<br>Infrastructure               | Highly<br>Vulnerable          | More<br>Vulnerable            | Less<br>Vulnerable | Water<br>Compatible |  |  |  |  |  |  |
| Zone 1      | 1   | 1                             | 1                             | 1                  | 1                   |  |  |  |  |  |  |
| Zone 2      | <i>✓</i>                                  | Exception<br>Test<br>Required | 1                             | 1                  | <i>√</i>            |  |  |  |  |  |  |
| Zone 3a     | Exception<br>Test Required                | X                             | Exception<br>Test<br>Required | <i>√</i>           | <i>√</i>            |  |  |  |  |  |  |
| Zone 3b     | Exception<br>Test Required                | Х                             | Х                             | Х                  | 1                   |  |  |  |  |  |  |

Table1 – Flood Risk Classification

2.9 This report has been prepared in accordance with the guidance contained in the NPPF and PPG.

## 3. THE SEQUENTIAL TEST

### Background

3.1 The purpose of the Sequential Test is to demonstrate that there are no sequentially preferable available sites at a lower flood risk, within a defined search area, which could deliver the proposed development.

### Housing Target

- 3.2 In previous years the South East Plan set the housing requirement for Adur, however this was revoked in March 2013. The National Planning Policy Framework now requires that Local Planning Authorities use their evidence base to ensure that their Local Plan meets the full, objectively assessed needs (OAN) for market and affordable housing in the housing market area, as far as is consistent with the policies set out in the Framework.
- 3.3 The Statutory Development Plan in Adur comprises the Adur Local Plan (1996). All housing allocations in the Adur Local Plan 1996 have been delivered and the policies relating to housing targets are considered to be out of date.
- 3.4 The Emerging Adur Local Plan (Amendments to the Proposed Submission Adur Local plan 2016) proposes a 'capacity based' target of 3609 dwellings over the plan period (2011 2031) equating to 180 dwellings per year. However this document is at an early stage and remains subject to further public consultation (anticipated from the end of March 2016) and is yet to be submitted for examination. This proposed housing delivery target in the Emerging Adur Local Plan is therefore considered to carry limited weight.
- 3.5 The Objectively Assessed Need for Housing: Adur District (August 2015) is therefore the most up to date assessment of housing need in the absence of an adopted, up to date, Local Plan. It is considered that it is the OAN figure which should be used as the housing target and to assess the five year housing land supply.
- 3.6 The OAN for housing in Adur has been identified as 5820 homes over the plan period equating to 291 homes per year.
- 3.7 The Strategic Housing Land Availability Assessment (SHLAA) 2014 and Update (2015) considers a number of sites within Adur District, the aim to identify a future supply of land which is suitable, available, and achievable for housing uses over the plan period covered by the Emerging Local Plan.
- 3.8 The SHLAA identifies that 2529 new dwellings could be delivered on brownfield land during the plan period. This falls significantly short of the OAN figure of 5820.

- 3.9 The assessment therefore also considered potential greenfield sites and identifies 2 of these (New Monks Farm and Land at West Sompting) as having development potential to deliver 1080 new homes. The SHLAA suggested that development at New Salts Farm was not currently achievable therefore it was not included as a potential strategic allocation. The indicative trajectory indicates that taking the 2 greenfield sites identified into account the plan can deliver 3609 dwellings.
- 3.10 This leaves a shortfall of 2211 dwellings for the plan period when measured against the OAN.
- 3.11 As set out in the Adur District Council Five Year Housing Land Supply Assessment 1<sup>st</sup> April 2015 to 31<sup>st</sup> March 2020, the Council is unable to demonstrate a 5 year supply of available land for development taking account of the sources of housing supply identified in the SHLAA.
- 3.12 On this basis, it is considered that more sites should be introduced as Strategic Allocations based on the SHLAA as there will continue to be a need for new housing to be delivered within the Local Plan area.

### Timing of Development

3.13 We are currently preparing a planning application for submission to Adur later this year in respect of Phase 1 of New Salts Farm. Phase 1 of New Salts Farm could be delivered over 12 to 18 months and it is anticipated that work could begin on site, should planning permission be approved, within the period April 2016 to March 2017. The site could therefore deliver much needed new homes within the plan period contributing towards meeting housing need and the five year housing land supply.

### Strategic Flood Risk Assessment and Sequential and Exceptions Test

- 3.14 The Adur and Worthing Councils Strategic Flood Risk Assessment (SFRA) (2012) identifies that 8 of the 10 allocated sites in Adur are at risk of flooding from the River Adur and wave overtopping and are in Flood zone 3a with 6 partially in Flood Zone 3b.
- 3.15 Recommendations in the SFRA in respect of the New Salts Farm site identify that the site would need to demonstrate it passes the Exception Test and provide a site specific Flood Risk Assessment, it also suggests a sequential approach to development to minimise flood risk. It should be noted that the Phase 1 site lies entirely within Flood Zone 3a.
- 3.16 The Sequential and Exception Test for the Amendments to the Proposed Submission Adur Local Plan (2016) dismisses the site (that being the wider New Salts Farm site) as not sequentially preferable as it is located in Flood Zone 3a and 3b and that no evidence has yet been submitted to overcome concerns regarding surface water and groundwater flooding. Although the report does accept that the flood risk from tidal sources at the site would improve with the Adur Shoreham Tidal Walls.

3.17 This site specific Sequential and Exceptions Test and the accompanying site specific Flood Risk Assessment have been prepared with reference to the Strategic Flood Risk Assessment in order to provide further evidence to demonstrate that there are no flooding constraints to development of the site and therefore enable the Local Planning Authority to allocate the site for housing.

### **Defining the Search Area**

3.18 It was considered appropriate that the search area in this case should comprise the same boundary as the area defined in the Emerging Adur Local Plan. The reason for this is that the development is proposed to provide residential use towards meeting housing need in the district and therefore this would be an appropriate catchment area.

### Applying the Sequential Test - Identifying Potential Alternatives

- 3.19 To identify potential sites that are available for development, a review of the Council's SHLAA 2014 and SHLAA Update 2015 has been undertaken.
- 3.20 The SHLAA considered a number of sites within the district and giving consideration to known constraints, neighbouring uses and planning history, determined the availability, suitability and achievability of individual sites. The sites assessed were put into one of four categories: Potential Site; Rejected Site – Monitor; Rejected Site; Committed Site.
- 3.21 New Salts Farm (known as Land North East of the Hasler Estate in the SHLAA) was considered in this assessment but was identified (along with 25 other sites) as 'Rejected Site Monitor'. These are sites assessed as being 'broadly suitable for housing development but not currently available for development and considered that they may offer development potential in the longer term and as such will be monitored on an annual basis.'
- 3.22 Specifically in relation to New Salts Farm the SHLAA 2015 stated that:

'This greenfield site was identified through the Local Plan process as a potential strategic allocation for housing development. However, development of the site is currently not achievable. Various constraints, including flood risk and landscape impact have not been addressed to the satisfaction of the local planning authority. The site has not therefore been included as a strategic allocation in the Proposed Submission Adur Local Plan.'

- 3.23 The alternative sites we have considered in addition to New Salts Farm for the purposes of this Sequential Test are those within the defined search area which have capacity to deliver the proposed development of 49 homes and have been identified as 'Potential Sites' or 'Rejected Sites Monitor' in the SHLAA. This is considered an appropriate approach as the Council has either accepted the site or accepts that there is potential for the site to be allocated for housing.
- 3.24 The alternative sites selected are noted in Table 2.

| SHLAA ID   | Site Address  | Flood<br>Zone | Estimated<br>Approx.<br>Capacity | Allocated<br>in<br>emerging<br>Local<br>Plan | Potential<br>Constraints   |
|------------|---|---------------|----------------------------------|--|--|
| ADC/106/13 | New Salts<br>Farm (Land<br>North East of<br>the Hasler<br>Estate)       | 3             | 500***                           | No   | Flooding<br>Landscape  |
| ADC/129/13 | Land north<br>west of the<br>Hasler<br>Estate<br>Lancing                | 3             | 840*                             | No   | Flooding<br>Landscape<br>Transport   |
| ADC/128/13 | Land<br>between<br>Adur Rec<br>and New<br>Salts Farm<br>Road<br>Lancing | 3             | 490****                          | No   | Flooding<br>Transport<br>Landscape   |
| ADC/049/13 | Riverbank<br>Business<br>Centre, Old<br>Shoreham<br>Road<br>Shoreham    | 3             | 120**                            | Yes  | N/A<br>Planning<br>permission<br>approved<br>August 2015<br>Ref:<br>AWDM/0935/13           |
| ADC/059/13 | Adur Civic<br>Centre, Ham<br>Road<br>Shoreham                           | 3             | 75**                             | Yes  | Flooding – will<br>restrict ground<br>floor uses<br>Transport may<br>require<br>mitigation |

### Table 2 – Alternative Sites

|                                 |                              |   |           |     | Contamination remediation   |
|---------------------------------|------------------------------|---|-----------|-----|---|
|                                 |                              |   |           |     | may be<br>required  |
| ADC/122/13                      | New Monks<br>Farm<br>Lancing | 3 | 450-600** | Yes | Flooding –<br>solution being<br>sought with<br>West Sussex<br>County Council<br>Transport –<br>new access<br>required   |
| ADC/125/13                      | Land at West<br>Sompting     | 1 | 480**     | Yes | High visibility –<br>design needs<br>to be sensitive<br>to this<br>Transport -<br>Transport<br>Assessment<br>required<br>Ground Water<br>Flooding –<br>mitigation<br>required |
| *estimated capa<br>size of 24ha |                              |   |           |     |   |
| **estimated cap                 |                              |   |           |     |   |
| ***estimated ca                 |                              |   |           |     |   |
| site size of 14ha               |                              |   |           |     |   |

3.25 It is evident from viewing the above table that in the first instance the majority of comparable sites within Adur District fall within Flood Zone 3. This includes a number of sites which have already been proposed to be allocated in the Emerging Local Plan for residential development. Only one site is within an area with a lower probability of flooding (Land at West Sompting) and this is a site which has been proposed to be allocated for residential development with an estimated capacity of 480 homes.

- 3.26 It is noted that New Monks Farm which is one of the two greenfield sites proposed to be allocated for housing in the Emerging Local Plan also falls within Flood Zone 3 and has issues with groundwater flooding. Both sites are outside of the built up area boundary on the Proposals Map 1996 and are designated as Countryside and within the Lancing/Sompting Strategic Gap.
- 3.27 In respect of New Monks Farm the SHLAA 2015 states that 'a residential led mixed use development is being actively promoted by the landowner' and goes on to say 'various constraints, including flood risk, transport and landscape impact are currently being addressed'.
- 3.28 As noted earlier the SHLAA identified that in respect of New Salts Farm 'constraints, including flood risk and landscape impact have not been addressed to the satisfaction of the local planning authority. The site has not therefore been included as a strategic allocation in the Proposed Submission Adur Local Plan'. The New Salts Farm site is being actively promoted by the landowner. Therefore in response to the concerns noted by the Council the landowner has actively engaged relevant technical consultants to prepare detailed reports in order to satisfy the local planning authority that the constraints identified relating to flood risk and landscape impact are capable of being addressed and mitigated and that the site is therefore available and residential development is achievable.
- 3.29 As was noted earlier all the sites identified in the SHLAA and proposed to be allocated in the Emerging Local Plan cannot deliver enough housing to meet the objectively assessed need in the area. There is therefore a need to look for further suitable sites.
- 3.30 Of the further two sites identified which could deliver the proposed development at New Salts Farm that have not yet been proposed to be allocated in the Emerging Local Plan, both also fall within Flood Zone 3 and therefore are not sequentially preferable. These sites also have potential constraints relating to transport as well as flooding and landscape and as far as we are aware are not yet available for development or being promoted by the landowners.
- 3.31 It is therefore clearly demonstrated that there are no other suitable, available sites within the defined search area that could deliver the proposed development at New Salts Farm Phase 1 and fall into an area at a lower risk of flooding. Development at New Salts Farm Phase 1 would make a significant contribution towards meeting Adur's housing need.

### Conclusion

- 3.32 Paragraph 101 of the NPPF seeks that development should not be allocated or permitted if there are reasonable available sites appropriate for the proposed development in areas with a lower probability of flooding.
- 3.33 The above has demonstrated that following a review of potential alternative sites within Adur district, taking account of the SHLAA 2014 and SHLAA Update 2015, there are no other suitable, available sites within Adur of a similar capacity which could provide the development proposed at New Salts Farm Phase 1, and which falls into an area with a lower probability of flooding.
- 3.34 Further, as noted, additional sites are required to come forward in order to meet Adur's full objectively assessed housing need and this site is available and deliverable within the Local Plan period.
- 3.35 On this basis it is considered that the Sequential Test has been passed and the site could be considered suitable for residential development where the Exception Test is also passed.

# 4. THE EXCEPTION TEST

#### Background

- 4.1 In line with the approach set out in the NPPF and PPG and the Flood Zone Classification table, having demonstrated that it is not possible for the development to be located in zones with a lower probability of flooding, the Exception Text has been applied to the site. This also follows the advice in the Adur and Worthing Strategic Flood Risk Assessment.
- 4.2 The use proposed at the site is residential which falls within the more vulnerable category. As the site is within Flood Zone 3a it is suitable for residential development where the Exception Test is passed.
- 4.3 For the Exception Test to be passed it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, and a site specific flood risk assessment must demonstrate that the development will be safe for its lifetime without increasing flood risk elsewhere and where possible reducing flood risk overall.

#### Sustainability Benefits to the community

- 4.4 The PPG states at paragraph 024 that *'evidence of wider sustainability benefits to the community should be provided, for instance, through the sustainability appraisal'.*
- 4.5 We have reviewed the potential of the proposed development to provide wider sustainability benefits by considering the scheme alongside the sustainability objectives set out in the Sustainability Appraisal of the Emerging Adur Local Plan, having regard to that document and the Adur and Worthing Strategic Flood Risk Assessment (2012).
- 4.6 Table 3 below sets out the sustainability objectives identified in the Sustainability Appraisal and how the development could meet those objectives.

| pposed development will incorporate renewable/low<br>energy sources where demonstrated appropriate and  |
|---|
| 2.  |
| pposed development has been designed using the<br>irst' principle. The dwellings are designed to be highly<br>ed, reduce heat loss and air leakage, which in turn<br>is the heating requirements for the dwellings. The<br>that is required will be delivered using energy efficient<br>ogies accompanied with low or zero carbon<br>ogies. |
|   |

Table 3 – Compliance with Adur Sustainability Objectives

|  | reduction beyond Part L 2013.  |
|--|--|
| Protect and enhance water<br>quality and encourage the<br>sustainable use of water                                   | Sustainable Drainage Systems (SuDS) will be incorporated in<br>the development (as detailed later in this report) which shall<br>manage the surface water run-off from the development.  |
| Reduce pollution and the risk<br>of pollution to air, land and<br>water  | To reduce water consumption within the dwellings each<br>dwelling shall be fitted with water efficient sanitary ware to<br>enable the predicted consumption to be no greater than1051<br>per person per day.   |
|  | To protect the quality of groundwater all surface water run-off<br>from the roof and hard paved areas will receive surface water<br>treatment to satisfy the level of treatment recommended within<br>the SuDS Manual, before discharging into the ground.   |
|  | There is potential for noise impact on the new development<br>from the airport and railway, however this would be capable of<br>being mitigated in any new development.  |
| Improve land use efficiency<br>by encouraging the re-use of<br>previously developed land,<br>buildings and materials | The proposed development is on a greenfield site. However<br>Adur have already accepted that some greenfield land would<br>need to be allocated through the Emerging Local Plan to<br>contribute towards meeting housing need, although it has not<br>allocated enough sites to meet that need.  |
| Conserve, protect and<br>enhance biodiversity and<br>habitats  | The site contains BAP habitats and NERC habitats and<br>supports a number of protected species. However a site<br>specific preliminary ecological appraisal has identified that<br>whilst there are areas of higher ecological interest these can<br>be accommodated within the scheme and maintained and<br>enhanced with potential to also provide ecological benefits on<br>the site.   |
|  | For example the existing ditch network would be maintained in<br>the scheme including a buffer zone in order to maintain the<br>existing water features and supporting habitats. There is also<br>an opportunity to enhance the ditch network by removing<br>invasive species. The wider site illustrative masterplan<br>includes areas of open space and there is potential for these to<br>be left as unmanaged space to maintain some of the grazing<br>floodplain habitat and ensure reptiles can be retained. |
| Protect and enhance the<br>historic environment<br>including townscapes,<br>buildings, archaeological                | The sites have been assessed as having medium / medium-<br>high overall landscape sensitivity in studies carried out on<br>behalf of Adur District Council. Although it is noted that these<br>overall landscape sensitivity classifications relate to wider   |

| heritage, parks and   | landscape character areas within which New Salts Farm sits.  |  |  |  |  |
|---|--|--|--|--|--|
| landscapes  | A landscape strategy for the proposed illustrative masterplan  |  |  |  |  |
| Protect and enhance the   | has sought to integrate the development into the existing  |  |  |  |  |
| countryside   | landscape. This includes:  |  |  |  |  |
| Protect and enhance public<br>open space / green<br>infrastructure and<br>accessibility to it   | <ul> <li>Introduction of soft boundary treatments and tree planting to create a more robust and softer interface between the urban edge and the countryside, which is a positive enhancement compared to the existing hard edge.</li> <li>Retention of an open boundary treatment to the eastern and northern boundaries to retain a sense of open landscape in these areas.</li> <li>Inclusion of informal amenity space with a natural appearance</li> <li>Incorporating the existing ditches in the development</li> <li>Incorporation of appropriate planting to soften the appearance of the development with planting of local provenance to benefit wildlife and aesthetic appeal.</li> </ul> |  |  |  |  |
|   | measures proposed has the potential to respond to the<br>sensitivities of the local landscape character and safeguard the<br>qualities of the strategic gap and provide a number of positive<br>landscape enhancements.  |  |  |  |  |
| Ensure that all developments<br>have taken into account the<br>changing climate and are<br>adaptable and robust to<br>extreme weather events. | A Flood Risk Assessment for the site (discussed further below)<br>has identified how flood risk in the present and future would be<br>managed and mitigated to ensure the development would<br>remain safe for its lifetime and not result in an increase in flood<br>risk elsewhere.  |  |  |  |  |
| Avoid, reduce and manage<br>the risk from all sources of<br>flooding to and from the<br>development   | The Environment Agency are progressing the Shoreham Adur<br>Tidal Walls Scheme which will improve existing flood defences<br>and would partly address tidal and fluvial flooding at New Salts<br>Farm.   |  |  |  |  |
| Improve health and wellbeing<br>and reduce inequalities in<br>health  | The development would provide new areas of accessible open<br>space which would have health benefits for new and existing<br>residents.  |  |  |  |  |
|   | High quality architects have been engaged to develop an initial masterplan for the site and to ensure that the proposed  |  |  |  |  |

|   | development would be of a high quality and provide a good<br>living environment through the design and layout beneficial for<br>physical and mental health.  |
|---|--|
| Reduce crime, the fear of crime and antisocial behaviour  | The layout of the proposed development has sought to design<br>out elements that can contribute towards crime and antisocial<br>behaviour, thereby contributing towards reducing crime, the<br>fear of crime and anti-social behaviour.  |
| Promote sustainable<br>transport and reduce the use<br>of the private car   | The site is close to Shoreham Town Centre with a number of<br>local services including supermarkets, doctor and dentist<br>surgeries. There are good pedestrian footways and cycle<br>routes in the vicinity which the proposed development could<br>connect to. Bus routes are located along Brighton Road close<br>to the site. It is therefore considered that the site is well<br>located close to sustainable modes of transport and hence will<br>reduce the need for future residents to travel by car. |
| Reduce poverty, social exclusion and social inequalities  | The proposed development would deliver new housing of a mix of tenures and sizes and hence would go towards meeting the objectively assessed housing needs in Adur District.   |
| Meet the need for housing<br>and ensure all groups have<br>access to decent /<br>appropriate housing  | A mix of homes would create a vibrant community in a sustainable location and would contribute towards creating mixed and balanced communities which would help to reduce social exclusion and inequalities.   |
| Create and sustain vibrant<br>communities which<br>recognise the needs and<br>contributions of all individuals  |  |
| Promote sustainable<br>economic development with<br>supporting infrastructure, and<br>ensure high and stable levels<br>of employment and a diverse<br>economy | The proposed development by providing new homes, including<br>affordable homes, in a sustainable location close to local<br>facilities would help to attract people to live and work in the<br>district thereby supporting this objective. Additionally in the<br>short term construction jobs would be created which would<br>help the economy.   |
| Improve the range, quality<br>and accessibility of key<br>services and facilities and<br>ensure the vitality and<br>viability of existing centres             | The site is in a sustainable location with good access to<br>existing local facilities in Shoreham Town Centre by bus, foot<br>and cycle. It would introduce new housing which would utilise<br>local services thereby contributing towards the viability and<br>vitality of existing centres.   |

| Create places, spaces and<br>building that work well, wear<br>well and look good   | HGP are high quality architects who have been engaged to<br>develop a scheme on the site. They have developed an initial<br>illustrative masterplan to demonstrate how the site could be<br>developed to deliver a high quality residential development.<br>Further design development will seek to achieve high<br>standards and create places, spaces and buildings that work<br>well, wear well and look good. |
|--|---|
| Raise educational<br>achievement and skills levels<br>to enable people to remain in<br>work and to access good<br>quality jobs | No education/training facilities are proposed on the site,<br>although financial contributions towards education are likely to<br>be required as part of a planning application.  |
| Reduce the amount of<br>domestic and commercial<br>waste going to landfill as per<br>the waste hierarchy                       | The waste arrangements for the development will be designed<br>so as to minimise waste and encourage recycling and other<br>waste management prior to sending waste to landfill   |

- 4.7 It can be seen from the table above and assessment of the proposed development against the sustainability objectives of the Emerging Adur Local Plan that the development of the site has the potential to give rise to significant sustainability benefits and generally scores positively. In particular it will provide additional homes, including affordable housing, within a sustainable location close to local facilities and with the ability to connect to existing sustainable transport modes.
- 4.8 The proposal scores positively against the aims and objectives of the sustainability appraisal and demonstrates that the sustainability benefits of the development to the community outweigh the flood risk, therefore the proposal passes this first part of the Exception Test.

#### Safe for Its Lifetime

#### Introduction

- 4.1 Paragraph 038 of the PPG states that 'the developer must provide evidence to show that the proposed development would be safe and that any residual flood risk . . . can be overcome to the satisfaction of the local planning authority.' It goes on to say that 'the developer's site-specific flood risk assessment should demonstrate that the site will be safe and that people will not be exposed to hazardous flooding from any source'.
- 4.2 A site specific Flood Risk Assessment (FRA) has been prepared for the development site by Tully De'Ath. This report should be read in conjunction with that document, although it has been summarised below.

#### Flood Risk

- 4.3 In respect of fluvial flood risk the site is in Flood Zone 3a with a residual risk associated with a breach of the River Adur flood defences. The site is within Flood Zone 3a for Tidal Flood Risk associated with a residual risk of breaching of defences along the River Adur and wave overtopping along the coastal frontage.
- 4.4 The site is also susceptible to ground water flooding (ground water emergence is more than 75%). It has a low surface water flood risk with those areas highlighted as susceptible to flooding being aligned to existing drains and ditches on the site. There is no reported incident of sewer flooding within the site.
- 4.5 Flood model data from the Environment Agency suggests that the 1:200 event with an allowance for climate change was the most onerous with a maximum flood height of 5.391m AOD for the undefended flood event and 5.05m AOD for a defended scenario.
- 4.6 The existing defences have been assessed as being in relatively good condition.
- 4.7 There are also proposed improvements to the flood defences as part of the Shoreham Adur Tidal Walls scheme which will partially address tidal and fluvial flooding at the site.

#### Flood Management and Mitigation

- 4.8 The FRA sets out a number of flood management and mitigation methods which could be incorporated in the final design to address flooding at the site which are summarised below.
- 4.9 All units would provide accommodation at first floor level only with this floor set above the 1 in 200+CC tidal event. This would equate to a minimum floor level of 5.35m AOD which is 3m above existing ground level. Ground floor levels would also be locally raised by 300mm to mitigate against the risk of ground and surface water flooding. All units would be designed using flood resilient materials and structurally designed to withstand potential flood depths.
- 4.10 All units would have direct access to first floor which would be the primary area for refuge in the event of a major flood event. All units would be linked to the EA's flood warning system and a site specific Flood Evacuation Plan will be provided and agreed with the Emergency Planning Team which gives guidance and advice to residents with regards to flood risks.
- 4.11 Surface Water run-off will be restricted to match greenfield run-off rates via use of flow control devices.
- 4.12 Surface water attenuation will be provided in a variety of devices including roof top attenuation, permeable paving and swales.
- 4.13 Attenuation will be designed to hold a 6hr 100+CC event within the sub-base material with overflow directed to the adjacent swales and ditches should this be exceeded.

Surface Water Drainage Proposals and Sustainable Drainage Systems (SuDS)

- 4.14 The proposed method of surface water disposal will be via shallow infiltration and sustainable drainage systems (SuDS) will also be incorporated including:
  - Water butts which can reduce the total volume of storm water run-off and provide additional attenuation;
  - · Green roofs on all roofs will provide storm water attenuation and reduce run-off;
  - Geocelular roof attenuation systems beneath the green roofs will create an additional storage structure which will discharge into the sub-base of permeable roads;
  - Permeable paving with base infiltration will be included to all hard paved areas will allow water to infiltrate and be temporarily stored before infiltrating into the sub-soils;
  - New swales / infiltration trenches will be introduced either side of the new access road and linked to the existing ditch system on site;
  - Bio retention areas will be introduced in the landscaping to provide additional exceedence event storage.
- 4.15 All surface water run-off from the roof and hard paved areas will receive an element of surface water treatment before discharging into the ground to satisfy the level of treatment recommended in the SuDS Manual.

#### Flood Risk Assessment Conclusion

- 4.16 The FRA has identified the current and future flood risk to the site and demonstrated how this would be managed and mitigated over the developments lifetime to demonstrate that the development can be designed so as to remain safe for its lifetime and would not increase flood risk elsewhere.
- 4.17 The proposals have therefore demonstrated that the second part of the Exception Test has also been passed.

#### Conclusion

- 4.18 Phase 1 is within Flood Zone 3a and therefore is suitable for residential development where the Exception Test has been passed.
- 4.19 This chapter has demonstrated that the development site offers wider sustainability benefits to the community that outweigh flood risk, and that the development can be designed to incorporate measures to mitigate and manage flood risk now and for the lifetime of the development and not increase flood risk elsewhere.
- 4.20 Therefore it is concluded that the Exception Test has been passed and the site can be considered appropriate for residential redevelopment.

### 5. SHOREHAM ADUR TIDAL WALLS

- 5.1 The Environment Agency submitted a planning application to Adur District Council in November 2015 for works known as the 'Shoreham Adur Tidal Walls' scheme (ref: AWDM/1614/15). The application was heard at the Adur Planning Committee on the 15<sup>th</sup> March 2016 and the Planning Committee resolved to grant planning permission subject to conditions.
- 5.2 The scheme involves a range of improvement works on the flood defences along the west and east banks of the River Adur to manage the risk of tidal flooding to the town of Shoreham-by-Sea.
- 5.3 The proposed works include:
  - improvements to 1.8km of defences on the east bank between Coronation Green and the A27 road bridge and 5.4km of defences on the west bank between Shoreham Old Fort and Shoreham Toll Bridge;
  - steel sheet piling, concrete walls, flood glass and earth embankments;
  - a section of road raising, scour protection in the form of rock revetment, matting, planted terraces and gabions;
  - Creation of a 1.3ha intertidal salt marsh; and
  - Landscape improvements to Town Quay and Shoreham Old Fort car park.
- 5.4 If no works are undertaken to the defences then rising sea levels and the continued deterioration of the defences could lead to a catastrophic failure in just 1-in-20 year event. With the proposed new defences in place the residential and commercial properties in Shoreham currently at risk from flooding would be protected into the future from a 1-in-300 year (0.33% AEP) tidal flood event. As sea levels rise the number of properties that the improved defence will protect will increase, up to the 50-year design life of the Scheme.
- 5.5 In addition once the defences have been constructed, areas designated Flood Zone 3b will be redesignated 3a. This includes areas within the wider New Salts Farm development site.
- 5.6 The Core Strategy site Flood Risk Assessment (2012) states that 'these new defences are likely to have a positive affect on the present day and future 'defended' flood extents, and future development proposals should give regard to the detailed outputs from the Adur Tidal Walls study'.
- 5.7 The works are planned to begin in the middle of 2016 and take 2 <sup>1</sup>/<sub>2</sub> years in total to complete with some sections completing earlier.
- 5.8 This is an important consideration for New Salts Farm Phase 1 as the completion of these works would partly address tidal and fluvial flooding at the site.

### 6. CONCLUSION

- 6.1 The NPPF sets out tests to protect people and property from flooding. It requires a sequential approach to site selection to ensure development is as far as possible directed to the areas at lowest risk of flooding. Where development needs to be in locations at risk from flooding it should demonstrate that it provides sustainability benefits to the wider community and would be safe for its lifetime.
- 6.2 It has been demonstrated that Adur District Emerging Local Plan does not currently allocate enough development sites to meet its objectively assessed housing need. It is therefore clear that further development sites should be brought forward to meet this need.
- 6.3 This report has demonstrated that the Phase 1 development site at New Salts Farm would pass the Sequential Test as there are no other available sites within a lower Flood Zone that could provide the development proposed.
- 6.4 In respect of the Exception Test, this report has demonstrated that the proposed development would provide sustainability benefits to the wider community that outweigh flood risk, particularly through the provision of new housing, including affordable housing, in a sustainable location close to local facilities and public transport options, to meet objectively assessed need. Further the Flood Risk Assessment has demonstrated that the proposed development would incorporate through its design, measures to manage and mitigate flood risk at the site to demonstrate that it would be safe for its lifetime without increasing flood risk elsewhere.
- 6.5 It is also relevant that the Shoreham Adur Tidal Walls proposals to improve flood defences in the river Adur would have a positive impact on the development site in terms of flooding and that these works are anticipated to commence in summer 2016 and take 2 ½ years to complete.
- 6.6 In accordance with the NPPF and PPG it has been demonstrated, informed by a site specific Flood Risk Assessment and following the Sequential and Exception Tests that the development is appropriately flood resilient and resistant, any residual risk can be safely managed and sustainable drainage systems have been incorporated and there is no increase in flood risk elsewhere.
- 6.7 The Sequential and Exception Tests have been passed and the development can therefore be considered appropriate and be permitted in line with the NPPF.





# New Salts Farm

Sequential and Exception Test



Prepared on behalf of The Hyde Group | March 2016

### Report Control

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### **EXECUTIVE SUMMARY**

This report has been prepared by Boyer on behalf of The Hyde Group in support of the redevelopment of their site at New Salts Farm for residential development. It is considered that the site could deliver around 455 new homes along with associated car parking and landscaping. The site is located within Flood zone 3a and part within 3b.

This report comprises a Sequential and Exception Test for the site to demonstrate that both tests have been passed and the site is suitable for residential development.

Adur District Council is not meeting its objectively assessed housing need in the Emerging Adur Local Plan (Amendments to the Proposed Submission Adur Local Plan 2016). It is therefore necessary for additional housing to be delivered within the plan period to meet housing need.

The Sequential Test has considered alternative sites within Adur District, having regard to the Strategic Housing Land Availability Assessment 2014 and Update 2015. The report has found that there were no other sites within Adur District of a similar capacity which could provide the development proposed at New Salts Farm and which would fall into an area with a lower probability of flooding. Therefore the Sequential Test has been passed.

The Adur Planning Committee resolved to grant planning permission, subject to conditions, at the committee meeting on the 15<sup>th</sup> March 2016 for the Shoreham Adur Tidal Walls scheme, a scheme for improved flood defences in the River Adur. When implemented these will have a positive impact at the New Salts Farm site by partly addressing concerns regarding tidal and fluvial flooding. It would also redesignate those parts of the site within Flood Zone 3b as Flood Zone 3a.

The Exception Test has taken the Shoreham Adur Tidal Walls scheme into account. It comprises a review of the development site against the sustainability objectives of the Emerging Adur Local Plan Sustainability Appraisal (2016). The results show that the development site scores positively in regard to the sustainability objectives and therefore would provide wider sustainability benefits to the community that outweigh flood risk, in particular the provision of new homes. The second part sets out what measures could be included in the development to manage and mitigate flood risk to demonstrate that it could remain safe for its lifetime, supported by a site specific Flood Risk Assessment prepared by Tully De'Ath. Therefore the two parts of the Exception Test have also been passed.

The Sequential and Exception Tests have been carried out in accordance with the National Planning Policy Framework and Planning Practice Guidance. It has demonstrated that the proposed development would pass both the Sequential and Exception Tests and therefore can be considered suitable for residential development.

## 1. INTRODUCTION

1.1 This report has been prepared by Boyer on behalf of The Hyde Group in support of the redevelopment of their site at New Salts Farm (Figure 1) for residential development.



Figure 1 - New Salts Farm Illustrative Masterplan

- 1.2 It is considered that the site could accommodate approximately 455 dwellings together with associated car parking, open space and landscaping, as demonstrated through the illustrative masterplan, and would represent a positive and beneficial contribution towards meeting housing need in Adur District.
- 1.3 The site is bounded by New Salts Farm road to the east, the railway to the north and Shoreham Airport beyond and existing residential properties, Broadway Park and Brighton Road to the south. It is within Flood Zones 3a and 3b.
- 1.4 The Council has previously raised concerns over flood risk issues at the site, and a lack of evidence to demonstrate that these can be overcome. The site was excluded from the Council's own Sequential and Exception Test for the Emerging Adur Local Plan on that basis. We have therefore prepared a site specific Sequential and Exception Test for the development site.
- 1.5 This report relates to the whole New Salts Farm site for development of 455 homes. A concurrent report has been prepared relating to Phase 1 only.

### 2. POLICY CONTEXT

2.1 The National Planning Policy Framework (NPPF) states at paragraph 100 that:

'inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere'.

2.2 Paragraph 101 continues saying that:

'the aim of the Sequential Test is to steer new development to areas with the lowest probability of flooding. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower probability of flooding.'

2.3 Para 102 of the NPPF states that:

*'if, following application of the Sequential Test, it is not possible, consistent with wider sustainability objectives for the development to be located in zones with a lower probability of flooding, the Exception Text can be applied if appropriate. For the Exception Test to be passed:* 

it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by a Strategic Flood Risk Assessment where one has been prepared; and

a site specific flood risk assessment must demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and where possible will reduce flood risk overall.'

2.4 Further guidance at paragraph 103 states that:

When determining planning applications, local planning authorities should ensure flood risk is not increased elsewhere and only consider development appropriate in areas at risk of flooding where, informed by a site-specific flood risk assessment following the Sequential Test, and if required the Exception Test, it can be demonstrated that:

within the site, the most vulnerable development is located in areas of lowest flood risk unless there are overriding reasons to prefer a different location; and

development is appropriately flood resilient and resistant, including safe access and escape routes where required, and that any residual risk can be safely managed, including by emergency planning; and it gives priority to the use of sustainable drainage systems.'

2.5 Paragraph 033 of the Planning Practice Guidance (PPG) provides further guidance to the application of the Sequential Test. It states that:

'the area to apply the Sequential Test across will be defined by local circumstances relating to the catchment area for the type of development proposed'. It goes on to say that 'when applying the Sequential Test, a pragmatic approach on the availability of alternatives should be taken'.

2.6 Paragraph 023 of the PPG provides guidance on the Exception Test and states that:

'Essentially, the two parts to the test require proposed development to show that it will provide wider sustainability benefits to the community that outweigh flood risk, and that it will be safe for its lifetime, without increasing flood risk elsewhere and where possible reduce flood risk overall.'

- 2.7 The PPG defines the flood risk vulnerability classifications of which residential development falls within the 'More Vulnerable' classification.
- 2.8 Table 1 below sets out the flood risk vulnerability and Flood Zone compatibility:

| Flood Zones | Flood Zone – Vulnerability Classification |                               |                               |                    |                     |  |
|-------------|---|-------------------------------|-------------------------------|--------------------|---------------------|--|
|             | Essential<br>Infrastructure               | Highly<br>Vulnerable          | More<br>Vulnerable            | Less<br>Vulnerable | Water<br>Compatible |  |
| Zone 1      | ✓   | ✓                             | 1                             | ✓                  | 1                   |  |
| Zone 2      | <i>✓</i>                                  | Exception<br>Test<br>Required | 1                             | ✓                  | <i>√</i>            |  |
| Zone 3a     | Exception<br>Test Required                | X                             | Exception<br>Test<br>Required | <i>✓</i>           | <i>✓</i>            |  |
| Zone 3b     | Exception<br>Test Required                | Х                             | Х                             | Х                  | •                   |  |

Table1 – Flood Risk Classification

2.9 This report has been prepared in accordance with the guidance contained in the NPPF and PPG.

### 3. THE SEQUENTIAL TEST

#### Background

3.1 The purpose of the Sequential Test is to demonstrate that there are no sequentially preferable available sites at a lower flood risk within a defined search area which could deliver the proposed development.

#### Housing Target

- 3.2 In previous years the South East Plan set the housing requirement for Adur, however this was revoked in March 2013. The National Planning Policy Framework now requires that Local Planning Authorities use their evidence base to ensure that their Local Plan meets the full, objectively assessed needs (OAN) for market and affordable housing in the housing market area, as far as is consistent with the policies set out in the Framework.
- 3.3 The Statutory Development Plan in Adur comprises the Adur Local Plan (1996). All housing allocations in the Adur Local Plan 1996 have been delivered and the policies relating to housing targets are considered out of date.
- 3.4 The Emerging Adur Local Plan (Amendments to the Proposed Submission Adur Local plan 2016) proposes a 'capacity based' target of 3609 dwellings over the plan period (2011 2031) equating to 180 dwellings per year. However this document is at an early stage and remains subject to further public consultation (anticipated from the end of March 2016) and is yet to be submitted for examination. This proposed housing delivery target in the Emerging Adur Local Plan is therefore considered to carry limited weight.
- 3.5 The Objectively Assessed Need for Housing: Adur District (August 2015) is the most up to date assessment of housing need in the absence of an adopted, up to date, Local Plan. It is considered that it is the OAN figure which should be used as the housing target and to assess the five year housing land supply.
- 3.6 The OAN for housing in Adur has been identified as 5820 homes over the plan period equating to 291 homes per year.
- 3.7 The Strategic Housing Land Availability Assessment (SHLAA) 2014 and Update (2015) considers a number of sites within Adur District, the aim to identify a future supply of land which is suitable, available, and achievable for housing uses over the plan period covered by the Emerging Local Plan.
- 3.8 The SHLAA identifies that 2529 new dwellings could be delivered on brownfield land during the plan period. This falls significantly short of the OAN figure of 5820.

- 3.9 The assessment therefore also considered potential greenfield sites and identifies 2 of these (New Monks Farm and Land at West Sompting) as having development potential to deliver 1080 new homes. The SHLAA suggested that development at New Salts Farm was not currently achievable therefore it was not included as a potential strategic allocation. The indicative trajectory indicates that taking the 2 greenfield sites identified into account the plan can deliver 3609 dwellings.
- 3.10 This leaves a shortfall of 2211 dwellings for the plan period when measured against the OAN.
- 3.11 As set out in the Adur District Council Five Year Housing Land Supply Assessment 1<sup>st</sup> April 2015 to 31<sup>st</sup> March 2020, the Council is unable to demonstrate a 5 year supply of available land for development taking account of the sources of housing supply identified in the SHLAA.
- 3.12 On this basis, it is considered that more sites should be introduced as Strategic Allocations based on the SHLAA as there will continue to be a need for new housing to be delivered within the Local Plan area.

#### **Phasing of Development**

3.13 The proposed development at New Salts Farm would be broken down into Phases and delivered over approximately 6 years. The Phasing would take into account the completion of the Adur Tidal Walls Scheme. A suggested phasing plan is set out below in Table 2. As can be seen the later phases of development are those on land currently within Flood Zone 3b within the site which will be redesignated as 3a following completion of the Adur Tidal Walls. This demonstrates that the site is available and development is capable of being delivered in a sequential approach in the short and medium term within the plan period providing much needed new homes to contribute towards housing need.

| Phase | No. of Units | Flood Zone (at present time) | Period<br>Construction<br>Commences | Time to complete |
|-------|--------------|------------------------------|-------------------------------------|------------------|
| 1     | 49           | 3a                           | April 2016 – March<br>2017          | 12 to 18 months  |
| 2     | 15           | 3a                           | April 2017 – March<br>2018          | 1 year           |
| 3     | 153          | 3a                           | April 2017 – March<br>2018          | 2 – 3 years      |
| 4     | 50           | 3a                           | April 2020 – March<br>2021          | 12 to 18 months  |

Table 2 – New Salts Farm Potential Phasing Plan

| 5 | 37 | 3b | April 2021 – March<br>2026 | 12 to 18 months |
|---|----|----|----------------------------|-----------------|
| 6 | 52 | 3b | April 2021 – March<br>2026 | 12 to 18 months |
| 7 | 99 | 3b | April 2021 – March<br>2026 | 2 years         |

#### Strategic Flood Risk Assessment and Sequential and Exceptions Test

- 3.14 The Adur and Worthing Councils Strategic Flood Risk Assessment (SFRA) (2012) identifies that 8 of the 10 allocated sites in Adur are at risk of flooding from the River Adur and wave overtopping and are in Flood zone 3a with 6 partially in Flood Zone 3b.
- 3.15 Recommendations in the SFRA in respect of New Salts Farm identify that the site would need to demonstrate it passes the Exception Test and provide a site specific Flood Risk Assessment, it also suggests a sequential approach to development to minimise flood risk.
- 3.16 The Sequential and Exception Test for the Amendments to the Proposed Submission Adur Local Plan (2016) dismisses the site as not sequentially preferable as it is located in Flood Zone 3a and 3b and that no evidence has yet been submitted to overcome concerns regarding surface water and groundwater flooding. Although the report does accept that the flood risk from tidal sources at the site would improve with the Adur Shoreham Tidal Walls.
- 3.17 This site specific Sequential and Exceptions Test and the accompanying Flood Risk Assessment have been prepared with reference to the Strategic Flood Risk Assessment in order to provide the further evidence to demonstrate that there are no flooding constraints to development of the site and therefore enable the Local Planning Authority to allocate the site for housing.

#### **Defining the Search Area**

3.18 It was considered appropriate that the search area in this case should comprise the same boundary as the area defined in the Emerging Adur Local Plan. The reason for this is that the development is proposed to provide residential use towards meeting housing need in the district and therefore this would be an appropriate catchment area.

#### Applying the Sequential Test - Identifying Potential Alternatives

- 3.19 To identify potential sites that are available for development, a review of the Council's SHLAA 2014 and SHLAA Update 2015 has been undertaken.
- 3.20 The SHLAA considered a number of sites within the district and giving consideration to known constraints, neighbouring uses and planning history, determined the availability, suitability and achievability of individual sites. The sites assessed were put into one of four categories: Potential Site; Rejected Site – Monitor; Rejected Site; Committed Site.

- 3.21 New Salts Farm (known as Land North East of the Hasler Estate in the SHLAA) was considered in this assessment but was identified (along with 25 other sites) as 'Rejected Site Monitor'. These are sites assessed as being 'broadly suitable for housing development but not currently available for development and considered that they may offer development potential in the longer term and as such will be monitored on an annual basis.'
- 3.22 Specifically in relation to New Salts Farm the SHLAA 2015 stated that:

'This greenfield site was identified through the Local Plan process as a potential strategic allocation for housing development. However, development of the site is currently not achievable. Various constraints, including flood risk and landscape impact have not been addressed to the satisfaction of the local planning authority. The site has not therefore been included as a strategic allocation in the Proposed Submission Adur Local Plan.'

- 3.23 The alternative sites we have considered in addition to New Salts Farm for the purposes of this Sequential Test are those within the defined search area which have a similar capacity and therefore could deliver the proposed development of 455 homes and have been identified as 'Potential Sites' or 'Rejected Sites Monitor' in the SHLAA. This is considered an appropriate approach as the Council has either accepted the site or accepts that there is potential for the site to be allocated for housing.
  - Table 3 Alternative Sites SHLAA ID Site Address Flood Zone Estimated Allocated Potential Approx. Constraints in Capacity Emerging Local Plan New Salts 3 500\*\*\* ADC/106/13 No Flooding Farm Landscape ADC/129/13 Land north 3 840\* No Flooding west of the Landscape Hasler Estate Transport Lancing ADC/128/13 490\*\*\*\* Land between 3 No Flooding Adur Rec and Transport New Salts Farm Road Landscape Lancing
- 3.24 The alternative sites selected are noted in Table 3.

New Monks

3

450-600\*\*

Yes

Flooding

ADC/122/13

|   | Farm                     |                 |                    |          | Landscape  |
|---|--------------------------|-----------------|--------------------|----------|--|
|   | Lancing                  |                 |                    |          | Transport  |
| ADC/125/13  | Land at West<br>Sompting | 1               | 480**              | Yes      | High<br>visibility –<br>design<br>needs to be<br>sensitive to<br>this<br>Transport -<br>Transport<br>Assessment<br>required<br>Ground<br>Water<br>Flooding –<br>mitigation<br>required |
| *estimated capa<br>size of 24ha   | city based on der        | nsity of 35 dwe | llings per hectare | and site |  |
| **estimated capacity taken from SHLAA 2014  |                          |                 |                    |          |  |
| ***estimated capacity based on The Hyde Group masterplan                                  |                          |                 |                    |          |  |
| ****estimated capacity based on density of 35 dwellings per hectare and site size of 14ha |                          |                 |                    |          |  |

- 3.25 It is evident from viewing the above table that in the first instance the majority of comparable sites within Adur District fall within Flood Zone 3. This includes a number of sites which have already been proposed to be allocated in the Emerging Local Plan for residential development. Only one site is within an area with a lower probability of flooding (Land at West Sompting) and this is a site which has already been proposed to be allocated for residential development with an estimated capacity of 480 homes.
- 3.26 It is noted that New Monks Farm which is one of the two greenfield sites proposed to be allocated for housing in the Emerging Local Plan also falls within Flood Zone 3 and has issues with groundwater flooding. Both sites are outside of the built up area boundary on the Proposals Map 1996 and are designated as Countryside and are within the Lancing / Sompting Strategic Gap.

- 3.27 In respect of New Monks Farm the SHLAA 2015 states that 'a residential led mixed use development is being actively promoted by the landowner' and goes on to say 'various constraints, including flood risk, transport and landscape impact are currently being addressed'.
- 3.28 As noted earlier the same report identified that in respect of New Salts Farm 'constraints, including flood risk and landscape impact have not been addressed to the satisfaction of the local planning authority. The site has not therefore been included as a strategic allocation in the Proposed Submission Adur Local Plan'.
- 3.29 The New Salts Farm site is being actively promoted by the landowner. Therefore in response to the concerns noted by the Council the landowner has actively engaged relevant technical consultants to prepare detailed reports in order to satisfy the local planning authority that the constraints identified relating to flood risk and landscape impact are capable of being addressed and mitigated and that the site is therefore available and residential development is achievable.
- 3.30 As was noted earlier all the sites identified in the SHLAA and proposed to be allocated in the Emerging Local Plan cannot deliver enough housing to meet the OAN in the area. There is therefore a need to look for further suitable sites.
- 3.31 Of the further two sites identified which could deliver the proposed development at New Salts Farm that have not yet been proposed to be allocated in the Emerging Local Plan, both fall within Flood Zone 3 and therefore are not sequentially preferable. These sites also have potential constraints relating to transport as well as flooding and landscape and as far as we are aware are not yet available for development or being promoted by the landowners
- 3.32 It is therefore clearly demonstrated that there are no other suitable, available sites within the defined search area that could deliver the proposed development at New Salts Farm and fall into an area at a lower risk of flooding.
- 3.33 Development at New Salts Farm would make a significant contribution towards meeting Adur's housing need.

#### Conclusion

- 3.34 Paragraph 101 of the NPPF seeks that development should not be allocated or permitted if there are reasonable available sites appropriate for the proposed development in areas with a lower probability of flooding.
- 3.35 The above has demonstrated that following a review of potential alternative sites within Adur district, taking account of the SHLAA 2014 and SHLAA Update 2015, there are no other suitable, available sites within Adur of a similar capacity which could provide the development proposed at New Salts Farm and which falls into an area with a lower probability of flooding.

- 3.36 Further, as noted, additional sites are required to come forward in order to meet Adur's full objectively assessed housing need and this site is available and deliverable within the Local Plan period.
- 3.37 On this basis it is considered that the Sequential Test has been passed and the site could be considered suitable for residential development where the Exception Test is also passed.

### 4. ADUR TIDAL WALLS

- 4.1 The Environment Agency submitted a planning application to Adur District Council in November 2015 for works known as the 'Shoreham Adur Tidal Walls' scheme (ref: AWDM/1614/15). The application was heard at the Adur Planning Committee on the 15<sup>th</sup> March 2016 and the Planning Committee resolved to grant planning permission subject to conditions.
- 4.2 The scheme involves a range of improvement works on the flood defences along the west and east banks of the River Adur to manage the risk of tidal flooding to the town of Shoreham-by-Sea.
- 4.3 The proposed works include:
  - improvements to 1.8km of defences on the east bank between Coronation Green and the A27 road bridge and 5.4km of defences on the west bank between Shoreham Old Fort and Shoreham Toll Bridge;
  - steel sheet piling, concrete walls, flood glass and earth embankments;
  - a section of road raising, scour protection in the form of rock revetment, matting, planted terraces and gabions;
  - Creation of a 1.3ha intertidal salt marsh; and
  - Landscape improvements to Town Quay and Shoreham Old Fort car park.
- 4.4 If no works are undertaken to the defences then rising sea levels and the continued deterioration of the defences could lead to a catastrophic failure in just 1-in-20 year event. With the proposed new defences in place the residential and commercial properties in Shoreham currently at risk from flooding would be protected into the future from a 1-in-300 year (0.33% AEP) tidal flood event. As sea levels rise the number of properties that the improved defence will protect will increase, up to the 50-year design life of the Scheme.
- 4.5 In addition once the defences have been constructed, areas designated Flood Zone 3b will be redesignated 3a. This includes areas within the New Salts Farm development site. This would alter the flood risk vulnerability classification of development permissible in the area.
- 4.6 The Core Strategy site Flood Risk Assessment (2012) states that 'these new defences are likely to have a positive affect on the present day and future 'defended' flood extents, and future development proposals should give regard to the detailed outputs from the Adur Tidal Walls study'.
- 4.7 The works are planned to begin in the middle of 2016 and take 2 <sup>1</sup>/<sub>2</sub> years in total to complete with some sections completing earlier.

4.8 This is an important consideration for New Salts Farm. The completion of these works would partly address tidal and fluvial flooding at the site. It would also redesignate parts of the site currently in Flood Zone3b to Flood Zone 3a, meaning 'more vulnerable' development (in the flood zone vulnerability classification) in these areas would become appropriate, subject to an Exception Test. Given it is anticipated that the works would be completed in 2018 this would enable the site to be phased appropriately to deliver new housing across the whole site within the plan period, contributing towards housing need in the District.

## 5. THE EXCEPTION TEST

#### Background

- 5.1 In line with the approach set out in the NPPF and PPG and the Flood Zone Classification table, having demonstrated that it is not possible for the development to be located in zones with a lower probability of flooding, the Exception Text has been applied to the site. In doing so we have had regard to the Shoreham Adur Tidal Walls scheme as advised in the Core Strategy Flood Risk Assessment.
- 5.2 Approximately 60% of the site falls within Flood Zone 3a whereby an Exception Test is required for residential development.
- 5.3 The remainder of the site currently falls within Flood Zone 3b, which is not considered suitable for residential development. However on completion of the Shoreham Adur Tidal Walls scheme these areas will be redesignated to Flood Zone 3a, and would then be in the same flood risk vulnerability classification as the rest of the site and subject to an Exception Test for residential development.
- 5.4 In approaching this Exception Test we have had regard to the Shoreham Adur Tidal Walls Scheme and the anticipated timing of completion of these works in 2018. We consider that the proposed redevelopment of New Salts Farm could be sequentially designed and phased so as to deliver residential development taking account of the completion of the Shoreham Adur Tidal Walls works ensuring that no development would be completed within areas currently designated as Flood Zone 3b prior to completion of those works.
- 5.5 For the Exception Test to be passed it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, and a site specific flood risk assessment must demonstrate that the development will be safe for its lifetime without increasing flood risk elsewhere and where possible decrease flood risk overall.

#### Sustainability Benefits to the community

- 5.6 The PPG states at paragraph 024 that 'evidence of wider sustainability benefits to the community should be provided, for instance, through the sustainability appraisal'.
- 5.7 We have reviewed the potential of the proposed development to provide wider sustainability benefits by considering the scheme alongside the sustainability objectives set out in the Sustainability Appraisal of the Adur Local Plan 2016, having regard to that document and the Adur and Worthing Strategic Flood Risk Assessment (2012).
- 5.8 Table 4 below sets out the sustainability objectives identified in the Sustainability Appraisal and how the development could be designed to meet those objectives.

#### Table 4 – Compliance with Adur Sustainability Objectives

| Sustainability Objectives  | Compliance  |
|--|---|
| Increase energy efficiency<br>and encourage the use of<br>renewable energy sources                                   | The proposed development will incorporate renewable/low carbon energy sources where demonstrated appropriate and feasible.  |
|  | The proposed development has been designed using the<br>'fabric first' principle. The dwellings are designed to be highly<br>insulated, reduce heat loss and air leakage, which in turn<br>reduces the heating requirements for the dwellings. The<br>heating that is required will be delivered using energy efficient<br>technologies accompanied with low or zero carbon<br>technologies.  |
|  | The design target for the dwellings is to achieve 19% CO2 reduction beyond Part L 2013.   |
| Protect and enhance water<br>quality and encourage the<br>sustainable use of water                                   | Sustainable Drainage Systems (SuDS) will be incorporated in<br>the development (as detailed later in this report) which shall<br>manage the surface water run-off from the development.   |
| Reduce pollution and the risk<br>of pollution to air, land and<br>water  | To reduce water consumption within the dwellings each<br>dwelling shall be fitted with water efficient sanitaryware to<br>enable the predicted consumption to be no greater than 1051<br>per person per day.  |
|  | To protect the quality of groundwater all surface water run-off<br>from the roof and hard paved areas will receive surface water<br>treatment to satisfy the level of treatment recommended within<br>the SuDS Manual, before discharging into the ground.  |
|  | There is potential for noise impact on the new development<br>from the airport and railway, however this would be capable of<br>being mitigated in any new development through detailed<br>design.  |
| Improve land use efficiency<br>by encouraging the re-use of<br>previously developed land,<br>buildings and materials | The proposed development is on a greenfield site. However<br>Adur have already accepted that some greenfield land would<br>need to be allocated to contribute towards meeting housing<br>need, although it has not allocated enough sites to meet that<br>need. For reasons noted earlier in this report New Salts Farm<br>is considered to be suitable, available and achievable and<br>should be allocated for housing to contribute towards meeting<br>housing need. |

| Conserve, protect and<br>enhance biodiversity and<br>habitats  | The site contains BAP habitats and NERC habitats and<br>supports a number of protected species. However a site<br>specific preliminary ecological appraisal has identified that<br>whilst there are areas of higher ecological interest these can<br>be accommodated within the scheme and maintained and<br>enhanced with potential to also provide ecological benefits on<br>the site.<br>For example the existing ditch network would be maintained in<br>the scheme including a buffer zone in order to maintain the<br>existing water features and supporting habitats. There is also<br>an opportunity to enhance the ditch network by removing<br>invasive species. The wider site illustrative masterplan<br>includes areas of open space and there is potential for these to<br>be left as unmanaged space to maintain some of the grazing<br>floodplain habitat and ensure reptiles can be retained on the<br>site. |
|--|---|
| Protect and enhance the<br>historic environment<br>including townscapes,<br>buildings, archaeological<br>heritage, parks and<br>landscapes<br>Protect and enhance the<br>countryside | The sites have been assessed as having medium / medium-<br>high overall landscape sensitivity in studies carried out on<br>behalf of Adur District Council. Although it is noted that these<br>overall landscape sensitivity classifications relate to wider<br>landscape character areas within which New Salts Farm sits.<br>A landscape strategy for the proposed illustrative masterplan<br>has sought to integrate the development into the existing<br>landscape. This includes:  |
| Protect and enhance public<br>open space / green<br>infrastructure and<br>accessibility to it  | <ul> <li>Introduction of soft boundary treatments and tree planting to create a more robust and softer interface between the urban edge and the countryside, which is a positive enhancement compared to the existing hard edge.</li> <li>Retention of an open boundary treatment to the eastern and northern boundaries to retain a sense of open landscape in these areas.</li> <li>Inclusion of informal amenity space with a natural appearance</li> <li>Incorporating the existing ditches in the development.</li> <li>Incorporation of appropriate planting to soften the appearance of the development with planting of local provenance to benefit wildlife and aesthetic appeal.</li> </ul>   |

|  | site the proposed illustrative layout along with landscape<br>measures proposed has the potential to respond to the<br>sensitivities of the local landscape character and safeguard the<br>qualities of the strategic gap and provide a number of positive<br>landscape enhancements.  |
|--|--|
| Ensure that all developments<br>have taken into account the<br>changing climate and are<br>adaptable and robust to<br>extreme weather events                           | A Flood Risk Assessment for the site (discussed further below)<br>has identified how flood risk in the present and future would be<br>managed and mitigated to ensure the development would<br>remain safe for its lifetime and not result in an increase in flood<br>risk elsewhere.  |
| Avoid, reduce and manage<br>the risk from all sources of<br>flooding to and from the<br>development  | The Environment Agency are progressing the Shoreham Adur<br>Tidal Walls Scheme which will improve flood defences and<br>would partly address tidal and fluvial flooding at New Salts<br>Farm. This scheme will also redesignate those parts of the<br>site within Flood Zone 3b as 3a.   |
| Improve health and wellbeing<br>and reduce inequalities in<br>health   | The development would provide new areas of accessible open<br>space which would have health benefits for new and existing<br>residents.  |
| Reduce crime, the fear of crime and antisocial behaviour   | The layout of the proposed development has sought to design<br>out elements that can contribute towards crime and antisocial<br>behaviour, thereby contributing towards reducing crime, the<br>fear of crime and anti-social behaviour.  |
| Promote sustainable<br>transport and reduce the use<br>of the private car  | The site is close to Shoreham Town Centre with a number of<br>local services including supermarkets, doctor and dentist<br>surgeries. There are good pedestrian footways and cycle<br>routes in the vicinity which the proposed development could<br>connect to. Bus routes are located along Brighton Road close<br>to the site. It is therefore considered that the site is well<br>located close to sustainable modes of transport and hence will<br>reduce the need for future residents to travel by car. |
| Reduce poverty, social<br>exclusion and social<br>inequalities<br>Meet the need for housing<br>and ensure all groups have<br>access to decent /<br>appropriate housing | The proposed development would deliver new housing of a mix of tenures and sizes and hence would go towards meeting the objectively assessed housing needs in Adur District.<br>A mix of homes would create a vibrant community in a sustainable location and would contribute towards creating mixed and balanced communities which would help to reduce social exclusion and inequalities.   |
| Create and sustain vibrant communities which   |  |

| recognise the needs and contributions of all individuals  |   |
|---|---|
| Promote sustainable<br>economic development with<br>supporting infrastructure, and<br>ensure high and stable levels<br>of employment and a diverse<br>economy | The proposed development by providing new homes, including<br>affordable homes, in a sustainable location close to local<br>facilities would help to attract people to live and work in the<br>district thereby supporting this objective. Additionally in the<br>short term construction jobs would be created which would<br>help the economy.  |
| Improve the range, quality<br>and accessibility of key<br>services and facilities and<br>ensure the vitality and<br>viability of existing centres             | The site is in a sustainable location with good access to<br>existing local facilities in Shoreham Town Centre by bus, foot<br>and cycle. It would introduce new housing which would utilise<br>local services thereby contributing towards the viability and<br>vitality of existing centres.  |
| Create places, spaces and<br>building that work well, wear<br>well and look good  | HGP are high quality architects who have been engaged to<br>develop a scheme on the site. They have prepared an initial<br>illustrative masterplan to demonstrate how the site could be<br>developed to deliver a high quality residential scheme. Further<br>design development will seek to achieve high standards and<br>create places, spaces and buildings that work well, wear well<br>and look good. |
| Raise educational<br>achievement and skills levels<br>to enable people to remain in<br>work and to access good<br>quality jobs                                | No education/training facilities are proposed on the site,<br>although financial contributions towards education are likely to<br>be required as part of a planning application.  |
| Reduce the amount of<br>domestic and commercial<br>waste going to landfill as per<br>the waste hierarchy  | The waste arrangements for the development will be designed<br>so as to minimise waste and encourage recycling and other<br>waste management prior to sending waste to landfill   |

- 5.9 It can be seen from the table above and assessment of the proposed development against the sustainability objectives of the Emerging Adur Local Plan that the development of the site has the potential to give rise to significant sustainability benefits and generally scores positively. In particular it will provide additional homes, including affordable housing, within a sustainable location and set within high quality landscaping and open space, close to local facilities and with the ability to connect to existing sustainable transport modes.
- 5.10 The proposal scores positively against the aims and objectives of the sustainability appraisal and demonstrates that the sustainability benefits of the development to the community outweigh the flood risk, therefore passes this first part of the Exception Test.

#### Safe for Its Lifetime

#### Introduction

- 5.11 The use proposed at the site is residential which falls within the more vulnerable category. For those areas within Flood Zone 3a the site is suitable for residential development where the Exception Test is passed.
- 5.12 It is noted that part of the site is currently within Flood Zone 3b and considered not suitable for more vulnerable development. However, the planned improvements to flood defences in the River Adur would remove this area from Flood Zone 3b and redesignate it as Flood Zone 3a. This would make those parts of the site to be redesignated suitable for residential development after that time, where the Exception Test is passed. The proposed new defences are anticipated to be completed in 2018 therefore enabling delivery of housing on this site within the Local Plan period.
- 5.13 Paragraph 038 of the PPG states that 'the developer must provide evidence to show that the proposed development would be safe and that any residual flood risk . . . can be overcome to the satisfaction of the local planning authority.' It goes on to say that 'the developer's site-specific flood risk assessment should demonstrate that the site will be safe and that people will not be exposed to hazardous flooding from any source'.
- 5.14 A site specific Flood Risk Assessment (FRA) has been prepared for the development site by Tully De'Ath. This report should be read in conjunction with that document, although it has been summarised below.

#### Flood Risk

- 5.15 In respect of fluvial flood risk the site is in Flood Zone 3a with a residual risk associated with a breach of the River Adur flood defences. The site is within Flood Zone 3a and 3b for Tidal Flood Risk associated with a residual risk of breaching of defences along the River Adur and wave overtopping along the coastal frontage.
- 5.16 The site is also susceptible to ground water flooding (ground water emergence is more than 75%). It has a low surface water flood risk with those areas highlighted as susceptible to flooding being aligned to existing drains and ditches on the site. There is no reported incident of sewer flooding within the site.
- 5.17 Flood model data from the Environment Agency suggests that the 1:200 event with an allowance for climate change was the most onerous with a maximum flood height of 5.391m AOD for the undefended flood event and 5.05m AOD for a defended scenario.
- 5.18 The existing defences have been assessed as being in relatively good condition. Further, as noted earlier, proposed improvements to the flood defences as part of the Shoreham Adur Tidal Walls scheme will partially address tidal and fluvial flooding at the site and redesignate those parts of the site within Flood Zone 3b as Flood Zone 3a.

#### Flood Management and Mitigation

- 5.19 The FRA sets out a number of flood management and mitigation methods which could be incorporated in the final design to address flooding at the site which are summarised below.
- 5.20 All units would provide accommodation at first floor level only with this floor set above the 1 in 200+CC tidal event. This would equate to a minimum floor level of 5.35m AOD which is 3m above existing ground level. Ground floor levels would also be locally raised by 300mm to mitigate against the risk of ground and surface water flooding. All units would be designed using flood resilient materials and structurally designed to withstand potential flood depths.
- 5.21 All units would have direct access to first floor which would be the primary area for refuge in the event of a major flood event. All units would be linked to the EA's flood warning system and a site specific Flood Evacuation Plan will be provided and agreed with the Emergency Planning Team which gives guidance and advice to residents with regards to flood risks.
- 5.22 Surface Water run-off will be restricted to match greenfield run off rates via use of flow control devices.
- 5.23 Surface water attenuation will be provided in a variety of devices including roof top attenuation, permeable paving and swales.
- 5.24 Attenuation will be designed to hold a 6hr 100+CC event within the sub-base material with overflow directed to the adjacent swales and ditches should this be exceeded.

Surface Water Drainage Proposals and Sustainable Drainage Systems (SuDS)

- 5.25 The proposed method of surface water disposal will be via shallow infiltration and sustainable drainage systems (SuDS) will also be incorporated including:
  - Water butts which can reduce the total volume of storm water run-off and provide additional attenuation;
  - Green roofs on all roofs will provide storm water attenuation and reduce run off;
  - Geocelular roof attenuation systems beneath the green roofs will create an additional storage structure which will discharge into the sub-base of permeable roads;
  - Permeable paving with base infiltration will be included to all hard paved areas and will allow water to infiltrate and be temporarily stored before infiltrating into the sub-soils;
  - New swales / infiltration trenches will be introduced either side of the new access road and linked to the existing ditch system on site;
  - Bio retention areas will be introduced in the landscaping to provide additional exceedence event storage.
- 5.26 All surface water run-off from the roof and hard paved areas will receive an element of surface water treatment before discharging into the ground to satisfy the level of treatment recommended in the SuDS Manual.
Flood Risk Assessment Conclusion

- 5.27 The FRA has identified the current and future flood risk to the site and demonstrated how this would be managed and mitigated over the developments lifetime to demonstrate that the development can be designed so as to remain safe for its lifetime and would not increase flood risk elsewhere.
- 5.28 The principles for management and mitigation of flood risk will be incorporated across the site, although those areas which are currently within Flood Zone 3b will not be developed until the Shoreham Adur Tidal Walls scheme is completed and they have been redesignated.
- 5.29 The proposals have therefore demonstrated that the second part of the Exception Test has also been passed.

#### Conclusion

- 5.30 This chapter has demonstrated that the development site offers wider sustainability benefits to the community that outweigh flood risk, and that the development can be designed to incorporate measures to mitigate and manage flood risk now and for the lifetime of the development and not increase flood risk elsewhere.
- 5.31 While some parts of the site are currently within Flood Zone 3b and would not be considered appropriate for residential development at this time these would be redesignated once the Shoreham Adur Tidal Walls scheme is complete to Flood Zone 3a and would not be developed until after this time.
- 5.32 It is concluded that the Exception Test has been passed, and the site can be considered appropriate for residential redevelopment.

## 6. CONCLUSION

- 6.1 The NPPF sets out tests to protect people and property from flooding. It requires a sequential approach to site selection to ensure development is as far as possible directed to the areas at lowest risk of flooding. Where development needs to be in locations at risk from flooding it should demonstrate that it provides sustainability benefits to the wider community and would be safe for its lifetime.
- 6.2 It has been demonstrated that Adur District Emerging Local Plan does not currently allocate enough development sites to meet its objectively assessed housing need. It is therefore clear that further development sites should be brought forward to meet this need.
- 6.3 This report has demonstrated that the development site at New Salts Farm would pass the Sequential Test as there are no other available sites within a lower Flood Zone that could provide the development proposed.
- 6.4 It is relevant that the Shoreham Adur Tidal Walls proposals to improve flood defences in the River Adur would have a positive impact on the development site in terms of flooding and would open up areas of the site currently not considered suitable for residential development. These defences are anticipated to be completed in 2018 and would enable deliverability of new housing on the site within the plan period.
- 6.5 In respect of the Exception Test, this report has demonstrated that the proposed development would provide sustainability benefits to the wider community that outweigh flood risk, particularly through the provision of new housing, including affordable housing, to meet objectively assessed need. Further the Flood Risk Assessment has demonstrated that the proposed development would incorporate through its design, measures to manage and mitigate flood risk at the site to demonstrate that it would be safe for its lifetime without increasing flood risk elsewhere.
- 6.6 In accordance with the NPPF and PPG it has been demonstrated, informed by a site specific Flood Risk Assessment, taking account of the future Adur Tidal Walls Scheme and following the Sequential and Exception Tests that the development is appropriately flood resilient and resistant, any residual risk can be safely managed and sustainable drainage systems have been incorporated and there is no increase in flood risk elsewhere.
- 6.7 The Sequential and Exception Tests have been passed and the development can therefore be considered appropriate and be permitted in line with the NPPF.





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# Appendix G – SFRA Historical Flood Maps

### Core Strategy Site Flood Risk Assessment: summary and recommendations Site Details

## Site Name

| Flood Risk  |      |
|---|------|
| Brown/Greenfield  | Gre  |
| Flood risk vulnerability classification (PPS25 Table D2): | Mor  |
| Proposed use  | Res  |
| Site Area (ha)  | 30.4 |
| Site Location (OS NGR)                                    | TQ2  |
|   | Lan  |

| Land North East of the Hasler Estate |
|--------------------------------------|
| TQ200046                             |
| 30.4                                 |
| Residential                          |
| More Vulnerable                      |
| Croonfield                           |
| Greenied                             |

#### Flood Zones (Fluvial & Tidal) Comments Flood Type Fluvial and Tidal River Adur, tidal estuary and coastline Percentage of site in Flood Zone 3b 39% Percentage of site in Flood Zone 3a 61% 0% This excludes any area contained within Flood Zone 3 Percentage of site in Flood Zone 2 Percentage of site in Flood Zone 1 Flood Zone 1 indicates the area lying outside of Flood Zones 2 and 0% 3 Defended? Formal defences Maintainer: Local Authority, private and EA along the River Adur and the Standard of Protection: Less than 1 in 20 year. coastline. The susceptibility to surface water flooding during a 1 in 200 year event for the majority of the site is shown to be less to intermediate . There are small pockets of flooding, some deep, associated with the 1 in 30 year and 1 in 200 year event across the site according to FMfSW. Groundwater Flood Risk The site is underlain by the Newhaven Chalk Formation, and is within the EA's major aquifer high vulnerability zone. Consequently the area may be susceptible to groundwater emergence. According to the EA groundwater susceptibility map, the site resides in a series of 1km squares where the proportion of each 1 km square that is susceptible to groundwater flood emergence is more than 75%.

No reported incidents of sewer flooding within the site. Reported incident to south west of the site (West Way)

Yes - there would be a residual risk associated with breach of the River Adur west bank defences.

The Flood Zones show the site would be inundated if undefended, therefore there is a residual risk associated with breach of the defences along the River Adur. Also, detailed modelling has been undertaken to assess the impact of wave overtopping along the coastal frontage. The results show that the site is at a high risk of inundation as a result of wave overtopping in both the 1 in 20 and 1 in 200 year events.

#### Effect of climate change

Detailed modelling undertaken to assess the impact of climate change of the tidal flood extent show that the entire site would suffer inundation in the future (2115) 1 in 200 year event. The impact of climate change on surface water or groundwater has not been assessed as part of this SFRA.

Surface water flooding

Susceptibility

Flood map for surface water

#### Other sources of flood risk

Sewer Flood Risk

**Residual risk** 

Fluvial Residual Risk

Tidal Residual Risk

| Is a site specific Flood Risk Assessment required? |     |   |  |  |  |  |
|--|-----|---|--|--|--|--|
| FRA required?                                      | Yes | Site is over 1ha and has significant areas within Flood Zone 3a.<br>Small areas at residual risk from wave overtopping. Additional high<br>risk of groundwater emergence and surface water flooding. The<br>site is at significant risk from the affects of climate change. |  |  |  |  |
| Exception test required for proposed use?          | Yes | The majority of the site is within Flood Zone 3a. The exception test would need to be met for more vulnerable development within the site. Notably, to meet the exception test the FRA would need to demonstrate that the development is 'safe'.                            |  |  |  |  |

#### **Recommendations for Development**

The site is within Flood Zones 3a, and 3b and has a history of flooding. All development proposals should be accompanied by a FRA. Flood Zone 3b is not considered suitable for less, more, or highly vulnerable developments. Flood Zone 3a is not suitable for highly vulnerable developments. The Exception Test is required for essential infrastructure and more vulnerable proposals. Water compatible land uses are considered compatible. Future development should be mindful of the various sources of flood risk, and where possible implement sequential design throughout the site to try to reduce flood risk within the development.

The effect of climate change should be considered for all new development, at present it is shown that the risk of flooding will increase in the future if the current defences remain unchanged as a consequence of reduced SoP.

There is also a risk from wave-overtopping, an assessment should be carried out on the impact of wave overtopping so that any future development can be designed with this in mind. Future developments should be resilient to the effects of wave overtopping and the site should be sequentially designed ensuring the development remains safe in the event of wave overtopping i.e. situating resilient uses on the ground floor.

The site is also at risk of groundwater and surface water flooding, therefore steps should be taken to reduce the consequence of flooding. Any future development should ensure that it would not increase the surface water flood risk elsewhere, to achieve this any existing flow paths would need to maintained. The site is greenfield so surface water drainage techniques should be built into any new design to ensure the runoff rate does not increase.

Improvements to the tidal walls along the River Adur in the vicinity of the site have been proposed (see section 4.3.4 of the main report for more information). When these improvements occur the floodplain designation will change, and areas designated 3b will be redesignated 3a. This will alter the flood risk vulnerability classification of development permissible in the area. These new defences are likely to have a positive affect on the present day and future 'defended' flood extents, and future development proposals should give regard to the detailed outputs from the Adur Tidal Walls study. At present available information indicates that the planned improvements are to the present day 1 in 200 year standard. This standard of protection is expected to decrease in the future with climate change and this should be considered early in the design of the development, including directing the highest vulnerability land uses to areas of lowest risk. Any new development should be resilient to future climate change, as well as the effect of wave overtopping and a failure in the defence. A detailed FRA will be required to assess these aspects.







Adur and Worthing Defences

1% AEP Defended

Flood Zone 3a

**Actual Fluvial Flood Risk** (with defences)







### Adur and Worthing SFRA update Flood Risk Summary Map



















# Appendix H – Lancing SWMP Extracts

## 4.1 Summary of flooding

There is good anecdotal evidence of flooding within Lancing from the wet winters of 2012/13 and 2013/14, and ongoing reporting from local residents throughout 2014 and 2015. Local residents have provided detailed information on the timing, location and impacts of flooding in Lancing. This has enabled a comprehensive picture of flooding to be established over the past two to three years. Flooding in Lancing has been a long-standing problem, but the best anecdotal evidence of flooding is from the last two to three years. Given that 2013/14 was the wettest winter on record it is reasonable to assume that the available anecdotal evidence from the past two to three years the flooding impacts. Table 4-1 provides an overview of the key locations affected by flooding in Lancing.

| Location   | No. properties<br>flooded internally <sup>16</sup>  | Other impacts  | Dates of flooding   |
|--|---|--|---|
| Grinstead<br>Lane,<br>Manor Way,<br>Manor<br>Close | Two garages<br>flooded in Manor<br>Way  | Extensive flooding on<br>Grinstead Lane (impassable),<br>restricted toilet use, garden<br>flooding, and overpumping of<br>foul network into ditch<br>network | December 2012 and December<br>2013<br>January 2015 although flooding<br>impacts significantly reduced |
| Old<br>Shoreham<br>Road <sup>17</sup>              | None  | Flooding on Old Shoreham<br>Road<br>Garden flooding  | December 2012 and December 2013, January 2014 and 2015  |
| Barfield<br>Park and<br>Monks<br>Avenue            | 1 home affected on<br>Barfield Park<br>1 property flooded<br>near Monks<br>Avenue/Hadlow<br>Way | Garden flooding in other<br>locations  | December 2013, Summer 2014  |
| The<br>Paddocks                                    | None, but some<br>garages affected  | Flooding on the highway  | Flooding occurred regularly<br>following heavy rainfall (until work<br>completed (see Section 2.4.3)  |
| West Beach<br>Estate                               | None  | Flooding across most of The<br>Broadway, and parts of<br>Westway and Prince Avenue   | Flooding occurs regularly   |
| A27  | None  | Northern carriageway of A27<br>flooded   | December 2013   |
| Shoreham<br>Airport                                | None  | Airport flooded, although<br>main runway was still<br>operational  | December 2013   |

Table 4-1 Locations affected by flooding in Lancing

 $<sup>^{16}</sup>$  Defined as flooding within a building, and includes the main buildings / garages of a property

<sup>&</sup>lt;sup>17</sup> This refers to the cul-de-sacs south of the A27 (NB: The A27 is also known as Old Shoreham Road)

#### SECTION 5

#### Table 5-1 Summary of flooding reports from residents of West Beach Estate (bold & italic text identifies a linked event)

|    | Date/Time flooding Date/time high tide What is flooded? And to what extent? (All are quotes from local residents) |                     | Other useful information   | Level of  | Groundwater  | Rainfall total | Dry /      | Tide level at  |         |               |
|----|---|---------------------|--|---|--|----------------|------------|--|---------|---------------|
|    | Date/ Time noouning   | Date/ time high the | The Broadway   | The Westway   | other userul information   | (mAOD)         | PAD (mAOD) | Farm)  | Wet     | time of flood |
| 1  | 05/11/2013 2:30pm   | 05/11/2013 12:05pm  |  |   |  | 6.61           | 1.36       | 25.6mm two<br>days<br>earlier2.2mm                                   | Wet     | High          |
| 2  | 27/12/2013 7:00am   | 27/12/2013 05:43am  | The Broadway is continually<br>flooded from the entrance to the<br>crossroads 6-9 inches deep                                    |   | The flood Plain behind West Beach<br>is pooling on Old Salts Farm  | 5.06           | 2.17       | 4.2mm on<br>27/11,<br>10.9mm on<br>26/11                             | Wet     | Low           |
| 3  | 01/01/2014 2:00pm   | 01/01/2014 10:49am  | Was flooded to the centre of the<br>road but numerous cars including<br>a lowered mini was able to<br>enter/exit the estate area |   | All areas were deep, making it<br>difficult to drive through   | 6.51           | 2.29       | 12.2mm on<br>01/01,<br>11.5mm on<br>31/12                            | Wet     | High          |
| 4  | 10/08/2014 Time<br>Unknown  |                     | The Broadway is continually<br>flooded   | West beach is continuing<br>to flood badly all this<br>week                                 |  | Tide >6m       | 1.31       | 17.8mm on<br>08/08 and<br>4.5mm on<br>09/08 and<br>7.5mm on<br>10/08 | Wet     | High          |
| 4a | 13/08/2014 4:10pm   | 13/08/2014 1:59pm   | Unknown  | Flooding either side of<br>Westway above ankle<br>deep, but not to middle of<br>road        |  | 6.96           | 1.30       | 1mm on<br>13/08, 12/08<br>dry  | Dry     | High          |
| 5  | 25/08/2014 7:00am   |                     |  |   | Flooding of woodland area  | Tide <6m       | 1.31       | 29.2mm on<br>25/08   | Wet     | Low           |
| 6  | 11/09/2014 3:00pm   | 11/09/2014 1:38pm   |  | Flooding either side of<br>Westway limited to one<br>side of the road                       | Water bubbling up onto Westway<br>(video). Water drained away by<br>5.30   | 6.96           | 1.27       | Dry  | Dry     | High          |
| 7  | 08/10/2014 1:00PM   | 08/10/2014 11:50am  | Unknown  | Flooding across most of<br>width of Westway. Fairly<br>deep in places                       | The flood plain behind west beach<br>is now flooded. Prince Avenue<br>flooded  | 6.74           | 1.32       | 5.3mm 08/10<br>and 20.0mm<br>on 07/10                                | Wet     | High          |
| 8  | 22/10/2014 1:30PM   | 22/10/2014 11:06am  |  |   | Prince Avenue flooded across<br>whole width of road  | 5.66           | 1.37       | Unknown  | Unknown | Low           |
| 9  | 03/11/2014 09:00am  | 03/11/2014 7:50am   | Broadway flooded, extent /<br>depths unknown   | Westway also flooded,<br>extent unknown?  | Roads were at 9am. About a foot<br>of concrete was not under water.<br>Water still sitting in Westway and<br>Broadway at 6pm | 5.62           | 1.40       | 18.3mm on<br>02/11 and<br>13.8mm<br>03/11                            | Wet     | Low           |
| 9a | 07/11/2014 12:15pm  | 07/11/2014 11:13am  | Broadway flooded, extent /<br>depths unknown   | Westway flooded, half<br>way across the road but<br>quite deep. Also looks to<br>be flowing |  | 6.54           | 1.42       | 5.1mm on<br>06/11 and<br>5.2mm on<br>07/11                           | Dry     | High          |
| 9b | 08/11/2014 1:30pm   | 08/11/2014 11:54am  | Broadway flooded, extent /<br>depths unknown   | Flooding across most of<br>width of Westway. Fairly<br>deep in places                       | Also flooded 9th November 2014,<br>high tide was 6.32m AOD   | 6.49           | 1.43       | 13.7mm on<br>08/11   | Wet     | High          |

| п   | Date/Time flooding         | Date/time high tide | What is flooded? And to what extent? (All are quotes from<br>local residents)   |  | Other useful information  | Level of                                | Groundwater | Rainfall total<br>(Applesham                                      | Dry / | Tide level at |
|-----|----------------------------|---------------------|---|--|---|---|-------------|---|-------|---------------|
|     | bate, fine nooung          |                     | The Broadway  | The Westway  |   | (mAOD)                                  | PAD (mAOD)  | Farm)   | Wet   | time of flood |
| 9c  | 10/11/2014 3.25pm          | 10/11/2014 1:13pm   | Broadway badly flooded across<br>whole length of road, buses<br>couldn't stop at edge of road   |  | Orient Road flooded near junction<br>with Broadway  | 6.05                                    | 1.51        | 0.3mm on<br>10/11   | Dry   | High          |
| 10  | 23/11/2014 1:00pm          | 23/11/2014 11:26am  | The Broadway / Orient Rd are<br>flooding badly again. Flooding<br>almost across the total width of<br>the road  | Limited flooding on<br>Westway?  | Broadway north of junction also flooded one side of the road  | 6.24                                    | 1.83        | 9.4 on 22/11<br>and 15.3mm<br>on 23/11                            | Wet   | High          |
| 10a | 28/11/2014 Time<br>Unknown |                     | Refer to previous photographs of<br>the flooding on the Broadway<br>and crossroads of Westway /<br>Orient Road  |  | The flooding has been constant<br>and not abated ,yesterday it was<br>across the entire road and<br>causing problems with the flow of<br>traffic especially smaller cars<br>which have to travel down the<br>centre of the road | Tide <6m<br>in<br>afternoon             | 1.91        | 10.8mm on<br>25/11,<br>.88mm on<br>26/11 and<br>0.3mm on<br>28/11 | Wet   | Low           |
| 11  | 12/12/2014 09:30am         |                     | Broadway and crossroads Orient<br>Road and Westway almost across<br>road near junction with A259  |  | Just to keep you informed The<br>Broadway is still partially flooded<br>2 days after the precipitation  | Not linked<br>to high<br>tide           | 1.85        | 14.7mm on<br>11/12 and<br>0.2mm on<br>12/11                       | Wet   | Low           |
| 11a | 17/12/2014 3:30pm          |                     | The Broadway is badly fiooded<br>nearly to the middle of the road<br>but still passable. Corner of<br>Orient Flooded  | No flooding on Westway   | Low tide but heavy precipitation.   | Tide <5m                                | 1.76        | 13.2mm on<br>16/12 and<br>1.4mm on<br>17/12                       | Wet   | Low           |
| 11b | 19/12/2014 12:00pm         |                     | Broadway flooded, but less<br>water compared to 2 days<br>earlier. Still across most of road  |  |   | Tide<br><5.5m                           | 1.72        | 6.8mm on<br>18/12 and<br>0.1mm on<br>19/12                        | Dry   | Low           |
| 12  | 03/01/2015 Time<br>Unknown |                     | The Broadway badly flooded,<br>cascading water off A 259,<br>reaching middle of road etc as<br>previous   | No flooding on Westway   | Unsure of time of flood, email was<br>as 12:47pm  | Tide<br><5.75m                          | 1.81        | 9.4mm on<br>02/01 and<br>5.6mm on<br>03/01                        | Wet   | Low           |
| 13  | 08-01-2015 11:00am         |                     | The Broadway badly flooded,<br>cascading water off A 259,<br>reaching middle of road etc as<br>previous   | Flooding Westway half<br>way across road, focussed<br>on area between George<br>V and Bristol Avenue |   | Not<br>related to<br>tide level         | 1.88        | 23.6mm on<br>07/01 and<br>17.9mm on<br>08/01                      | Wet   | Low           |
| 14  | 14-01-2015 3:35pm          |                     | The Broadway junction floods in<br>all four directions (into Orient Rd,<br>up and down Broadway as well as<br>into the Westway). If it rains<br>heavily, the whole junction floods<br>heavily | Not flooded  |   | Low tide 2<br>hours<br>earlier          | 2.50        | 11.3mm on<br>14/01  | Wet   | Low           |
| 14a | 17-01-2015 11.30am         |                     | Majority of Broadway flooded  | Not flooded  |   | High tide<br>@ 8am,<br>only 5.2m<br>AOD | 2.79        | 4.7mm on<br>17/01   | Dry   | Low           |
| 15  | 23-01-15 2.30pm            | 23-01-15 @1.30pm    | Flooding but still receding   | Water bubbling up<br>through Westway, but<br>only isolated flooding                                  |   | 6.83                                    | 2.60        | 6.6mm on<br>23/01   | Dry   | High          |

| ID | Date/Time flooding | Date/time high tide | What is flooded? And to what extent? (All are quotes from local residents)  |  | Other useful information | Level of                   | Groundwater               | Rainfall total            | Dry /   | Tide level at |
|----|--------------------|---------------------|---|--|--------------------------|----------------------------|---------------------------|---------------------------|---------|---------------|
|    |                    |                     | The Broadway  | The Westway  |                          | (mAOD)                     | PAD (mAOD)                | Farm)                     | Wet     | time of flood |
| 16 | 13-02-2015 4.00pm  |                     | The Broadway is flooded to about<br>a quarter due to surface water<br>runoff from the A 259 after<br>precipitation this | pooling significantly along<br>the curbs to a quarter of<br>the Broadway and orient /<br>Westway |                          | High tide<br>4.97 @<br>5pm | Data not yet<br>available | Data not yet<br>available | Unknown | Unknown       |

## Lancing SWMP





## Legend

- Manhole Data from WSCC 0
- **Bed Level** X
- Farm Crossing .
- Gullies .
- Soakaway
- Culvert
- **Open Channel**
- Catchpit .
- Foul Chamber .
- Gully .
- Kerb Inlet
- Surface Chamber .
- Unknown Chamber .
- **Assumed Foul Pipe**
- Assumed Surface Water Pipe West Beach

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## Lancing Site Notes - Zone D

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The following technical note has been prepared to summarise the findings of the Lancing SWMP site walkover.

### Site Overview

Zone D is comprised of the privately owned West Beach Estate. The estate is bounded to the south by the A259. The A259 is typically 400mm higher than the highways in West Beach Estate. The northern boundary of zone D is the drainage ditch downstream of zone B and C. Figure 1 shows the zone D boundary.



Fig.1. Zone D boundary

### **Ditch Network**

The main ditch flows from west to east along the northern boundary of the study area. No connection was found between the surface water sewer network and the ditch network. The ditch network was heavily overgrown with reeds where it entered the zone in the west to the point where the ditch turns north adjacent to the caravan park. From this point to the northern boundary the ditch was clear of vegetation. Anecdotal evidence suggests the ditch is maintained by the landowner (farmer) in this location. Figure 2 shows the ditch where it is overgrown with reeds. Figure 3 shows the ditch where it has been cleared of vegetation.



Fig.2. vegetated section of ditch

LANCING SITE NOTES - ZONE D



Fig.3. Ditch maintained winter 2013

### Surface Water Sewer Network

A record was collected of the location of all manholes and gullies within zone D. The survey was carried out the day after an approximately 6 hour rainfall. Siginificant flooding of the highway was observed at the entrance to West Beach Estate from the A259 'Brighton Road' as shown in figure 4. It was not possible to view inside gullies at this point due to the high water level. Although not accurately measured there was no discernable change in water level here throughout the day despite the changing tide levels. These gullies at the entrance to the estate drain to a soakaway. This area at the entrance is the lowest topographical point in the estate according to the digital terrain map (DTM).

The survey of manholes and gullies in the remainder of the estate found that surface water sewers ran in a northerly direction along all the minor roads coming of West Way. Surface water sewers were found in West Way however the connectivity of these sewers is unknown. Figure 5 shows a typical manhole along West Way at the head of Boundary Road.



Fig.4. Surface water flooding at entrance to West Beach Estate



Fig.5. Manhole at head of Boundary Road

Outlets to these surface water sewers have recently been excavated at the head of Bristol Avenue and George V Avenue. No outlets were found at the end of the other roads within the estate. Figure 6 shows the outlet at the head of George V Avenue. The existing ground level at the end the roads in West Beach Estate is typically 650 mm higher than the ground level adjacent to the ditch at the north of site D.



Fig.6. Surface water sewer outlet at end of George V Avenue

in the aquifers during the period of groundwater measurement. The monitoring showed that the aquifers layers respond separately to the influence of recharge and discharge, with a time lag in response between the two layers. Additionally, due to the clay/alluvium acting as an aquiclude the pressure in the Chalk aquifer was found to be artesian after the period of heavy rainfall during February. The Chalk aquifer in this location was therefore behaving as a confined aquifer with groundwater in the superficial layer acting as a perched water table. Based on this evidence, there is no significant contribution to surface water flows from the underlying Chalk in this location. There was found to be a tidal influence in the Chalk aquifer at BH07. The groundwater level was found to react quickly to the diurnal tidal cycle. Elevated levels of sodium and chloride were recorded for BH07D only. It was concluded that this was representative of a more direct and deeper hydraulic link to groundwater in the Chalk beneath the Adur estuary or beneath the coast.

The report recommended that the development site was not at risk of groundwater flooding, provided that the development did not disturb the geological units (i.e. development did not extend into the Chalk formation. As part of the review for the SWMP there is no evidence that would counter the conclusions of the New Monks Farm hydrogeological investigations. A summary description of the geology in the area can be found in Section 3.4.

## 2.4 Actions taken to alleviate flooding in the catchment

## 2.4.1 Clearance of Lancing Brooks

Collectively, the Monson and Royal Haskoning studies have considered the drainage ditch network in considerable detail to understand pinch points and remedial works required. Significant ditch clearance work was carried out by Adur and Worthing Councils and landowners in 2010 and 2013. In 2010 extensive ditch clearance was undertaken on the northern floodplain east of Mash Barn Lane<sup>12</sup>, and on the southern floodplain south of the railway line (downstream of Barfield Park). Furthermore in 2013 the ditch sections which run through residential areas were dredged and cleared (beds lowered by up to 500mm)<sup>13</sup>. The ditch clearance work addresses most of the recommendations of the Monson and Royal Haskoning reports.

As part of the SWMP new and comprehensive cross-section survey of the ditch network was undertaken in in December 2014 and January 2015 to understand the current flow regime and levels of siltation and vegetation. The purpose of this was to assist WSCC and Adur and Worthing District Councils in identifying an optimal maintenance regime. The findings of the cross-section survey are described in Section 6. In January 2015 the landowner of the golf course development undertook a comprehensive clearance of the ditches.

### 2.4.2 Improvements to foul sewerage network

Since the winters of 2013/13 and 2013/14 Southern Water have undertaken a number of actions to reduce the risk of foul sewer flooding, including:

- developing an Infiltration Reduction Plan (IRP) for North Lancing which sets out the strategy for managing infiltration into the sewer network;
- sealing of the sewer network to reduce infiltration;
- installation of a level alert system which triggers a tanker call out when sewer levels go above a certain threshold, and;
- production of an Emergency Action Plan (EAP) which identifies trigger levels and associated actions depending on sewer levels and forecast flooding.

<sup>&</sup>lt;sup>12</sup> In January 2015 the landowner also undertook ditch clearance of the northern floodplain within the golf course area

<sup>&</sup>lt;sup>13</sup> Ken Argent, pers. comm.



Appendix I– EA Flood Maps



## Flood Map for Planning (Rivers & Sea) centred on New Salts Farm, Shoreham - created 19/05/2015

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|       |         |          | 1 in 75 unde | fended | 1 in 200 undefended |        | 1 in 200+cc undefended |        | 1 in 1000 undefended |        |
|-------|---------|----------|--------------|--------|---------------------|--------|------------------------|--------|----------------------|--------|
| Point | Easting | Northing | depth        | height | depth               | height | depth                  | height | depth                | height |
| 1     | 519,585 | 104,456  | 2.468        | 4.111  | 2.607               | 4.250  | 3.756                  | 5.399  | 2.835                | 4.478  |
| 2     | 519,735 | 104,581  | 2.405        | 4.113  | 2.544               | 4.252  | 3.687                  | 5.395  | 2.770                | 4.479  |
| 3     | 519,609 | 104,716  | 2.388        | 4.116  | 2.526               | 4.255  | 3.667                  | 5.395  | 2.753                | 4.481  |
| 4     | 519,823 | 104,779  | 2.996        | 4.117  | 3.136               | 4.256  | 4.270                  | 5.391  | 3.360                | 4.481  |
| 5     | 520,075 | 104,847  | 2.541        | 4.119  | 2.681               | 4.258  | 3.810                  | 5.388  | 2.904                | 4.482  |
| 6     | 519,976 | 104,693  | 2.548        | 4.116  | 2.688               | 4.256  | 3.823                  | 5.390  | 2.912                | 4.480  |
| 7     | 520,261 | 104,709  | 2.430        | 4.116  | 2.571               | 4.257  | 3.704                  | 5.390  | 2.794                | 4.481  |
| 8     | 520,125 | 104,600  | 2.376        | 4.114  | 2.517               | 4.255  | 3.653                  | 5.392  | 2.741                | 4.479  |
| 9     | 520,257 | 104,508  | 2.563        | 4.113  | 2.705               | 4.255  | 3.842                  | 5.393  | 2.929                | 4.479  |
| 10    | 520,468 | 104,520  | 2.252        | 4.115  | 2.395               | 4.258  | 3.529                  | 5.391  | 2.618                | 4.481  |

depth = metres

height = mAOD

|       |         |          | 1 in 75 defei | nded   | 1 in 200 defended |        | 1 in 200+cc defended |        | 1 in 1000 defended |        |
|-------|---------|----------|---------------|--------|-------------------|--------|----------------------|--------|--------------------|--------|
| Point | Easting | Northing | depth         | height | depth             | height | depth                | height | depth              | height |
| 1     | 519,587 | 104,452  | 0.336         | 1.970  | 0.786             | 2.420  | 3.415                | 5.050  | 1.649              | 3.284  |
| 2     | 519,736 | 104,581  | 0.261         | 1.970  | 0.712             | 2.420  | 3.341                | 5.050  | 1.575              | 3.283  |
| 3     | 519,612 | 104,717  | 0.304         | 1.970  | 0.755             | 2.420  | 3.383                | 5.049  | 1.617              | 3.283  |
| 4     | 519,823 | 104,780  | 0.775         | 1.970  | 1.226             | 2.420  | 3.854                | 5.049  | 2.087              | 3.282  |
| 5     | 520,073 | 104,847  | 0.398         | 1.970  | 0.849             | 2.420  | 3.477                | 5.048  | 1.711              | 3.282  |
| 6     | 519,976 | 104,693  | 0.402         | 1.970  | 0.852             | 2.420  | 3.481                | 5.049  | 1.715              | 3.283  |
| 7     | 520,263 | 104,710  | 0.358         | 1.970  | 0.808             | 2.420  | 3.437                | 5.049  | 1.672              | 3.284  |
| 8     | 520,125 | 104,595  | 0.248         | 1.970  | 0.698             | 2.420  | 3.327                | 5.049  | 1.561              | 3.284  |
| 9     | 520,255 | 104,509  | 0.420         | 1.970  | 0.870             | 2.420  | 3.499                | 5.049  | 1.734              | 3.285  |
| 10    | 520,467 | 104,519  | 0.107         | 1.970  | 0.558             | 2.420  | 3.187                | 5.050  | 1.423              | 3.286  |

depth = metres

height = mAOD











|       |         | 1 in 75 undefended |       | 1 in 200 undefended |       | 1 in 200+cc undefended |       | 1 in 1000 undefended |       |        |
|-------|---------|--------------------|-------|---------------------|-------|------------------------|-------|----------------------|-------|--------|
| Point | Easting | Northing           | depth | height              | depth | height                 | depth | height               | depth | height |
| 1     | 519,585 | 104,456            | 2.468 | 4.111               | 2.607 | 4.250                  | 3.756 | 5.399                | 2.835 | 4.478  |
| 2     | 519,735 | 104,581            | 2.405 | 4.113               | 2.544 | 4.252                  | 3.687 | 5.395                | 2.770 | 4.479  |
| 3     | 519,609 | 104,716            | 2.388 | 4.116               | 2.526 | 4.255                  | 3.667 | 5.395                | 2.753 | 4.481  |
| 4     | 519,823 | 104,779            | 2.996 | 4.117               | 3.136 | 4.256                  | 4.270 | 5.391                | 3.360 | 4.481  |
| 5     | 520,075 | 104,847            | 2.541 | 4.119               | 2.681 | 4.258                  | 3.810 | 5.388                | 2.904 | 4.482  |
| 6     | 519,976 | 104,693            | 2.548 | 4.116               | 2.688 | 4.256                  | 3.823 | 5.390                | 2.912 | 4.480  |
| 7     | 520,261 | 104,709            | 2.430 | 4.116               | 2.571 | 4.257                  | 3.704 | 5.390                | 2.794 | 4.481  |
| 8     | 520,125 | 104,600            | 2.376 | 4.114               | 2.517 | 4.255                  | 3.653 | 5.392                | 2.741 | 4.479  |
| 9     | 520,257 | 104,508            | 2.563 | 4.113               | 2.705 | 4.255                  | 3.842 | 5.393                | 2.929 | 4.479  |
| 10    | 520,468 | 104,520            | 2.252 | 4.115               | 2.395 | <mark>4.258</mark>     | 3.529 | <mark>5.391</mark>   | 2.618 | 4.481  |

depth = metres

height = mAOD

| 1 in 75 defended 1 in 200 defended |         | nded     | 1 in 200+cc defended 1 in 1000 defended |        | fended |        |       |        |       |        |
|------------------------------------|---------|----------|---|--------|--------|--------|-------|--------|-------|--------|
| Point                              | Easting | Northing | depth                                   | height | depth  | height | depth | height | depth | height |
| 1                                  | 519,587 | 104,452  | 0.336                                   | 1.970  | 0.786  | 2.420  | 3.415 | 5.050  | 1.649 | 3.284  |
| 2                                  | 519,736 | 104,581  | 0.261                                   | 1.970  | 0.712  | 2.420  | 3.341 | 5.050  | 1.575 | 3.283  |
| 3                                  | 519,612 | 104,717  | 0.304                                   | 1.970  | 0.755  | 2.420  | 3.383 | 5.049  | 1.617 | 3.283  |
| 4                                  | 519,823 | 104,780  | 0.775                                   | 1.970  | 1.226  | 2.420  | 3.854 | 5.049  | 2.087 | 3.282  |
| 5                                  | 520,073 | 104,847  | 0.398                                   | 1.970  | 0.849  | 2.420  | 3.477 | 5.048  | 1.711 | 3.282  |
| 6                                  | 519,976 | 104,693  | 0.402                                   | 1.970  | 0.852  | 2.420  | 3.481 | 5.049  | 1.715 | 3.283  |
| 7                                  | 520,263 | 104,710  | 0.358                                   | 1.970  | 0.808  | 2.420  | 3.437 | 5.049  | 1.672 | 3.284  |
| 8                                  | 520,125 | 104,595  | 0.248                                   | 1.970  | 0.698  | 2.420  | 3.327 | 5.049  | 1.561 | 3.284  |
| 9                                  | 520,255 | 104,509  | 0.420                                   | 1.970  | 0.870  | 2.420  | 3.499 | 5.049  | 1.734 | 3.285  |
| 10                                 | 520,467 | 104,519  | 0.107                                   | 1.970  | 0.558  | 2.420  | 3.187 | 5.050  | 1.423 | 3.286  |

depth = metres

height = mAOD



# Appendix J – Indicative Drainage Drawing





# Appendix K – SuDS Manual Extracts

| TABLE | Pollution hazard indices for different land use classifications   |                           |                              |  |                   |  |  |  |
|-------|---|---------------------------|------------------------------|--|-------------------|--|--|--|
| 26.2  | Land use  | Pollution<br>hazard level | Total suspended solids (TSS) | Metals   | Hydro-<br>carbons |  |  |  |
|       | Residential roofs   | Very low                  | 0.2                          | 0.2  | 0.05              |  |  |  |
|       | Other roofs (typically commercial/<br>industrial roofs)   | Low                       | 0.3                          | 0.2 (up to 0.8<br>where there<br>is potential for<br>metals to leach<br>from the roof) | 0.05              |  |  |  |
|       | Individual property driveways,<br>residential car parks, low traffic roads<br>(eg cul de sacs, homezones and<br>general access roads) and non-<br>residential car parking with infrequent<br>change (eg schools, offices) ie < 300<br>traffic movements/day   | Low                       | 0.5                          | 0.4  | 0.4               |  |  |  |
|       | Commercial yard and delivery areas,<br>non-residential car parking with<br>frequent change (eg hospitals, retail), all<br>roads except low traffic roads and trunk<br>roads/motorways <sup>1</sup>  | Medium                    | 0.7                          | 0.6  | 0.7               |  |  |  |
|       | Sites with heavy pollution (eg haulage<br>yards, lorry parks, highly frequented<br>lorry approaches to industrial estates,<br>waste sites), sites where chemicals and<br>fuels (other than domestic fuel oil) are<br>to be delivered, handled, stored, used<br>or manufactured; industrial sites; trunk<br>roads and motorways <sup>1</sup> | High                      | 0.8²                         | 0.8²   | 0.9²              |  |  |  |

#### Notes

1 Motorways and trunk roads should follow the guidance and risk assessment process set out in Highways Agency (2009).

2 These should only be used if considered appropriate as part of a detailed risk assessment – required for all these land use types (Table 4.3). When dealing with high hazard sites, the environmental regulator should first be consulted for pre-permitting advice. This will help determine the most appropriate approach to the development of a design solution.

Where a site land use falls outside the defined categories, the indices should be adapted (and agreed with the drainage approving body) or else the more detailed risk assessment method should be adopted.

Where nutrient or bacteria and pathogen removal is important for a particular receiving water, equivalent indices should be developed for these pollutants (if acceptable to the drainage approving body) or the risk assessment method adopted.

Where the mitigation index of an individual component is insufficient, two components (or more) in series will be required, where:

Total SuDS mitigation index = mitigation index, + 0.5 (mitigation index,)

Where:

mitigation Index, = mitigation index for component n

A factor of 0.5 is used to account for the reduced performance of secondary or tertiary components associated with already reduced inflow concentrations.

| TABLE | Indicative SuDS mitigation indices for discharges to groundwater  |   |  |  |  |  |  |  |
|-------|---|---|--|--|--|--|--|--|
| 26.4  | Characteristics of the material overlying the proposed infiltration surface, through which the runoff percolates <sup>1</sup>   | TSS   | Metals   | Hydrocarbons   |  |  |  |  |
|       | A layer of dense vegetation underlain by a soil with good contaminant attenuation potential <sup>2</sup> of at least 300 mm in depth <sup>3</sup>   | 0.6 <sup>4</sup>  | 0.5  | 0.6  |  |  |  |  |
|       | A soil with good contaminant attenuation potential <sup>2</sup> of at least 300 mm in depth <sup>3</sup>  | 0.44  | 0.3  | 0.3  |  |  |  |  |
|       | Infiltration trench (where a suitable depth of filtration material is included that provides treatment, ie graded gravel with sufficient smaller particles but not single size coarse aggregate such as 20 mm gravel) underlain by a soil with good contaminant attenuation potential <sup>2</sup> of at least 300 mm in depth <sup>3</sup> | 0.44  | 0.4  | 0.4  |  |  |  |  |
|       | Constructed permeable pavement (where a suitable filtration<br>layer is included that provides treatment, and including a<br>geotextile at the base separating the foundation from the<br>subgrade) underlain by a soil with good contaminant attenuation<br>potential <sup>2</sup> of at least 300 mm in depth <sup>3</sup>                | 0.7   | 0.6  | 0.7  |  |  |  |  |
|       | Bioretention underlain by a soil with good contaminant attenuation potential <sup>2</sup> of at least 300 mm in depth <sup>3</sup>  | 0.84  | 0.8  | 0.8  |  |  |  |  |
|       | Proprietary treatment systems <sup>5, 6</sup>   | These must of<br>each of the c<br>levels for inflo<br>contributing of | demonstrate th<br>ontaminant typ<br>ow concentrati<br>drainage area. | hat they can address<br>bes to acceptable<br>ons relevant to the |  |  |  |  |

Notes

- 1 All designs must include a minimum of 1 m unsaturated depth of aquifer material between the infiltration surface and the maximum likely groundwater level (as required in infiltration design – Chapter 25).
- 2 For example as recommended in Sniffer (2008a and 2008b), Scott Wilson (2010) or other appropriate guidance.
- 3 Alternative depths may be considered where it can be demonstrated that the combination of the proposed depth and soil characteristics will provide equivalent protection to the underlying groundwater – see note 1.
- 4 If significant volumes of sediment are allowed to enter an infiltration system, there will be a high risk of rapid clogging and subsequent system failure.
- 5 See Chapter 14 for approaches to demonstrate product performance. Note: a British Water/Environment Agency assessment code of practice is currently under development that will allow manufacturers to complete an agreed test protocol for systems intended to treat contaminated surface water runoff. Full details can be found at: www.britishwater.co.uk/Publications/codes-of-practise.aspx
- 6 SEPA only considers proprietary treatment systems as appropriate in exceptional circumstances where other types of SuDS component are not practicable. Proprietary treatment systems may also be considered appropriate for existing sites that are causing pollution, where there is a requirement to retrofit treatment. WAT-RM-08 (SEPA, 2014) also provides a flowchart with a summary of checks on suitability of a proprietary system.

The following should be noted:

- Where the indices are not considered representative by the designer, a risk assessment can be undertaken (Section 26.7.3).
- Components should always be designed for treatment, as described in the design guidance set out in the individual component chapters. If they are undersized, incorrectly designed or constructed or inadequately maintained, their treatment performance could be significantly affected. Component checklists (Appendix B) can be used to confirm design and construction adequacy and set appropriate maintenance regimes.
- Where the infiltration component itself does not provide sufficient pollution mitigation, the design should include upstream SuDS components that are lined to prevent infiltration from occurring. The mitigation indices set out in Table 26.3 (for discharges to surface water) should be used for any upstream treatment.



# Appendix L – Adur Tidal Wall Scheme







- All dimensions are in metres unless noted otherwise
- All levels are in metres relative to Ordnance Datum Newlyn (OD).
- 3. All positions are in metres relative to National Grid.
- Limit of deviation is extended 1.0m from the toe of embankment or sheet pile walls on each side.
- The Boundary of Works lines should be 10m from the Flood Defence Wall riverward unless the Mean Low Water is encountered before, then Boundary of Works lines turns to be Mean Low Water.









## LEGEND



## Adur and Worthing Boundary

1 in 20 year Present Day

Defence improvements



Adur Tidal Walls (ATW)

Ropetackle defences

Shoreham Harbour walls

Note: The cross-hatched polygons show those areas that will no longer be inundated in the 1 in 20 year event if the defence improvements along the River Adur are undertaken.

Three scenarios are shown:

1. Improvement to the Adur Tidal walls

2. Improvement to the Adur Tidal walls and Ropetackle defences

3. Improvement to the Adur Tidal walls and Shoreham Harbour walls

These extents are based on the modelling undertaken as part of the West Bank Tidal Walls (Arun to Adur Model update) 2011.

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Map 17 Impact of proposed defence improvements on the 1 in 20 year (Flood Zone 3b) extent.



# Appendix M – West Beach Estate Drainage

## Lancing SWMP





## Legend

.

Temporary Bench Mark Level (m)
Assets (Points)

- Catchpit
- Foul Chamber
- Gully
- Kerb Inlet
- Surface Chamber
- Unknown Chamber

Assets (Lines)

----- Assumed Foul Pipe

Assumed Surface Water Pipe

#### Notes:

- Foul chambers not lifted

- Orient Road & Mobile home park not surveyed

Adur & Worthing CC knowledge that Orient Road & lower end of Broadway are drained via soakaways

## Drainage Plan (Zone D)

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DEPTH AND LOZATION OF NEW SURFACE WATER CONNECTIONS ARE NOT KNOWN. TO BE ADVISED.

| TITLE:<br>WES | T Be  | ICH DI  | TCH    | Tully                              |
|---------------|-------|---------|--------|------------------------------------|
| PROJECT:      | U SAC | TS FA   | RM     | Engi                               |
| SCALE:        | DATE: | DRAWN:  | CHK'D: | SHERIDAN HOUSE,<br>TELEPHONE 01342 |
| 116           | 49    | DRG NO. | A REV. | EMAIL info@tuilydeo                |

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| cons                         | sultants                        |
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Proposed Residential Development New Salts Farm, Shoreham

Preliminary Transport Appraisal for 500 Residential Units

For

Hyde Housing





### **Document Control Sheet**

Preliminary Transport Appraisal New Salts Farm, Shoreham Hyde Housing

This document has been issued and amended as follows:

| Date       | Issue                 | Prepared by                    | Approved by    |
|------------|-----------------------|--------------------------------|----------------|
| 14/03/2016 | 1 <sup>st</sup> Draft | Emma Stonard / Lianne<br>Brook | Damian Tungatt |
| 17/03/2016 | Final                 | Emma Stonard / Lianne<br>Brook | Damian Tungatt |

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| 4.0 | Emerging Development Proposals   | 12 |
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### **Appendices**

- A Site Location Plan
- B Pre-application letter
- C MTC Surveys
- D Local Facilities Map
- E Emerging Masterplan
- F Proposed Site Access Junction
- G Swept Path Analysis
- H TRICS Residential Use
- I Nomis Census Data
- J Junction Modelling Output Files

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- 3.1 Baseline Traffic Flows
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- 5.1 Distribution Profiles
- 5.2 Development Traffic Flows
- 6.1 2020 without development Traffic Flows
- 6.2 2020 with Development Traffic Flows



#### **1.0** Introduction

- 1.1 This Preliminary Transport Appraisal Report has been prepared by Motion on behalf of Hyde Housing to provide transport and highways advice for a proposed strategic development of 500 residential units on land to the west of New Salts Farm, Shoreham. The site is located within the administrative boundaries of Adur District Council and West Sussex County Council (WSCC).
- 1.2 The council has invited submissions of potential development sites to be considered for inclusion within its Strategic Housing Land Availability Assessment (SHLAA) and maintains an ongoing 'call for sites' exercise. This report has been prepared to accompany a wider *Vision Document* that sets out the aspirations for the site and demonstrates that the New Salts Farm site is deliverable and accessible in transport terms.
- 1.3 New Salts Farm is conveniently located to provide a high quality, residential development that will integrate well with the existing urban area of Shoreham. The location of the site provides the opportunity to encourage the use of more sustainable modes of transport owing to the close proximity to public transport services in the vicinity. The location of the site can be seen at Appendix A.
- 1.4 This Transport Appraisal Report sets out the context of the site and assesses the deliverability of the development proposals in respects of the site access and accessibility. In addition to this, this report demonstrates that the New Salts Farm site can be fully integrated and accommodated on the highway, pedestrian, cycle and public transport networks whilst bringing forward benefit to the wider area.

**Discussions with West Sussex County Council** 

- 1.5 Previous discussions have been held with West Sussex County Council relating to a smaller quantum of development proposed for the site, comprising 50 units. This proposal is soon to go to public consultation with a view to submitting a planning application thereafter.
- 1.6 During pre-application discussions relating to that proposal the potential for a larger scheme to be delivered at this location was also initially discussed. The concept of such a proposal was broadly supported, subject to further discussion and assessment. The formal pre application advice relating to the smaller scheme dated 28<sup>th</sup> January is provided at Appendix B. This report builds on that initial discussion and identifies the likely impacts and enhancements required to facilitate delivery of the larger scheme.

#### **Structure of Report**

- 1.7 Following this introduction, the report is split into seven sections as follows:
  - > Section 2 outlines relevant transport policy and guidance at a national, regional and local level;
  - Section 3 provides a description of the site in relation to the immediate area and considers the existing conditions on the surrounding transport and highway networks;
  - Section 4 provides details of the development proposals including the access strategy;
  - Section 5 summarises the trip generation and distribution;
  - Section 6 summarises the junction assessment work undertaken;
  - Section 8 summaries and concludes the report.



#### 2.0 Policy

#### Introduction

2.1 This Chapter sets out the main transport policies applicable to the development at a national, regional and local level. These policies have been considered in the development of the emerging masterplan and in the development of the wider transport package proposed to support the development.

#### **National policy**

#### National Planning Policy Framework (NPPF)

- 2.2 The National Policy Framework (NPPF) was published in March 2012 and sets out the Governments planning policies for England and how these are expected to be applied.
- 2.3 In relation to Transport, NPPF states that;

"The transport system needs to be balanced in favour of sustainable transport modes, giving people a real choice about how they travel. However, the Government recognises that different policies and measures will be required in different communities and opportunities to maximise sustainable transport solutions will vary from urban to rural areas."

#### Effect of Development

- 2.4 When considering the transport effects of a development, NPPF states that:
  - The opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;
  - Safe and suitable access to the site can be achieved for all people; and
  - ► Improvements can be undertaken within the transport network that cost effectively limit the significant impacts of development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe"

#### **Promoting Sustainable Travel Choices**

2.5 In order to promote opportunities for the use of sustainable travel, NPPF advises that:

"...developments should be located and designed where practical to;

- Accommodate the efficient delivery of goods and supplies;
- Give priority to pedestrian and cycle movements, and have access to high quality public transport facilities;
- Create safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians, avoiding street clutter and where appropriate establishing home zones."
- 2.6 NPPF (and associated NPPG) highlights that a key tool for facilitating the promotion of sustainable travel choices will be the implementation of a travel plan.



#### Local Policy

- 2.7 The Adur District Local Plan was adopted in 1996, it is a district wide plan and covered a ten year period from 1996 to 2006. Adur District Council is currently producing a new Local Development Framework which will eventually replace the Local Plan. Due to the age of the Local Plan not all the policies within it are still relevant. Those which have been saved that are relevant to transport include;
- 2.8 Policy AT12 "Development, including the use of land, will be required to be located, designed and carried out so that it would:-
  - Have safe and adequate access to the main road network;
  - Cater safely and adequately for any vehicular traffic it would generate;
  - Not reduce safety or worsen traffic conditions materially for existing highway users or would incorporate satisfactory remedial measures;
  - Be accessible by public transport and, where relevant, not reduce and, if possible, improve its operating efficiency;
  - Have safe and adequate access for pedestrians, cyclists and people with disabilities, and
  - Include provision for parking and, if appropriate, loading space (except in some town centres and Conservation Areas where special policies apply) in accordance with the maximum standards contained in the Council's adopted standards for parking and servicing in relation to development which may, from time to time, be revised."
- 2.9 The Emerging Adur Local Plan is at an early stage in preparation, is subject to further consultation and has not yet been submitted for examination, therefore it holds limited weight. Nevertheless consideration has been given to Policy 29: Transport and Connectivity in the Amendments to the Proposed Submission Adur Local Plan 2016. With regards to new developments, Policy 29 states;

"In order to secure significant improvements to transport and mobility in Adur, new development should:

- ▶ Improve public transport and access to it where opportunities arise.
- Work with West Sussex County Council and Brighton & Hove City Council to promote a sustainable transport system along the coast to help in the regeneration of the area including Shoreham Harbour, ensuring that the A259 is improved.
- Provide for improvements to the road network, including the A259 and A27. Measures include junction improvements, traffic calming, and where necessary new roads. Appropriate mitigation measures to address capacity issues at a number of key junctions including the Sussex Pad on the A259 and A27 will be sought.
- Encourage proposals to extend the existing cycle network and secure a network of cycle, pedestrian and bridleway facilities linking urban areas, key sites, open space, countryside and coast. These will include new and improved rights of way (suitable for a range of users, including those with mobility difficulties, where appropriate) as well as improved access across the A27.
- Ensure that new development is located and designed to minimise the need for travel, facilitates and promotes the use of sustainable alternatives to the private car, and provides or contributes to the necessary infrastructure to serve the development and to mitigate against any adverse impacts to an acceptable level. Travel plans and Transport Assessments will be required for certain developments in line with West Sussex County Council guidance and the National Planning Policy Framework.



- Ensure new development contributes to the mitigation of air pollution, particularly in Air Quality Management Areas. Air quality assessments may be required. Where practical, new development should be located and designed to incorporate facilities for electric vehicle charging points, thereby extending the current network.
- ▶ Implement a range of measures to address car parking issues in Shoreham town centre.
- Incorporate appropriate levels of car and cycle parking having regard to West Sussex County Council guidance, taking into consideration the impact of development upon on-street parking.
- Pursue with West Sussex County Council ways of managing the impact of HGVs in Adur and implement measures as appropriate.
- Implement an area-wide behaviour change programme to encourage sustainable modes of transport and reduce demand for the private car. This should include a package of travel behaviour initiatives."

#### Parking Standards

2.10 With regard to car and cycle parking, provision in new developments should be assessed against WSCC's 'Guidance for Parking at New Residential Development' document that was adopted in September 2010. This guidance advocated the use of the West Sussex Car Parking Demand Calculator which provides guidance on parking provision for residents and visitors based on the type and size of dwellings proposed and having regard to the number of allocated and unallocated parking spaces. The guidance also recommends the following levels of cycle provision:

| Туре  | Size                      | Cycle Provision (per unit)  |
|-------|---------------------------|---|
| House | Up to 4 rooms (1 & 2 bed) | 1 space   |
| House | 5+ rooms (3+ bed)         | 2 spaces  |
| Flat  | Up to 3 rooms (1 & 2 bed) | 0.5 spaces (if communal storage otherwise same as 1 & 2 bed houses) |
| Flat  | 4+ rooms (3+ bed)         | 1 space   |

Table 2.1 - Recommended cycle provision

#### Summary

- 2.11 On the basis of the above policy review, it is evident that the location of a site in relation to sustainable modes of transport is a key consideration when assessing the acceptability of any proposed development. Furthermore, developers are required to provide appropriate levels of car parking that meet anticipated demands whilst at the same time providing cycle parking at a level that encourages residents to travel by modes other than the private car. Similarly, developers are also required to provide pedestrian links to the wider network and put in place Travel Plans to encourage the use of more sustainable modes of transport.
- 2.12 The following sections of this report reviews the accessibility of the New Salts Farm site and provide evidence that the development proposals will encourage the use of sustainable modes of transport. In addition, an assessment has been undertaken to establish the impact of the proposals on the local highway network to demonstrate that the increase in vehicle trips can be accommodated.



#### 3.0 **Baseline Conditions**

3.1 This chapter details the location of the site and provides an overview of the public transport, pedestrian, cycle and highway networks within its proximity. This distance to local facilities is also considered in this section.

#### Site Location and Local Road Network

3.2 The site is located on the A259 Brighton Road approximately 1.2km south-west of Shoreham High Street within the administrative boundaries of Adur District Council (ADC) and West Sussex County Council (WSCC). A plan showing the location of the site in relation to the local highway network and existing built-up areas of Shoreham is provided below.



- Site Location
- 3.3 The application site is currently undeveloped and is bound to the south by the A259 Brighton Road, to the west by existing residential development and to the north by Shoreham Airport. The wider surrounding area is predominantly residential with good access to local amenities such as shops, pubs and the hospital.

#### **Highway Network**

3.4 The local highway network is focused around Brighton Road (A259), which is a single carriageway road subject to a 30 miles per hour speed limit in the vicinity of the site. The carriageway widens to two lanes on approach to the Saltings roundabout to the east of the site. Brighton Road also provides access to Lancing and Worthing to the west.



3.5 Approximately 1 kilometre to the east of the site, Brighton Road provides access to Shoreham High Street and to Old Shoreham Road via the Ropetackle roundabout. Old Shoreham Road provides a further connection to the Shoreham Bypass (A27) to the north, which links Southampton to the west and to Eastbourne via Brighton and Hove to the east.

#### **Existing Traffic Conditions**

- 3.6 When assessing the impacts of a residential development such as that proposed, it is generally accepted that the critical periods in terms of traffic impact are the weekday morning and evening peak hours. It is during these periods that traffic flows associated with the development, and those on the adjacent highway network are likely to be at their greatest. The study area included the following junctions:
  - Junction 1: Brighton Road (A259)/The Broadway;
  - Junction 2: New Salts Farm Road/A259/Petrol Filling Station/The Saltings/A259 roundabout; and
  - ▶ Junction 3: Old Shoreham Road/High Street/The Bridge Inn Pub/A259 roundabout.
- 3.7 The location of these junctions in relation to the proposed development site is shown below. For consistency, the junction numbers introduced below are used in subsequent sections of this report.



Traffic Impact Study Area

- 3.8 So that baseline traffic conditions at the above junctions could be ascertained, a survey company was commissioned to record existing vehicular movements at the two junctions. The existing vehicular movements passing through the junctions within the study area were recorded on neutral weekdays in June 2015 between the hours of 07:00 and 10:00 and between 16:00 and 19:00 by undertaking Manually Classified Turning Counts (MTC). Copies of the full surveys are provided at Appendix C.
- 3.9 In order to assess the baseline traffic conditions at the Ropetackle roundabout, the Manual Classified Turning Count survey data submitted to Adur District Council to support the proposed mixed use development at 79-81 Brighton Road (ref: ADWM/0501/12) have been used.
- 3.10 The results of the MTC surveys indicate that the weekday peak hour traffic flows associated with the local highway network occurs between 07:30 and 08:30 in the morning and 17:00 and 18:00 in the evening. A summary of the traffic movements on the local highway network during these periods are shown at Figure 3.1.



3.11 The survey results presented at **Appendix C** also include the results of the queue lengths recorded at junction 2. The results of the queue length survey is summarised in Table 3.1.

|          |                        |        | Average Queue Length                   |   |  |  |
|----------|------------------------|--------|--|---|--|--|
| Junction | Approach               |        | Thursday Morning Peak<br>(07:30-08:30) | Thursday Evening<br>Peak<br>(17:00-18:00) |  |  |
|          | New Salts Farm Road    | Lane 1 | 0                                      | 0   |  |  |
|          | Δ259 (F)               | Lane 1 | 0                                      | 0   |  |  |
|          | A233 (L)               | Lane 2 | 0                                      | 0   |  |  |
| 2        | Petrol Filling Station | Lane 1 | 0                                      | 0   |  |  |
| -        | The Saltings           | Lane 1 | 0                                      | 0   |  |  |
|          | The Sattings           | Lane 2 | 0                                      | 0   |  |  |
|          | A259 (W)               | Lane 1 | 2                                      | 0   |  |  |
|          |                        | Lane 2 | 0                                      | 0   |  |  |

Table 3.1 – Average Queue Lengths

3.12 Based on the information presented above, it is considered that the local highway network generally operates with residual capacity during the peak periods and the junctions operate within the capacity thresholds that are typically referred to when considering the performance of a junction.

#### **Committed Development**

- 3.13 During earlier pre-application discussions, it was agreed with WSCC that the following committed developments should be taken into consideration when undertaking the assessment of the highway network:
  - The Riverbank Business Centre (mixed use development, including 120 dwellings, AWDM/0935/13);
  - 79-81 Brighton Road redevelopment (mixed use development, including 132 dwellings, AWDM/0501/12); and
  - ▶ Ham Business Centre, Brighton Road (food retail, AWDM/13/0762).
- 3.14 It should be noted that the Ham Business Centre development is still awaiting decision. The traffic movements associated with the committed developments listed above can be seen within Figure 3.2.

#### Sustainable Transport Accessibility

- 3.15 It is generally accepted that walking and cycling provide important alternatives to the private car, and should also be encouraged to form part of longer journeys via public transport. Indeed, it is noteworthy that the Institute of Highways and Transportation (IHT) has prepared several guidance documents that provide advice with respect to the provision of sustainable travel in conjunction with new developments. Within these documents it is suggested that:
  - Most people will walk to a destination that is less than one mile (Planning for Walking, 2015);
  - The bicycle is a potential mode of transport for all journeys under five miles (Planning for Cycling, 2015); and,
  - Walking distances to bus stops should not exceed 400 metres, whilst people are prepared to walk twice as far to rail stations (Planning for Walking, 2015).

#### Walking and Cycling

3.16 There are 2 metre wide footways provided on both sides of the A259 Brighton Road which benefits from street lighting and pedestrian refuge islands at regular intervals.

3.17 The Institution of Highways and Transportation (IHT) 'Guidelines for Providing Journeys on Foot' (2000) suggests acceptable, desirable and preferred maximum walking distances ('acceptable' walking distances would vary between individuals). Table 3.2 summarises the suggested walking distances for pedestrians without mobility impairment for some common trip purposes.

|   | Town Centres | Commuting/Schools | Elsewhere |  |
|---|--------------|-------------------|-----------|--|
| Desirable   | 200          | 500               | 400       |  |
| Acceptable  | 400          | 1000              | 800       |  |
| Preferred Maximum                                   | 800          | 2000              | 1200      |  |
| Source: 'Providina for Journeys on Foot', IHT, 2000 |              |                   |           |  |

Table 3.2: Suggested Acceptable Walking Distances

3.1 In respect of cycling, the nearest cycle route is National Cycle Route 2, situated along West Beach Road approximately 220 metres south of the site. This cycle route provides access to a range of destinations located along the south coast including Brighton and Worthing.

#### **Public Transport**

#### Accessibility by Bus

- 3.2 Bus stops are located along Brighton Road, immediately adjacent to the sites southern boundary.
- 3.3 These bus stop benefits from a bus stop shelter with seating and timetabling information and are served by route numbers 700 and N700. A summary of these routes is shown in Table 3.3 below. Further bus services, including route number 19 can be accessed via the bus stop located along The Saltings, accessible off the Saltings Roundabout. This bus stop benefits from a bus stop shelter with seating and timetabling information.

| Service<br>Number | Route   | Frequency  |
|-------------------|---|--|
| 700               | Arundel - Littlehampton - Worthing - Brighton | 1 every 10 minutes   |
| N700              | Brighton - Worthing - Brighton                | (Night Service)<br>Hourly between 1 am and 4am<br>Friday to Sunday |
| 19                | Shoreham Beach - Shoreham - Holmbush Centre   | 1 every hour   |

Table 3.3 – Local Bus Services

#### Accessibility by Train

3.4 Shoreham-by-Sea railway station is located approximately 1.8 kilometres to the north-east of the site and can be accessed by bus route 19. A summary of destinations and frequency of services from Shoreham-by-Sea railway station are provided in Table 3.4.



| Service   | Destinations  | Approximate<br>Frequency in Both<br>Directions |
|---|---|--|
| London Victoria to                              | London Victoria, Clapham Junction, East Croydon, Gatwick<br>Airport, Haywards Heath, Hove, Shoreham-by-Sea, Lancing,  |  |
| Littlehampton                                   | Worthing, West Worthing, Durrington-on-Sea, Goring-by-Sea,<br>Angmering, Littlehampton  | Every 30 minutes                               |
| Southampton Central                             | Southampton Central, Swanwick, Fareham, Cosham, Havant,<br>Emsworth, Chichester, Barnham, Ford, Angerming, Goring-by-   |  |
| to Brighton (East<br>Sussex)                    | Sea, Durrington-by-Sea, West Worthing, Worthing, Lancing,<br>Shoreham-by-Sea, Southwick, Portslade, Hove, Brighton (East<br>Sussex)   | Every hour                                     |
| Brighton (East Sussex)<br>to West Worthing      | Brighton (East Sussex), Hove, Aldrington, Portslade, Fishergate,<br>Southwick, Shoreham-by-Sea, Lancing, East Worthing,<br>Worthing, West Worthing  | Every 30 minutes                               |
| Brighton (East Sussex)<br>to Portsmouth Harbour | Brighton (East Sussex), Hove, Portslade, Southwick, Shoreham-<br>by-Sea, Lancing, Worthing, West Worthing, Durrington-on-Sea,<br>Goring-by-Sea, Angmering, Ford, Barnham, Chichester,<br>Southbourne, Emsworth, Havant, Fratton, Portsmouth &<br>Southsea, Portsmouth Harbour | Every hour                                     |

Table 3.4 – Shoreham-by-Sea Railway Station Services

Journey to Work Statistics

3.5 In order to assess the relative attractiveness of the sustainable modes of transport that future residents would have access to, the 2011 Census Data results for existing residents living in the Output Layer *E00159980*, which incorporates the residential developments to the west of the site, has been interrogated. Details of the data extracted from the 2011 Census is summarised below in Table 3.5.

| Mada              | Output Layer | Non-Metropolitan District |
|-------------------|--------------|---------------------------|
| моце              | E00159980    | Adur                      |
| Public Transport  | 15%          | 14%                       |
| • Rail            | 7.5%         | 8%                        |
| • Bus             | 7.5%         | 6%                        |
| Car/van driver    | 75%          | 65%                       |
| Car/van passenger | 2%           | 6%                        |
| Тахі              | 0%           | 0%                        |
| Motorcycle        | 1%           | 1%                        |
| Pedal Cycle       | 3%           | 4%                        |
| On foot           | 4%           | 9%                        |
| Other             | 0%           | 1%                        |
| TOTAL             | 100%         | 100%                      |

Table 3.5 – Travel to Word Data (2011 Census)

3.6 As with the rest of the non-metropolitan district of Adur, Table 3.5 indicates the predominant mode of transport for travelling to work amongst existing residents is the private car. However, it is noteworthy that approximately 22% of people living in this Output Layer travel to work via sustainable modes of transport (i.e. public transport, walking and cycling) and as such, it is considered that the sustainable transport options highlighted above provide existing residents of this area with the potential to travel to work by modes other than the private car. Therefore, it is evident that the potential development site is well located with respect to its accessibility to a range of transport modes.



#### Access to Key Local Services

- 3.7 Having regard to the above review, the plan shown at **Appendix D** has been prepared to demonstrate the proximity of key local services, together with other amenities (i.e. supermarkets, dental surgeries and health centres) to the site. Isochrones have been included to demonstrate walk distances from the centre of the site.
- 3.8 There are a range of community facilities falling well within the maximum walk distance located in Shoreham town centre, including supermarkets, banks and doctor/dentist surgeries and schools which will reduce the need for future residents to access such services by car.



#### 4.0 Emerging Development Proposals

4.1 Whilst the emerging masterplan is at an early stage and would ultimately require further discussion with WSCC, consideration has already been given to how the site could be accessed by all modes of transport to demonstrate that suitable vehicular, pedestrian, cycle and public transport connectivity can be provided. This section sets out the emerging development proposals in respect of access and the general characteristics of the internal site layout that would be accommodated as part of masterplan.

#### **Emerging Masterplan**

4.2 The emerging masterplan is included at **Appendix E** and seeks to provide an urban residential led extension that will integrate well with the existing urban area of Shoreham. It is proposed that this development site could accommodate up to 500 homes.

#### Vehicular Access Points

- 4.3 The pending application for 50 units proposes a new point of access onto Brighton Road via a priority junction with a dedicated right turn lane. This arrangement was discussed with WSCC during the pre-application stages and subsequently revised following that advice. The amended junction arrangement is shown in Drawing 150137-01 included at Appendix F. This junction has been designed to a standard that could accommodate the larger quantum of development.
- 4.4 The emerging proposals have been designed with reference to guidance contained within national (Design Manual for Roads and Bridges, Manual for Streets and Manual for Streets 2) and local (WSCC Supplementary Guidance for Residential Development Proposals) guidelines. In this regard, the primary vehicle access benefits from visibility splays that are appropriate for a road with 30mph speed limits, and radii that accommodate the largest vehicles that are anticipated to access the development on a regular basis.
- 4.5 The larger development also proposes three additional points of access from existing residential streets; Boundary Road, George V Avenue and Bristol Avenue. Whilst it is accepted that these streets are currently private roads, it is considered that there is the opportunity to explore the upgrade of these roads to an adoptable standard to allow pedestrian and cyclist permeability into the site. This would create an enhanced street frontage to existing residents.
- 4.6 It is also considered reasonable to allow for a restricted number of additional units to have direct vehicular access onto these residential streets. Whilst it is anticipated that further work will be required to assess the feasibility of this, it is important to note that it is not required to facilitate the development.

#### Internal Site Layout

- 4.7 The current masterplan has been prepared in illustrative form only and the exact layout will be the subject of future consultation and design.
- 4.8 The internal layout of the development will be designed in accordance with 'Manual for Streets' and WSCC's 'Local Design Guide'. The internal spine road of the development will be designed at 5.5 metres wide with footways provided on either side measuring 1.8 metres in width.
- 4.9 It is envisaged that there will be a network of pedestrian facilities that range from segregated footways through to shared surfaces. The pedestrian routes will ensure safe and attractive journeys can be made on foot allowing full permeability of the site along appropriate desire lines. In addition to this, it is proposed that the existing cycleway is continued along the site frontage and through the site along the spine road.
- 4.10 As the exact schedule has not been finalised it is not possible to state at this time the total number of car parking spaces that would be e provided, however car parking will be provided in accordance with the West Sussex County Council Parking demand calculator.


4.11 Secure cycle parking will be provided for each property in dedicated storage facilities or within garages In accordance with policy.

#### Servicing Strategy

4.12 The site access has been designed to enable the delivery and service vehicles that are likely to enter and exit the site on a regular basis, to do so in a forward gear. In this regard it is evident that the access strategy will not cause disruption to the free flow of traffic, or lead to an adverse effect upon the safety levels of the adjoining highway network. A swept path analysis of the proposed site access can be seen at **Appendix G**.

#### **Public Transport Links**

- 4.13 Although 500 homes would not generate the need for a new bus service, it would be viable to divert or amend existing routes to serve the site and provide access to a new catchment area. However it needs to be ensured that any strategy proposed is part of a wider, longer term initiative that ties in with the aspirations for Shoreham as a whole.
- 4.14 Given that bus service and routings will undoubtedly change prior to and throughout the buildout period, it is not intended to be prescriptive in respect of detailing the routes and timetables of buses providing services to the development site at this stage. Rather, the development will ensure that appropriate infrastructure is in place to accommodate the most likely bus routes. It should be noted that the internal spine road has been designed with a minimum width of 5.5 metres. Initial discussions with bus service operators in the area are being initiated to explore the possibility of routing through the site.
- 4.15 Having regard to the above, with the appropriate infrastructure in place, it is considered that a bus strategy could be delivered that would provide an attractive and reliable frequency of service to key local destinations, including the Shoreham by Sea railway station from where it is possible to make convenient connections to the regional rail network.

#### Summary

4.16 On the basis of the above and in accordance with current planning policy it is evident that the proposed development could be designed to encourage less reliance upon the private car and encourage travel by sustainable modes through the inclusion of appropriate infrastructure in the masterplan. Such measures would ensure the deliverability of the proposed development in this location.



## 5.0 Trip Generation and Distribution

#### Overview

5.1 This chapter outlines the levels of trips that are likely to be generated by the proposed development during the peak travel periods, and also provides an overview of how this is anticipated to be distributed onto the local highway network.

### **Trip Attraction**

- 5.2 In order to quantify the levels of vehicle flows that are likely to be associated with the proposed residential development, the TRICS database (version 7.2.4) has been interrogated using the following search parameters:
  - Land Use Residential (Mixed Private/Affordable Housing);
  - Regions England (excluding Greater London and the North);
  - Number of units 0 to 1,000 units;
  - Date Range 2007 onwards;
  - Days Weekdays; and,
  - Selected Locations Suburban Area and Edge of Town.
- 5.3 The TRICS output files are provided at **Appendix H**, whilst a summary of the vehicle movements that are anticipated to be generated by the 500 mixed private and affordable dwellings is provided in Table 5.1.

| Time Period     | Trip     | o Rates (per ur | nit)    | Trip Attraction (500 Units) |            |       |  |  |  |
|-----------------|----------|-----------------|---------|-----------------------------|------------|-------|--|--|--|
| This Feriod     | Arrivals | Departures      | Total   | Arrivals                    | Departures | Total |  |  |  |
| Weekday Morning | 0.116    | 0.314           | 0.430   | 58                          | 157        | 215   |  |  |  |
| (08:00-09:00)   | (0.000)  | (0.000)         | (0.000) | (0)                         | (0)        | (0)   |  |  |  |
| Weekday Evening | 0.250    | 0.127           | 0.377   | 125                         | 64         | 189   |  |  |  |
| (17:00-18:00)   | (0.000)  | (0.000)         | (0.000) | (0)                         | (0)        | (0)   |  |  |  |
| Daily           | 1.766    | 1.846           | 3.612   | 883                         | 923        | 1,806 |  |  |  |
| (07:00-19:00)   | (0.006)  | (0.006)         | (0.012) | (4)                         | (5)        | (9)   |  |  |  |

Table 5.1 – Trip Attraction for 500 Mixed Private and Affordable Houses

5.4 Table 5.1 indicates that 500 residential dwellings are likely to attract 215 vehicle movements in the weekday morning peak and 189 vehicle movements in the evening peak hour period.

#### **Multi Modal Trip Generation**

5.5 In order to establish the person trips that the proposed residential development is likely to generate; the vehicular trip generations outlined in Table 5.1 above have been factored using the modal split data for the 2011 Census Output Layer *E00159980*. This output layer includes the residential developments along George V Avenue and Bristol Avenue, which are located to the south of the proposed development. Details of the data extracted from the 2011 Census and the resultant person trip profile is summarised below at Table 5.2.



| Mode              |      | AM       | l Peak     | PM       | l Peak     | Daily    |            |  |  |
|-------------------|------|----------|------------|----------|------------|----------|------------|--|--|
| Houe              |      | Arrivals | Departures | Arrivals | Departures | Arrivals | Departures |  |  |
| Public Transport  | 16%  | 12       | 34         | 26       | 14         | 188      | 197        |  |  |
| • Rail            | 8%   | 6        | 17         | 13       | 7          | 94       | 98         |  |  |
| • Bus             | 8%   | 6        | 17         | 13       | 7          | 94       | 98         |  |  |
| Car/van driver    | 75%  | 58       | 157        | 125      | 64         | 883      | 923        |  |  |
| Car/van passenger | 2%   | 2        | 4          | 4        | 2          | 24       | 25         |  |  |
| Taxi              | 0%   | 0        | 0          | 0        | 0          | 0        | 0          |  |  |
| Motorcycle        | 1%   | 1        | 2          | 2        | 1          | 12       | 12         |  |  |
| Pedal Cycle       | 3%   | 2        | 6          | 5        | 2          | 35       | 37         |  |  |
| On foot           | 3%   | 2        | 6          | 5        | 2          | 35       | 37         |  |  |
| TOTAL             | 100% | 77       | 209        | 167      | 85         | 1,177    | 1,231      |  |  |

Table 5.2 – Proposed Residential Development Person Trips

5.6 Based upon the information presented in Table 5.2, it is evident that the proposals have the potential to generate approximately 286 and 252 person trips in the AM and PM peak travel periods respectively.

#### **Vehicular Trip Distribution**

- 5.7 When establishing the distribution of development traffic reference can be made to analyses of Census data, gravity models or existing traffic flows. For the purposes of this assessment it has been assumed that the development traffic will disperse in accordance with data extracted from the Nomis website. Copies of the data extracted from the Nomis website are provided at **Appendix I**.
- 5.8 In order to calculate how the development traffic will disperse through the wider highway network, reference has been made to the manual turning counts undertaken at the Saltings roundabout and the Ropetackle roundabout. These surveys were undertaken between 07:00 and 10:00 and between 16:00 and 19:00 on Thursday 18<sup>th</sup> June 2015. A summary of the distribution profiles are presented at Figure 5.1 whilst the development traffic flows can be seen at Figure 5.2.



## 6.0 Development Impacts

#### Overview

6.1 The following chapter summarises the impacts that the vehicle trip generation associated with the proposed development will have upon the local highway network.

## Highway Impact Assessment Scenarios

- 6.2 For the purposes of this assessment, the junctions (Junction 1: Brighton Road (A259)/The Broadway, Junction 2: New Salts Farm Road/A259/The Saltings roundabout and Junction 3: Old Shoreham Road/High Street/A259) outlined in Section 3, as well as proposed site access priority junction with Brighton Road (A259) have been assessed using the following scenarios:
  - 2015 Survey Results and Base Year Survey and Existing Uses;
  - 2020 'Without Development' Figures 6.1; and,
  - 2020 'With Development' Figures 6.2.
- 6.3 When establishing the 'without development' traffic flows for 2020, as shown in Figures 6.1, the 2015 traffic survey results have been combined with the traffic flows associated with the committed developments within the vicinity of the development site. Figure 6.2 includes the additional traffic flows associated with the proposed development.

## **Base Year Traffic Conditions – Junction Modelling**

- 6.4 Junction 1 (Brighton Road/The Broadway) and 4 (site access/Brighton Road) have been assessed using PICADY which is used to predict capacities, queues, delays and accident risk at priority intersections.
- 6.5 ARCADY is an assessment of roundabout capacity and delay and has been used to assess Junction 2 (New Salts Farm Road/A259/The Saltings roundabout) and Junction 3: (Old Shoreham Road/High Street/A259).
- 6.6 ARCADY and PICADY express the relationship between traffic flow and the capacity of a junction as a ratio, referred to as the Ratio of Flow to Capacity (RFC). Based on these results it also predicts the anticipated queue lengths and delays that are likely to occur at a junction. The current version of ARCADY and PICADY also provides a further performance measurement, which correlates the length of delay experienced by vehicles to a scale that is referred to as the `Level of Service' (LoS).
- 6.7 The LoS is determined having regard to a banding system that is set out in the Highway Capacity Manual approach to traffic capacity. The following summarises the definitions that are provided within Highway Traffic Analysis and Design (Salter & Hounsell, 1996) for the various bandings that are predicted by ARCADY and PICADY:
  - LoS A: Free Flow Primarily free-flow operation with vehicles having almost complete freedom to manoeuvre;
  - LoS B: Reasonably Free Flow Reasonably free-flow conditions with vehicles having a slightly restricted freedom to manoeuvre;
  - *LoS C: Stable Flow* Stable operation but freedom to manoeuvre is restricted;
  - LoS D: Approaching Unstable Flow Borders on unstable flow with freedom to manoeuvre severely limited;
  - ▶ LoS E: Unstable Flow Traffic flow is very unstable and approaching capacity; and,
  - ▶ LoS F: Forced or Breakdown Flow The point at which demand exceeds capacity.



6.8 The full output files of the baseline capacity assessments, are presented at Appendix J of this report. In addition to this, a summary of how each of the assessed junctions currently operates is summarised in Table 6.1 below.

| Local | Highway | Network |
|-------|---------|---------|
|-------|---------|---------|

| Assessment                       |         | Morning Pea | k     |         | Afternoon Pea | ık    |
|----------------------------------|---------|-------------|-------|---------|---------------|-------|
| Junction                         | Max RFC | LoS         | Delay | Max RFC | LoS           | Delay |
| Brighton Road/The<br>Broadway    | 0.29    | А           | 12.27 | 0.45    | А             | 13.00 |
| The Saltings<br>Roundabout       | 0.56    | А           | 5.72  | 0.62    | А             | 5.66  |
| Old Shoreham<br>Road/High Street | 0.82    | A           | 11.42 | 0.68    | A             | 5.48  |

Table 6.1 – Local Highway Network Junctions 8 Modelling Summary (2015 Survey Data)

6.9 When considering the above results it should be noted that the IHT indicates that RFC values of 0.85 to 0.90 have historically been considered to reflect uncongested design thresholds, whilst an RFC of 1 indicates that a junction is operating at capacity. Notwithstanding this, it is generally accepted that links that experience a degree of saturation above 90% are operating over capacity. The results presented at Table 6.1 demonstrate that the assessed junctions generally operate within the theoretical capacity thresholds identified by the IHT.

#### Future Year Traffic Conditions – Junction Modelling

6.10 The traffic flows for the '2020 without development' and '2020 with development' scenarios have also been assessed. In addition, the proposed site access junction has also been considered under the 'with development scenario'. The results of detailed junction modelling analyses that take into account the net changes in traffic associated with the proposed development are provided at **Appendix J**, with summaries provided below in Tables 6.2 and 6.3.

| Assessment                                       | Wit     | hout Develop | oment | With Development |     |       |  |  |  |
|--|---------|--------------|-------|------------------|-----|-------|--|--|--|
| Junction   | Max RFC | LoS          | Delay | Max RFC          | LoS | Delay |  |  |  |
| Brighton Road/The<br>Broadway                    | 0.30    | А            | 12.44 | 0.33             | A   | 13.38 |  |  |  |
| The Saltings<br>Roundabout                       | 0.58    | А            | 5.83  | 0.61             | А   | 6.10  |  |  |  |
| Old Shoreham<br>Road/High Street<br>(Ropetackle) | 0.84    | A            | 12.87 | 0.87             | A   | 15.65 |  |  |  |
| Site Access                                      | N/A     | N/A          | N/A   | 0.28             | A   | 16.11 |  |  |  |

Table 6.2 – Local Highway Network Junctions 8 Modelling Summary (2020 AM Peak)

| Assessment                                       | Witl    | hout Develo | oment | With Development |     |       |  |  |  |
|--|---------|-------------|-------|------------------|-----|-------|--|--|--|
| Junction   | Max RFC | LoS         | Delay | Max RFC          | LoS | Delay |  |  |  |
| Brighton Road/The<br>Broadway                    | 0.44    | А           | 13.31 | 0.45             | A   | 13.56 |  |  |  |
| The Saltings<br>Roundabout                       | 0.63    | А           | 5.74  | 0.65             | А   | 5.85  |  |  |  |
| Old Shoreham<br>Road/High Street<br>(Ropetackle) | 0.74    | A           | 9.17  | 0.76             | A   | 9.97  |  |  |  |
| Site Access                                      | N/A     | N/A         | N/A   | 0.43             | А   | 14.04 |  |  |  |

Table 6.3 – Local Highway Network Junctions 8 Modelling Summary (2020 PM Peak)

- 6.11 The information provided in Tables 6.2 and 6.3 indicates that in the 2020 'with development scenario', all the junctions will continue to operate well within the design thresholds identified by the IHT, and that the proposed development will result in negligible increases in delays.
- 6.12 It has also been established that the proposed site access will operate within appropriate design thresholds, which is as to be expected given the low levels of traffic that will pass through this junction. As a result, it is evident that the proposed access will not result in any adverse impact to the operation of traffic flows along Brighton Road.

#### Ropetackle Roundabout Improvements

- 6.13 In 2013, a planning application was submitted to Adur District Council for a proposed mixed use development comprising a new Morrison's food store, retail and commercial floorspace as well as residential apartments on Brighton Road (planning reference: ADWM/0762/13). Within the Transport Assessment submitted in support of that application it was stated that by widening the entry on Norfolk Bridge by 0.4 metres the number of cars queuing along this arm could be appropriately mitigate the development proposals and local area traffic growth. Whilst this proposal was considered to be acceptable to WSCC, the planning application is still awaiting decision and it is understood that at this time, were consent to be granted, it is unlikely that the proposals would be built out. However it is recognised that this or a comparable development could be delivered on this site in the future.
- 6.14 As is demonstrated above, were such a development to come forward it would not prejudice the proposals for the New Salts Farm site and this development is not reliant on its delivery.

#### Summary

- 6.15 In summary, it has been shown that the proposed site access on Brighton Road, the New Salts Farm Road/A259/The Saltings roundabout and the Old Shoreham Road/High Street/A259 roundabout will not be subject to any capacity constraints that are likely to lead to unacceptable periods of delay.
- 6.16 As such, it is considered that the proposed development will not result in any adverse disruption to the free flow of traffic on the local highway network or have an adverse effect upon the quality of the sustainable transport networks that currently serve the site. In this regard it is considered that the development proposals are deliverable in highway terms and are consistent with national and local transportation polices.



## 7.0 Summary

- 7.1 This Preliminary Transport Appraisal Report has been prepared by Motion on behalf of Hyde Housing to provide transport and highways advice for a proposed strategic development of 500 dwellings on land to the west of New Salts Farm, Shoreham. The site is located within the administrative boundaries of Adur District Council and West Sussex County Council.
- 7.2 The council has invited submissions of potential development sites to be considered for inclusion within its Strategic Housing Land Availability Assessment (SHLAA) and maintains an ongoing 'call for sites' exercise. This report has been prepared to accompany a wider Vision Document and demonstrates that the New Salts Farm site is deliverable and accessible in transport terms.
- 7.3 New Salts Farm is conveniently located to provide a high quality, residential development that will integrate well with the existing residential areas of Shoreham. The location of the site provides the opportunity to encourage the use of more sustainable modes of transport owing to the close proximity to existing bus routes along Brighton Road.
- 7.4 This report has demonstrated that an appropriate access strategy can be satisfactorily delivered that could accommodate up to 500 residential units on the New Salts Farm site.
- 7.5 The junction modelling has demonstrated that the development will not result in any adverse disruption to the free flow of traffic on the local highway network, nor will it have an adverse effect upon the quality of the sustainable transport networks that currently operate in proximity to site.
- 7.6 Whilst the proposed enhancements to the Ropetackle Roundabout as outlined in paragraph 6.13 above are not required to facilitate the development proposals, measures to mitigate against the minimal increase in vehicular trips to the site and reduce queuing could be provided by the development.
- 7.7 The Transport Appraisal Report has demonstrated that the New Salts Farm development can be fully integrated and accommodated on the highway, pedestrian, cycle and public transport networks whilst bringing forward benefit to the wider area.
- 7.8 On the basis of the above, it is concluded that the proposals accord with national and local transport related policies and this Transport Appraisal Report demonstrates the deliverability of a residential development in this location.



**Figures** 



0 Number of HGVs

Motion Figure 3.1



Motion Figure 3.2



- 0 Number of HGVs

Motion Figure 5.1



Motion Figure 5.2

- 5 Total Vehicles
- 0 Number of HGVs



- 5 Total Vehicles
- 0 Number of HGVs

Motion Figure 6.1



- 5 Total Vehicles
- 0 Number of HGVs

Motion Figure 6.2



# **Appendix A**

Site Location Plan





# **Appendix B**

Pre Application Advice

## WEST SUSSEX COUNTY COUNCIL PRE APPLICATION ADVICE

| FROM:               | Dominic Smith    | TO: Mo<br>FAO: Lia      | otion<br>anne Brook |                             |
|---------------------|------------------|-------------------------|---------------------|-----------------------------|
| SUBJECT:            | New Salts Farm – | Pre-Applicat            | tion Advice         |                             |
| RECOMMEN            | DATION:          |                         |                     | _                           |
| Advice<br>Objection | X                | Modificati<br>No Object | ion                 | More Information<br>Refusal |

Thank you for your request for pre-application advice in respect of the proposed development at New Salts Farm, Shoreham. Further to the meeting held on the 18<sup>th</sup> November 2015, the following report provides a written response to the pre-application submission

Retaining the same format as within your SN, I would respond with the following:

## **Description of Development**

The proposed development comprises 50 dwellings with associated access taken from Brighton Road to the south. It is noted that the development forms part of a wider site comprising 500 dwellings, and whilst this site will be assessed as a standalone proposal, the access/ internal road layout will be assessed with the wider scheme in mind as an access is proposed to be taken through the site.

With this in mind it is essential that the site is demonstrated not to prejudice or compromise the delivery of the strategic development site identified in the emerging local plan. In particular, it is acknowledged that the access should be designed to safely accommodate a development of 50 dwellings, it would be appropriate to safeguard land around the access should there be the necessity for the junction to be upgraded as part of the wider strategic site. A detailed upgraded junction design is not required, but the amount of land to be safeguarded should be evidenced; this could be via an overlay of a fully standards compliant roundabout arrangement for example.

#### Vehicular Access

A right-turn lane is proposed to provide access to the site (and in future to the wider development). Drawing 150137-01 demonstrates an indicative right-turn lane into the site, with the access itself in the form of a bellmouth arrangement. The junction will need to be assessed using MTC turning count data, taken directly outside the proposed site access. I can see from your SN that MTC surveys have already been undertaken, and the full outputs of these should be provided as part of the Transport Assessment.

The document, 'DMRB TD42/95 Geometric Design of Major/Minor Priority Junctions (specifically Figure 2/2)' should be used to assess the scale/ form of the junction required. Any proposed junction to the site should drawn up using geometries outlined in DMRB TD42/95 and Manual for Streets. I have some fundamental concerns about the design of the site access at this point. The access would need to be subject to a full Design Audit and Road Safety Audit, with any concerns fully addressed. ATC surveys will need to be undertaken to confirm appropriate visibility.

A Road Safety Audit: Stage 1 with Designer Response and a Design Audit of the junction should accompany the submission. Any departures from standards would need to be

considered via the 'Departure from Standards' process, in accordance with GD01/08, and standard templates for an application can be provided upon request.

## Internal Layout

The scoping note indicates that the internal layout of the development will be designed in accordance with Manual for Streets and WSCC's 'Local Design Guide'. I would recommend the spine road carriageway widths to measure 5.5m wide, as described, and would recommend a minimum 2m wide footways on either side of the spine road, particularly if the spine road is to be used in future to support further development. Consideration should be given to the provision of a 3m wide cycle footway on one side of the carriageway which would tie in with existing facilities along the site frontage.

Forward visibility splays should also be provided for the corner next to plot 58 and south of the playground (it is expected that the indicative tree in this location would need to be removed). Consideration should also be made to location of parking, particularly for plots 51-58, as reversing onto the carriageway may become a safety issue when the spine road is used for further development.

It is expected (and indicatively indicated) that the lower order roads off the spine road ('The Green', 'The Square' and 'The Plaza') will be of narrower dimensions, and will deploy shared surface/ home zone approaches in places. An extent of adoption plan should be provided at the application stage in order for the LHA to provide comments appropriate to the extent of adoption in order to, where it is expected that the spine road only is to be adopted.

As stated, car parking is to be provided in accordance with the WSCC Parking Demand Calculator, with cycle parking in line with local standards. Where garages are to be used for cycle storage, the dimensions must be shown to be a minimum of 6m x 3m.

Refuse vehicle and fire tender tracking is to be demonstrated, with refuse vehicle profiles also provided. Reverse and carry distances should be in accordance with Manual for Streets guidance.

#### Pedestrian and cycle access

The TA should consider access to services and facilities by pedestrians and cyclists. The guidance and thresholds used to determine the acceptability of walking and cycling to reach the services should be detailed within the TA. The SN proposes the existing cycle route to the east of the site to be extended along the site frontage. It is assumed that this will be an off-road cycle route, as is currently the case for the route to the east.

#### Assessment Methodology

### Policy Context

The scoping note provides details of the relevant transport related policies that will be used to guide this assessment. These policies are all relevant to this development and should be adhered to. The WSCC Guidance for Transport Assessments and the WSCC Guidance for Travel Plans should also be used, although it is not necessary to detail them within this section.

## **Baseline Conditions**

The SN outlines that an assessment of the existing highway, public transport facilities and pedestrian and cycle networks will be included in the TA. PIA data is also proposed to include Brighton Road, Old Shoreham Road, Grinsted Lane and sections of the A27 for the last 5 year period. It is not necessary to include such a wide search area. Where the proposal is for 50 dwellings with access onto Brighton Road, a section of Brighton Road 100m either side of the proposed access, as well as the Saltings Roundabout (and any incidents within the immediate vicinity of this roundabout) are to be assessed.

## **Trip Generation**

The proposed development will use the TRICS database to assess the likely traffic impact. The scoping note outlines the following parameters for its assessment.

- Use of TRICS database 7.2.2
- Land Use Mixed Private/ Affordable Housing
- Regions England (excluding Greater London)
- Size of development 14-1,874 units
- Date Range 26/05/88 to 27/01/15
- Selected days Monday to Friday
- Selected Locations Town centre, Edge of Town Centre, Suburban Area, Edge of Town, Neighbourhood centre.

As demonstrated in the TRICS outputs (Appendix C), these parameters are not entirely accurate, and do not accord with the TRICS data outputs or the type of development (for example they include surveys undertaken at weekends and in suburban areas/ neighbourhood centres). It is recommended that the Applicant use the TRICS Best Practice Guide for their assessment, and that, since MTC surveys have already been undertaken, these are cross-checked against the TRICS outputs for a robust assessment. However, it is accepted that any alteration to the trip rate is likely to have a negligible impact on the total number of movements generated by the site given the quantum of development.

## **Trip Distribution**

Trip Distribution has been established using Census 2011 Travel to Work Data. The assessment of trip distribution from the site appears reasonable at this stage. The distribution assessment should be used, along with the MTC counts and TRICS data, to work out the percentage increase in traffic caused by the site, as well as to establish the extent of the surrounding junctions to be assessed.

## Junction Modelling

ARCADY software has been used to analyse the site access, Saltings Roundabout and the Ropetackle roundabout in the baseline scenario (assumed to be 2015) and the full development scenario (including TEMPRO growth rates and committed developments).

No TEMPRO growth rates or details of consented trip generation from each committed development have been given; therefore I cannot assess the impact of these factors on the proposed future year assessments. These will need to be re-assessed; however, as on-site observations and internal modelling suggest that both junctions currently operate over capacity in the baseline year.

Dominic Smith Strategic Planning



# Appendix C

Manual Turning Count Data

JOB REF: 18765

JOB NAME: SHOREHAM ON SEA

SITE:

TIME

07:00

07:15

07:30

07:45

н/тот

08:00

08:15

08:30

08:45

H/TOT

09:00

09:15

09:30

09:45

H/TOT

P/TOT

#### LOCATION: THE BROADWAY / BRIGHTON ROAD

**MOVEMENT 1 MOVEMENT 2** FROM THE BROADWAY TO BRIGHTON ROAD (W) FROM THE BROADWAY TO BRIGHTON ROAD (E) LGV LGV CAR OGV1 OGV2 PSV MCL PCL тот CAR OGV1 OGV2 PSV MCL PCL 



TOT

```
DATE: 23/04/2015
```

DAY: THURSDAY

JOB REF: 18765

JOB NAME: SHOREHAM ON SEA

SITE:

#### LOCATION: THE BROADWAY / BRIGHTON ROAD

**MOVEMENT 1 MOVEMENT 2** FROM THE BROADWAY TO BRIGHTON ROAD (W) TIME FROM THE BROADWAY TO BRIGHTON ROAD (E) LGV LGV CAR OGV1 OGV2 PSV MCL PCL тот CAR OGV1 OGV2 PSV MCL PCL TOT 16:00 16:15 16:30 16:45 н/тот 17:00 17:15 17:30 17:45 H/TOT 18:00 18:15 18:30 18:45 H/TOT P/TOT 



DATE: 23/04/2015

JOB REF: 18765

JOB NAME: SHOREHAM ON SEA

SITE:

#### LOCATION: THE BROADWAY / BRIGHTON ROAD

**MOVEMENT 3 MOVEMENT 4** TIME FROM BRIGHTON ROAD (W) TO THE BROADWAY FROM BRIGHTON ROAD (W) TO BRIGHTON ROAD (E) LGV LGV CAR OGV1 OGV2 PSV MCL PCL тот CAR OGV1 OGV2 PSV MCL PCL TOT 07:00 07:15 07:30 07:45 н/тот 08:00 08:15 08:30 08:45 H/TOT 09:00 09:15 09:30 09:45 H/TOT P/TOT 



DATE: 23/04/2015

JOB REF: 18765

JOB NAME: SHOREHAM ON SEA

SITE:

#### LOCATION: THE BROADWAY / BRIGHTON ROAD

**MOVEMENT 3 MOVEMENT 4** TIME FROM BRIGHTON ROAD (W) TO THE BROADWAY FROM BRIGHTON ROAD (W) TO BRIGHTON ROAD (E) LGV LGV CAR OGV1 OGV2 PSV MCL PCL тот CAR OGV1 OGV2 PSV MCL PCL TOT 16:00 16:15 16:30 16:45 н/тот 17:00 17:15 17:30 17:45 H/TOT 18:00 18:15 18:30 18:45 H/TOT P/TOT 



DATE: 23/04/2015

JOB REF: 18765

JOB NAME: SHOREHAM ON SEA

SITE:

#### LOCATION: THE BROADWAY / BRIGHTON ROAD

#### **MOVEMENT 5 MOVEMENT 6** FROM BRIGHTON ROAD (E) TO THE BROADWAY TIME FROM BRIGHTON ROAD (E) TO BRIGHTON ROAD (W) CAR LGV LGV OGV1 OGV2 PSV MCL PCL тот CAR OGV1 OGV2 PSV MCL PCL TOT 07:00 07:15 07:30 07:45 н/тот 08:00 08:15 08:30 08:45 H/TOT 09:00 09:15 09:30 09:45 H/TOT P/TOT



DATE: 23/04/2015

JOB REF: 18765

JOB NAME: SHOREHAM ON SEA

SITE:

#### LOCATION: THE BROADWAY / BRIGHTON ROAD

#### **MOVEMENT 5 MOVEMENT 6** FROM BRIGHTON ROAD (E) TO THE BROADWAY TIME FROM BRIGHTON ROAD (E) TO BRIGHTON ROAD (W) LGV CAR OGV1 OGV2 PSV MCL PCL тот CAR LGV OGV1 OGV2 PSV MCL PCL TOT 16:00 16:15 16:30 16:45 н/тот 17:00 17:15 17:30 17:45 H/TOT 18:00 18:15 18:30 18:45 H/TOT P/TOT



DATE: 23/04/2015

JOB REF: 18765

JOB NAME: SHOREHAM ON SEA

2

SITE:

LOCATION: THE BROADWAY / BRIGHTON ROAD

|       |     |     |      | TO AI   | RM A  |     |     |     |     |     |      | FROM    | ARM A |     |     |     |
|-------|-----|-----|------|---------|-------|-----|-----|-----|-----|-----|------|---------|-------|-----|-----|-----|
| TIME  |     |     |      | THE BRO | ADWAY |     |     |     |     |     |      | THE BRO | ADWAY |     |     |     |
|       | CAR | LGV | OGV1 | OGV2    | PSV   | MCL | PCL | тот | CAR | LGV | OGV1 | OGV2    | PSV   | MCL | PCL | тот |
| 07:00 | 7   | 1   | 0    | 0       | 0     | 0   | 0   | 8   | 33  | 9   | 0    | 0       | 0     | 0   | 0   | 42  |
| 07:15 | 5   | 1   | 1    | 0       | 0     | 0   | 0   | 7   | 25  | 11  | 0    | 0       | 0     | 0   | 0   | 36  |
| 07:30 | 5   | 1   | 1    | 0       | 0     | 0   | 0   | 7   | 29  | 6   | 2    | 0       | 0     | 0   | 1   | 38  |
| 07:45 | 8   | 1   | 0    | 0       | 0     | 0   | 0   | 9   | 34  | 9   | 0    | 0       | 0     | 0   | 0   | 43  |
| н/тот | 25  | 4   | 2    | 0       | 0     | 0   | 0   | 31  | 121 | 35  | 2    | 0       | 0     | 0   | 1   | 159 |
| 08:00 | 9   | 2   | 0    | 0       | 0     | 0   | 0   | 11  | 30  | 0   | 0    | 0       | 0     | 3   | 0   | 33  |
| 08:15 | 11  | 2   | 1    | 0       | 1     | 0   | 0   | 15  | 28  | 2   | 0    | 0       | 1     | 0   | 0   | 31  |
| 08:30 | 10  | 1   | 0    | 0       | 0     | 0   | 0   | 11  | 45  | 5   | 0    | 0       | 0     | 1   | 0   | 51  |
| 08:45 | 12  | 4   | 0    | 0       | 0     | 0   | 0   | 16  | 20  | 3   | 0    | 0       | 0     | 0   | 0   | 23  |
| н/тот | 42  | 9   | 1    | 0       | 1     | 0   | 0   | 53  | 123 | 10  | 0    | 0       | 1     | 4   | 0   | 138 |
| 09:00 | 17  | 1   | 1    | 0       | 0     | 0   | 0   | 19  | 34  | 3   | 0    | 0       | 0     | 0   | 0   | 37  |
| 09:15 | 17  | 2   | 1    | 0       | 0     | 1   | 0   | 21  | 15  | 2   | 0    | 0       | 0     | 0   | 0   | 17  |
| 09:30 | 12  | 4   | 0    | 0       | 1     | 1   | 1   | 19  | 16  | 1   | 0    | 0       | 1     | 1   | 0   | 19  |
| 09:45 | 12  | 2   | 0    | 0       | 0     | 0   | 0   | 14  | 11  | 4   | 0    | 0       | 1     | 0   | 0   | 16  |
| н/тот | 58  | 9   | 2    | 0       | 1     | 2   | 1   | 73  | 76  | 10  | 0    | 0       | 2     | 1   | 0   | 89  |
| Р/ТОТ | 125 | 22  | 5    | 0       | 2     | 2   | 1   | 157 | 320 | 55  | 2    | 0       | 3     | 5   | 1   | 386 |



DATE: 23/04/2015

JOB REF: 18765

JOB NAME: SHOREHAM ON SEA

2

SITE:

THE BROADWAY / BRIGHTON ROAD LOCATION:

|       |     |     |      | TO AF   | RM A  |     |     |     |     |     |      | FROM    | ARM A |     |     |     |
|-------|-----|-----|------|---------|-------|-----|-----|-----|-----|-----|------|---------|-------|-----|-----|-----|
| TIME  |     |     |      | THE BRO | ADWAY |     |     |     |     |     |      | THE BRO | ADWAY |     |     |     |
|       | CAR | LGV | OGV1 | OGV2    | PSV   | MCL | PCL | тот | CAR | LGV | OGV1 | OGV2    | PSV   | MCL | PCL | тот |
| 16:00 | 29  | 5   | 0    | 0       | 0     | 0   | 0   | 34  | 30  | 3   | 0    | 0       | 0     | 1   | 0   | 34  |
| 16:15 | 27  | 8   | 0    | 0       | 2     | 1   | 2   | 40  | 11  | 1   | 0    | 0       | 2     | 0   | 0   | 14  |
| 16:30 | 26  | 7   | 0    | 0       | 1     | 0   | 0   | 34  | 3   | 5   | 1    | 0       | 0     | 0   | 0   | 9   |
| 16:45 | 31  | 6   | 0    | 0       | 0     | 0   | 0   | 37  | 12  | 3   | 0    | 0       | 1     | 1   | 0   | 17  |
| н/тот | 113 | 26  | 0    | 0       | 3     | 1   | 2   | 145 | 56  | 12  | 1    | 0       | 3     | 2   | 0   | 74  |
| 17:00 | 39  | 12  | 0    | 0       | 0     | 2   | 1   | 54  | 13  | 2   | 0    | 0       | 0     | 1   | 0   | 16  |
| 17:15 | 32  | 9   | 1    | 0       | 0     | 1   | 0   | 43  | 18  | 4   | 0    | 0       | 0     | 0   | 0   | 22  |
| 17:30 | 37  | 8   | 0    | 0       | 1     | 3   | 0   | 49  | 31  | 8   | 0    | 0       | 1     | 0   | 0   | 40  |
| 17:45 | 25  | 2   | 1    | 0       | 0     | 1   | 0   | 29  | 18  | 3   | 1    | 0       | 0     | 0   | 0   | 22  |
| н/тот | 133 | 31  | 2    | 0       | 1     | 7   | 1   | 175 | 80  | 17  | 1    | 0       | 1     | 1   | 0   | 100 |
| 18:00 | 30  | 6   | 0    | 0       | 0     | 0   | 0   | 36  | 17  | 1   | 0    | 0       | 0     | 0   | 0   | 18  |
| 18:15 | 45  | 5   | 0    | 0       | 0     | 1   | 1   | 52  | 18  | 2   | 0    | 0       | 0     | 0   | 0   | 20  |
| 18:30 | 35  | 2   | 0    | 0       | 0     | 0   | 0   | 37  | 14  | 7   | 0    | 0       | 0     | 0   | 0   | 21  |
| 18:45 | 34  | 5   | 1    | 0       | 0     | 0   | 0   | 40  | 27  | 1   | 0    | 0       | 0     | 1   | 0   | 29  |
| н/тот | 144 | 18  | 1    | 0       | 0     | 1   | 1   | 165 | 76  | 11  | 0    | 0       | 0     | 1   | 0   | 88  |
| P/TOT | 390 | 75  | 3    | 0       | 4     | 9   | 4   | 485 | 212 | 40  | 2    | 0       | 4     | 4   | 0   | 262 |

TO ARM A IS TOTAL OF MOVEMENTS 3, 6 FROM ARM A IS TOTAL OF MOVEMENTS 1, 2



DATE: 23/04/2015

THURSDAY DAY:

JOB REF: 18765

JOB NAME: SHOREHAM ON SEA

2

SITE:

LOCATION: THE BROADWAY / BRIGHTON ROAD

|       |      |     |      | TO A     | RM B     |     |     |      |      |     |      | FROM     | ARM B    |     |     |      |
|-------|------|-----|------|----------|----------|-----|-----|------|------|-----|------|----------|----------|-----|-----|------|
| TIME  |      |     |      | BRIGHTON | ROAD (W) |     |     |      |      |     |      | BRIGHTON | ROAD (W) |     |     |      |
|       | CAR  | LGV | OGV1 | OGV2     | PSV      | MCL | PCL | тот  | CAR  | LGV | OGV1 | OGV2     | PSV      | MCL | PCL | тот  |
| 07:00 | 95   | 33  | 1    | 1        | 0        | 2   | 3   | 135  | 120  | 39  | 8    | 2        | 2        | 5   | 6   | 182  |
| 07:15 | 144  | 39  | 5    | 2        | 2        | 4   | 3   | 199  | 176  | 53  | 12   | 2        | 8        | 5   | 2   | 258  |
| 07:30 | 152  | 24  | 6    | 2        | 2        | 4   | 6   | 196  | 176  | 42  | 4    | 0        | 3        | 4   | 4   | 233  |
| 07:45 | 181  | 30  | 5    | 0        | 2        | 3   | 1   | 222  | 153  | 38  | 8    | 1        | 3        | 6   | 2   | 211  |
| н/тот | 572  | 126 | 17   | 5        | 6        | 13  | 13  | 752  | 625  | 172 | 32   | 5        | 16       | 20  | 14  | 884  |
| 08:00 | 174  | 50  | 5    | 1        | 2        | 5   | 5   | 242  | 159  | 27  | 7    | 1        | 3        | 7   | 10  | 214  |
| 08:15 | 167  | 28  | 8    | 1        | 3        | 3   | 5   | 215  | 165  | 31  | 5    | 4        | 3        | 8   | 4   | 220  |
| 08:30 | 154  | 30  | 6    | 2        | 3        | 3   | 3   | 201  | 119  | 29  | 14   | 0        | 5        | 5   | 6   | 178  |
| 08:45 | 126  | 26  | 9    | 0        | 2        | 2   | 3   | 168  | 157  | 38  | 7    | 1        | 1        | 1   | 2   | 207  |
| н/тот | 621  | 134 | 28   | 4        | 10       | 13  | 16  | 826  | 600  | 125 | 33   | 6        | 12       | 21  | 22  | 819  |
| 09:00 | 147  | 30  | 4    | 2        | 2        | 1   | 1   | 187  | 135  | 42  | 15   | 3        | 3        | 4   | 1   | 203  |
| 09:15 | 130  | 27  | 11   | 2        | 3        | 2   | 0   | 175  | 114  | 26  | 3    | 1        | 1        | 2   | 0   | 147  |
| 09:30 | 115  | 35  | 8    | 1        | 3        | 4   | 0   | 166  | 110  | 31  | 9    | 1        | 3        | 5   | 3   | 162  |
| 09:45 | 113  | 22  | 12   | 3        | 3        | 2   | 1   | 156  | 110  | 31  | 6    | 2        | 2        | 0   | 1   | 152  |
| н/тот | 505  | 114 | 35   | 8        | 11       | 9   | 2   | 684  | 469  | 130 | 33   | 7        | 9        | 11  | 5   | 664  |
| P/TOT | 1698 | 374 | 80   | 17       | 27       | 35  | 31  | 2262 | 1694 | 427 | 98   | 18       | 37       | 52  | 41  | 2367 |



DATE: 23/04/2015

JOB REF: 18765

JOB NAME: SHOREHAM ON SEA

2

SITE:

LOCATION: THE BROADWAY / BRIGHTON ROAD

|       |      |     |      | TO AI    | RM B     |     |     |      |      |     |      | FROM     | ARM B    |     |     |      |
|-------|------|-----|------|----------|----------|-----|-----|------|------|-----|------|----------|----------|-----|-----|------|
| TIME  |      |     |      | BRIGHTON | ROAD (W) |     |     |      |      |     |      | BRIGHTON | ROAD (W) |     |     |      |
|       | CAR  | LGV | OGV1 | OGV2     | PSV      | MCL | PCL | тот  | CAR  | LGV | OGV1 | OGV2     | PSV      | MCL | PCL | TOT  |
| 16:00 | 197  | 54  | 2    | 1        | 5        | 3   | 1   | 263  | 138  | 38  | 2    | 0        | 2        | 1   | 0   | 181  |
| 16:15 | 165  | 35  | 2    | 0        | 3        | 13  | 4   | 222  | 169  | 24  | 6    | 0        | 2        | 0   | 1   | 202  |
| 16:30 | 164  | 47  | 5    | 0        | 3        | 5   | 4   | 228  | 149  | 25  | 3    | 2        | 2        | 4   | 1   | 186  |
| 16:45 | 179  | 33  | 1    | 0        | 2        | 5   | 1   | 221  | 169  | 21  | 1    | 0        | 1        | 3   | 10  | 205  |
| н/тот | 705  | 169 | 10   | 1        | 13       | 26  | 10  | 934  | 625  | 108 | 12   | 2        | 7        | 8   | 12  | 774  |
| 17:00 | 210  | 38  | 2    | 0        | 1        | 10  | 8   | 269  | 148  | 32  | 0    | 0        | 1        | 8   | 6   | 195  |
| 17:15 | 168  | 43  | 4    | 0        | 1        | 9   | 5   | 230  | 230  | 19  | 2    | 0        | 1        | 0   | 4   | 256  |
| 17:30 | 196  | 32  | 3    | 0        | 5        | 8   | 5   | 249  | 165  | 22  | 0    | 0        | 4        | 2   | 3   | 196  |
| 17:45 | 182  | 27  | 2    | 0        | 3        | 5   | 3   | 222  | 165  | 25  | 2    | 1        | 2        | 7   | 4   | 206  |
| н/тот | 756  | 140 | 11   | 0        | 10       | 32  | 21  | 970  | 708  | 98  | 4    | 1        | 8        | 17  | 17  | 853  |
| 18:00 | 187  | 24  | 2    | 0        | 3        | 3   | 4   | 223  | 198  | 17  | 0    | 0        | 2        | 3   | 5   | 225  |
| 18:15 | 193  | 25  | 1    | 0        | 5        | 7   | 5   | 236  | 174  | 17  | 2    | 0        | 1        | 2   | 8   | 204  |
| 18:30 | 197  | 20  | 2    | 0        | 2        | 2   | 8   | 231  | 158  | 16  | 0    | 0        | 1        | 2   | 1   | 178  |
| 18:45 | 180  | 23  | 0    | 0        | 4        | 4   | 1   | 212  | 157  | 29  | 0    | 0        | 0        | 2   | 1   | 189  |
| н/тот | 757  | 92  | 5    | 0        | 14       | 16  | 18  | 902  | 687  | 79  | 2    | 0        | 4        | 9   | 15  | 796  |
| P/TOT | 2218 | 401 | 26   | 1        | 37       | 74  | 49  | 2806 | 2020 | 285 | 18   | 3        | 19       | 34  | 44  | 2423 |

TO ARM B IS TOTAL OF MOVEMENTS 2, 5

FROM ARM B IS TOTAL OF MOVEMENTS 3, 4



DATE: 23/04/2015

JOB REF: 18765

JOB NAME: SHOREHAM ON SEA

2

SITE:

LOCATION: THE BROADWAY / BRIGHTON ROAD

|       |      |     |      | TO A     | RM C       |     |     |      |      |     |      | FROM     | ARM C      |     |     |      |
|-------|------|-----|------|----------|------------|-----|-----|------|------|-----|------|----------|------------|-----|-----|------|
| TIME  |      |     |      | BRIGHTON | I ROAD (E) |     |     |      |      |     |      | BRIGHTON | I ROAD (E) |     |     |      |
|       | CAR  | LGV | OGV1 | OGV2     | PSV        | MCL | PCL | тот  | CAR  | LGV | OGV1 | OGV2     | PSV        | MCL | PCL | тот  |
| 07:00 | 141  | 45  | 8    | 2        | 2          | 5   | 6   | 209  | 90   | 31  | 1    | 1        | 0          | 2   | 3   | 128  |
| 07:15 | 189  | 57  | 11   | 2        | 8          | 5   | 2   | 274  | 137  | 33  | 5    | 2        | 2          | 4   | 3   | 186  |
| 07:30 | 196  | 46  | 3    | 0        | 3          | 4   | 5   | 257  | 148  | 23  | 4    | 2        | 2          | 4   | 6   | 189  |
| 07:45 | 171  | 41  | 8    | 1        | 3          | 6   | 2   | 232  | 173  | 25  | 5    | 0        | 2          | 3   | 1   | 209  |
| н/тот | 697  | 189 | 30   | 5        | 16         | 20  | 15  | 972  | 548  | 112 | 15   | 5        | 6          | 13  | 13  | 712  |
| 08:00 | 172  | 26  | 7    | 1        | 3          | 10  | 10  | 229  | 166  | 51  | 5    | 1        | 2          | 5   | 5   | 235  |
| 08:15 | 178  | 31  | 4    | 4        | 3          | 8   | 4   | 232  | 163  | 28  | 8    | 1        | 3          | 3   | 5   | 211  |
| 08:30 | 131  | 31  | 14   | 0        | 5          | 5   | 6   | 192  | 131  | 28  | 6    | 2        | 3          | 2   | 3   | 175  |
| 08:45 | 158  | 35  | 7    | 1        | 1          | 1   | 2   | 205  | 119  | 24  | 9    | 0        | 2          | 2   | 3   | 159  |
| н/тот | 639  | 123 | 32   | 6        | 12         | 24  | 22  | 858  | 579  | 131 | 28   | 4        | 10         | 12  | 16  | 780  |
| 09:00 | 149  | 44  | 14   | 3        | 3          | 4   | 1   | 218  | 144  | 30  | 4    | 2        | 2          | 1   | 1   | 184  |
| 09:15 | 113  | 26  | 2    | 1        | 1          | 1   | 0   | 144  | 131  | 27  | 11   | 2        | 3          | 2   | 0   | 176  |
| 09:30 | 108  | 28  | 9    | 1        | 3          | 4   | 2   | 155  | 109  | 35  | 8    | 1        | 3          | 3   | 0   | 159  |
| 09:45 | 108  | 33  | 6    | 2        | 2          | 0   | 1   | 152  | 112  | 22  | 12   | 3        | 2          | 2   | 1   | 154  |
| н/тот | 478  | 131 | 31   | 7        | 9          | 9   | 4   | 669  | 496  | 114 | 35   | 8        | 10         | 8   | 2   | 673  |
| P/TOT | 1814 | 443 | 93   | 18       | 37         | 53  | 41  | 2499 | 1623 | 357 | 78   | 17       | 26         | 33  | 31  | 2165 |



DATE: 23/04/2015

JOB REF: 18765

JOB NAME: SHOREHAM ON SEA

2

SITE:

LOCATION: THE BROADWAY / BRIGHTON ROAD

|       |      |     |      | TO AI    | RM C     |     |     | FROM ARM C<br>BRIGHTON ROAD (E) |      |     |      |      |     |     |     |      |  |
|-------|------|-----|------|----------|----------|-----|-----|---------------------------------|------|-----|------|------|-----|-----|-----|------|--|
| TIME  |      |     |      | BRIGHTON | ROAD (E) |     |     |                                 |      |     |      |      |     |     |     |      |  |
|       | CAR  | LGV | OGV1 | OGV2     | PSV      | MCL | PCL | тот                             | CAR  | LGV | OGV1 | OGV2 | PSV | MCL | PCL | тот  |  |
| 16:00 | 138  | 35  | 2    | 0        | 2        | 2   | 0   | 179                             | 196  | 53  | 2    | 1    | 5   | 3   | 1   | 261  |  |
| 16:15 | 164  | 23  | 6    | 0        | 2        | 0   | 0   | 195                             | 176  | 41  | 2    | 0    | 3   | 14  | 5   | 241  |  |
| 16:30 | 139  | 23  | 3    | 2        | 1        | 4   | 1   | 173                             | 177  | 47  | 4    | 0    | 3   | 5   | 4   | 240  |  |
| 16:45 | 161  | 19  | 1    | 0        | 1        | 4   | 10  | 196                             | 190  | 34  | 1    | 0    | 1   | 5   | 1   | 232  |  |
| н/тот | 602  | 100 | 12   | 2        | 6        | 10  | 11  | 743                             | 739  | 175 | 9    | 1    | 12  | 27  | 11  | 974  |  |
| 17:00 | 140  | 25  | 0    | 0        | 1        | 7   | 6   | 179                             | 228  | 41  | 2    | 0    | 1   | 10  | 9   | 291  |  |
| 17:15 | 227  | 14  | 1    | 0        | 1        | 0   | 4   | 247                             | 179  | 43  | 4    | 0    | 1   | 10  | 5   | 242  |  |
| 17:30 | 172  | 25  | 0    | 0        | 3        | 2   | 3   | 205                             | 209  | 35  | 3    | 0    | 4   | 11  | 5   | 267  |  |
| 17:45 | 163  | 25  | 2    | 1        | 2        | 7   | 4   | 204                             | 187  | 26  | 2    | 0    | 3   | 6   | 3   | 227  |  |
| н/тот | 702  | 89  | 3    | 1        | 7        | 16  | 17  | 835                             | 803  | 145 | 11   | 0    | 9   | 37  | 22  | 1027 |  |
| 18:00 | 195  | 18  | 0    | 0        | 2        | 3   | 5   | 223                             | 197  | 30  | 2    | 0    | 3   | 3   | 4   | 239  |  |
| 18:15 | 173  | 17  | 2    | 0        | 1        | 1   | 8   | 202                             | 219  | 28  | 1    | 0    | 5   | 7   | 6   | 266  |  |
| 18:30 | 149  | 19  | 0    | 0        | 1        | 2   | 1   | 172                             | 209  | 18  | 2    | 0    | 2   | 2   | 8   | 241  |  |
| 18:45 | 154  | 27  | 0    | 0        | 0        | 3   | 1   | 185                             | 184  | 25  | 1    | 0    | 4   | 4   | 1   | 219  |  |
| н/тот | 671  | 81  | 2    | 0        | 4        | 9   | 15  | 782                             | 809  | 101 | 6    | 0    | 14  | 16  | 19  | 965  |  |
| P/TOT | 1975 | 270 | 17   | 3        | 17       | 35  | 43  | 2360                            | 2351 | 421 | 26   | 1    | 35  | 80  | 52  | 2966 |  |

TO ARM C IS TOTAL OF MOVEMENTS 1, 4 FROM ARM C IS TOTAL OF MOVEMENTS 5, 6



23/04/2015

DATE:

JOB REF: 18988

JOB NAME: SHOREHAM ON SEA

1

SITE:

#### NEW SALTS FARM ROAD / BRIGHTON ROAD / THE SALTINGS / PFS LOCATION:

AXIOM Traffic Limited

DATE:

DAY:

|       |     |     |            | A٠          | E           |             |     | A - D                           |     |     |      |      |     |     |     |     |  |  |
|-------|-----|-----|------------|-------------|-------------|-------------|-----|---------------------------------|-----|-----|------|------|-----|-----|-----|-----|--|--|
| TIME  |     | FR  | OM NEW SAL | TS FARM ROA | AD TO BRIGH | TON ROAD (I | NE) | FROM NEW SALTS FARM ROAD TO PFS |     |     |      |      |     |     |     |     |  |  |
|       | CAR | LGV | OGV1       | OGV2        | PSV         | MCL         | PCL | тот                             | CAR | LGV | OGV1 | OGV2 | PSV | MCL | PCL | тот |  |  |
| 07:00 | 2   | 0   | 0          | 0           | 0           | 0           | 2   | 4                               | 0   | 0   | 0    | 0    | 0   | 0   | 0   | 0   |  |  |
| 07:15 | 1   | 0   | 0          | 0           | 0           | 0           | 0   | 1                               | 0   | 0   | 0    | 0    | 0   | 0   | 0   | 0   |  |  |
| 07:30 | 4   | 0   | 0          | 0           | 0           | 0           | 0   | 4                               | 0   | 0   | 0    | 0    | 0   | 0   | 0   | 0   |  |  |
| 07:45 | 3   | 0   | 0          | 0           | 0           | 0           | 1   | 4                               | 0   | 0   | 0    | 0    | 0   | 0   | 0   | 0   |  |  |
| н/тот | 10  | 0   | 0          | 0           | 0           | 0           | 3   | 13                              | 0   | 0   | 0    | 0    | 0   | 0   | 0   | 0   |  |  |
| 08:00 | 2   | 1   | 0          | 0           | 0           | 0           | 0   | 3                               | 1   | 0   | 0    | 0    | 0   | 0   | 0   | 1   |  |  |
| 08:15 | 1   | 1   | 0          | 0           | 0           | 0           | 0   | 2                               | 0   | 0   | 0    | 0    | 0   | 0   | 0   | 0   |  |  |
| 08:30 | 2   | 1   | 0          | 0           | 0           | 0           | 0   | 3                               | 0   | 0   | 0    | 0    | 0   | 0   | 0   | 0   |  |  |
| 08:45 | 1   | 0   | 0          | 0           | 0           | 0           | 0   | 1                               | 0   | 0   | 0    | 0    | 0   | 0   | 0   | 0   |  |  |
| н/тот | 6   | 3   | 0          | 0           | 0           | 0           | 0   | 9                               | 1   | 0   | 0    | 0    | 0   | 0   | 0   | 1   |  |  |
| 09:00 | 5   | 0   | 0          | 0           | 0           | 0           | 2   | 7                               | 0   | 0   | 0    | 0    | 0   | 0   | 0   | 0   |  |  |
| 09:15 | 5   | 0   | 0          | 0           | 0           | 0           | 0   | 5                               | 0   | 0   | 0    | 0    | 0   | 0   | 0   | 0   |  |  |
| 09:30 | 4   | 0   | 0          | 0           | 0           | 0           | 0   | 4                               | 0   | 0   | 0    | 0    | 0   | 0   | 0   | 0   |  |  |
| 09:45 | 5   | 1   | 0          | 0           | 0           | 0           | 0   | 6                               | 0   | 0   | 0    | 0    | 0   | 0   | 0   | 0   |  |  |
| н/тот | 19  | 1   | 0          | 0           | 0           | 0           | 2   | 22                              | 0   | 0   | 0    | 0    | 0   | 0   | 0   | 0   |  |  |
| P/TOT | 35  | 4   | 0          | 0           | 0           | 0           | 5   | 44                              | 1   | 0   | 0    | 0    | 0   | 0   | 0   | 1   |  |  |



18/06/2015

THURSDAY

JOB REF: 18988

JOB NAME: SHOREHAM ON SEA

1

SITE:

#### NEW SALTS FARM ROAD / BRIGHTON ROAD / THE SALTINGS / PFS LOCATION:

Traffic Limited

DATE:

DAY:

|       | -   |     |            |             |             |             |     |                                 |     |     |      |      |     |     |     |     |  |  |
|-------|-----|-----|------------|-------------|-------------|-------------|-----|---------------------------------|-----|-----|------|------|-----|-----|-----|-----|--|--|
|       |     |     |            | A -         | Е           |             |     | A - D                           |     |     |      |      |     |     |     |     |  |  |
| TIME  |     | FR  | OM NEW SAL | TS FARM ROA | AD TO BRIGH | TON ROAD (N | NE) | FROM NEW SALTS FARM ROAD TO PFS |     |     |      |      |     |     |     |     |  |  |
|       | CAR | LGV | OGV1       | OGV2        | PSV         | MCL         | PCL | тот                             | CAR | LGV | OGV1 | OGV2 | PSV | MCL | PCL | тот |  |  |
| 16:00 | 8   | 0   | 0          | 0           | 0           | 0           | 0   | 8                               | 2   | 0   | 0    | 0    | 0   | 0   | 0   | 2   |  |  |
| 16:15 | 8   | 0   | 0          | 0           | 0           | 0           | 0   | 8                               | 1   | 0   | 0    | 0    | 0   | 0   | 0   | 1   |  |  |
| 16:30 | 4   | 0   | 0          | 0           | 0           | 0           | 0   | 4                               | 1   | 0   | 0    | 0    | 0   | 0   | 0   | 1   |  |  |
| 16:45 | 7   | 1   | 0          | 0           | 0           | 0           | 0   | 8                               | 1   | 0   | 0    | 0    | 0   | 0   | 0   | 1   |  |  |
| н/тот | 27  | 1   | 0          | 0           | 0           | 0           | 0   | 28                              | 5   | 0   | 0    | 0    | 0   | 0   | 0   | 5   |  |  |
| 17:00 | 9   | 0   | 0          | 0           | 0           | 0           | 0   | 9                               | 1   | 1   | 0    | 0    | 0   | 0   | 0   | 2   |  |  |
| 17:15 | 8   | 2   | 0          | 0           | 0           | 0           | 1   | 11                              | 2   | 0   | 0    | 0    | 0   | 0   | 0   | 2   |  |  |
| 17:30 | 13  | 1   | 0          | 0           | 0           | 0           | 0   | 14                              | 0   | 0   | 0    | 0    | 0   | 0   | 0   | 0   |  |  |
| 17:45 | 7   | 0   | 0          | 0           | 0           | 0           | 0   | 7                               | 1   | 0   | 0    | 0    | 0   | 0   | 0   | 1   |  |  |
| н/тот | 37  | 3   | 0          | 0           | 0           | 0           | 1   | 41                              | 4   | 1   | 0    | 0    | 0   | 0   | 0   | 5   |  |  |
| 18:00 | 5   | 2   | 0          | 0           | 0           | 1           | 1   | 9                               | 1   | 0   | 0    | 0    | 0   | 0   | 0   | 1   |  |  |
| 18:15 | 9   | 0   | 0          | 0           | 0           | 0           | 2   | 11                              | 0   | 0   | 0    | 0    | 0   | 0   | 0   | 0   |  |  |
| 18:30 | 7   | 0   | 0          | 0           | 0           | 1           | 0   | 8                               | 1   | 0   | 0    | 0    | 0   | 0   | 0   | 1   |  |  |
| 18:45 | 4   | 0   | 0          | 0           | 0           | 0           | 0   | 4                               | 1   | 0   | 0    | 0    | 0   | 0   | 0   | 1   |  |  |
| н/тот | 25  | 2   | 0          | 0           | 0           | 2           | 3   | 32                              | 3   | 0   | 0    | 0    | 0   | 0   | 0   | 3   |  |  |
| P/TOT | 89  | 6   | 0          | 0           | 0           | 2           | 4   | 101                             | 12  | 1   | 0    | 0    | 0   | 0   | 0   | 13  |  |  |



18/06/2015

THURSDAY

JOB REF: 18988

JOB NAME: SHOREHAM ON SEA

1

SITE:

#### LOCATION: NEW SALTS FARM ROAD / BRIGHTON ROAD / THE SALTINGS / PFS

AXIOM Traffic Limited

|       |     |     | -        |            |            |            |     |  |       |     |      |      |     |     |     |     |  |  |  |
|-------|-----|-----|----------|------------|------------|------------|-----|--|-------|-----|------|------|-----|-----|-----|-----|--|--|--|
|       |     |     |          | A٠         | - C        |            |     |  | A - B |     |      |      |     |     |     |     |  |  |  |
| TIME  |     |     | FROM NEW | SALTS FARM | ROAD TO TH | E SALTINGS |     | FROM NEW SALTS FARM ROAD TO BRIGHTON ROAD (SW) |       |     |      |      |     |     |     |     |  |  |  |
|       | CAR | LGV | OGV1     | OGV2       | PSV        | MCL        | PCL | тот  | CAR   | LGV | OGV1 | OGV2 | PSV | MCL | PCL | тот |  |  |  |
| 07:00 | 0   | 0   | 0        | 0          | 0          | 0          | 0   | 0  | 0     | 0   | 0    | 0    | 0   | 0   | 0   | 0   |  |  |  |
| 07:15 | 0   | 0   | 0        | 0          | 0          | 0          | 0   | 0  | 0     | 0   | 0    | 0    | 0   | 0   | 0   | 0   |  |  |  |
| 07:30 | 1   | 0   | 0        | 0          | 0          | 0          | 0   | 1  | 0     | 0   | 0    | 0    | 0   | 0   | 0   | 0   |  |  |  |
| 07:45 | 1   | 0   | 0        | 0          | 0          | 0          | 0   | 1  | 2     | 0   | 0    | 0    | 0   | 0   | 0   | 2   |  |  |  |
| н/тот | 2   | 0   | 0        | 0          | 0          | 0          | 0   | 2  | 2     | 0   | 0    | 0    | 0   | 0   | 0   | 2   |  |  |  |
| 08:00 | 0   | 0   | 0        | 0          | 0          | 0          | 0   | 0  | 1     | 0   | 0    | 0    | 0   | 0   | 0   | 1   |  |  |  |
| 08:15 | 0   | 0   | 0        | 0          | 0          | 0          | 0   | 0  | 0     | 1   | 0    | 0    | 0   | 0   | 0   | 1   |  |  |  |
| 08:30 | 1   | 0   | 0        | 0          | 0          | 0          | 0   | 1  | 2     | 0   | 0    | 0    | 0   | 0   | 0   | 2   |  |  |  |
| 08:45 | 2   | 0   | 0        | 0          | 0          | 0          | 0   | 2  | 4     | 0   | 0    | 0    | 0   | 0   | 0   | 4   |  |  |  |
| н/тот | 3   | 0   | 0        | 0          | 0          | 0          | 0   | 3  | 7     | 1   | 0    | 0    | 0   | 0   | 0   | 8   |  |  |  |
| 09:00 | 4   | 0   | 0        | 0          | 0          | 0          | 1   | 5  | 2     | 0   | 0    | 0    | 0   | 0   | 0   | 2   |  |  |  |
| 09:15 | 1   | 0   | 0        | 0          | 0          | 0          | 0   | 1  | 2     | 0   | 0    | 0    | 0   | 0   | 0   | 2   |  |  |  |
| 09:30 | 2   | 0   | 0        | 0          | 0          | 0          | 0   | 2  | 1     | 0   | 0    | 0    | 0   | 0   | 0   | 1   |  |  |  |
| 09:45 | 4   | 1   | 0        | 0          | 0          | 0          | 0   | 5  | 0     | 0   | 0    | 0    | 0   | 0   | 0   | 0   |  |  |  |
| н/тот | 11  | 1   | 0        | 0          | 0          | 0          | 1   | 13   | 5     | 0   | 0    | 0    | 0   | 0   | 0   | 5   |  |  |  |
| P/TOT | 16  | 1   | 0        | 0          | 0          | 0          | 1   | 18   | 14    | 1   | 0    | 0    | 0   | 0   | 0   | 15  |  |  |  |


JOB REF: 18988

JOB NAME: SHOREHAM ON SEA

1

SITE:

### LOCATION: NEW SALTS FARM ROAD / BRIGHTON ROAD / THE SALTINGS / PFS



| DATE: | 18/06/2015 |
|-------|------------|
|-------|------------|

|       |     |     |          | A -        | · C        |            |     |     |            |     |     |            | A -         | ·B         |             |     |     |
|-------|-----|-----|----------|------------|------------|------------|-----|-----|------------|-----|-----|------------|-------------|------------|-------------|-----|-----|
| TIME  |     |     | FROM NEW | SALTS FARM | ROAD TO TH | E SALTINGS |     |     |            |     | FR  | OM NEW SAL | TS FARM ROA | D TO BRIGH | TON ROAD (S | SW) |     |
|       | CAR | LGV | OGV1     | OGV2       | PSV        | MCL        | PCL | тот | C          | AR  | LGV | OGV1       | OGV2        | PSV        | MCL         | PCL | TOT |
| 16:00 | 5   | 0   | 0        | 0          | 0          | 0          | 0   | 5   | 1          | 10  | 0   | 0          | 0           | 0          | 1           | 0   | 11  |
| 16:15 | 6   | 0   | 0        | 0          | 0          | 0          | 0   | 6   |            | 7   | 0   | 0          | 0           | 0          | 1           | 0   | 8   |
| 16:30 | 8   | 0   | 0        | 0          | 0          | 0          | 1   | 9   | 1          | 16  | 1   | 0          | 0           | 0          | 0           | 0   | 17  |
| 16:45 | 4   | 0   | 0        | 0          | 0          | 1          | 0   | 5   |            | 5   | 1   | 0          | 0           | 0          | 1           | 1   | 8   |
| н/тот | 23  | 0   | 0        | 0          | 0          | 1          | 1   | 25  | (1)<br>(1) | 38  | 2   | 0          | 0           | 0          | 3           | 1   | 44  |
| 17:00 | 8   | 1   | 0        | 0          | 0          | 0          | 1   | 10  | 1          | 16  | 1   | 0          | 0           | 0          | 0           | 0   | 17  |
| 17:15 | 5   | 1   | 0        | 0          | 0          | 0          | 1   | 7   | 1          | 13  | 0   | 0          | 0           | 0          | 1           | 0   | 14  |
| 17:30 | 9   | 1   | 0        | 0          | 0          | 0          | 1   | 11  | 1          | 17  | 0   | 0          | 0           | 0          | 3           | 0   | 20  |
| 17:45 | 10  | 1   | 0        | 0          | 0          | 0          | 0   | 11  | 1          | 12  | 0   | 0          | 0           | 0          | 1           | 0   | 13  |
| н/тот | 32  | 4   | 0        | 0          | 0          | 0          | 3   | 39  | 5          | 58  | 1   | 0          | 0           | 0          | 5           | 0   | 64  |
| 18:00 | 11  | 0   | 0        | 0          | 0          | 0          | 0   | 11  |            | 8   | 0   | 0          | 0           | 0          | 0           | 0   | 8   |
| 18:15 | 9   | 0   | 0        | 0          | 0          | 1          | 0   | 10  | 1          | 14  | 0   | 0          | 0           | 0          | 0           | 1   | 15  |
| 18:30 | 7   | 0   | 0        | 0          | 0          | 1          | 0   | 8   |            | 9   | 1   | 0          | 0           | 0          | 0           | 0   | 10  |
| 18:45 | 6   | 0   | 0        | 0          | 0          | 0          | 3   | 9   |            | 1   | 1   | 0          | 0           | 0          | 0           | 0   | 2   |
| Н/ТОТ | 33  | 0   | 0        | 0          | 0          | 2          | 3   | 38  | (ii)       | 32  | 2   | 0          | 0           | 0          | 0           | 1   | 35  |
| Р/ТОТ | 88  | 4   | 0        | 0          | 0          | 3          | 7   | 102 | 1          | .28 | 5   | 0          | 0           | 0          | 8           | 2   | 143 |

JOB REF: 18988

JOB NAME: SHOREHAM ON SEA

1

SITE:

### LOCATION: NEW SALTS FARM ROAD / BRIGHTON ROAD / THE SALTINGS / PFS

AXIOM Traffic Limited

|       |     |     |             | A -          | A           |              |     |     |     |     |            | В -         | Α         |             |     |     |
|-------|-----|-----|-------------|--------------|-------------|--------------|-----|-----|-----|-----|------------|-------------|-----------|-------------|-----|-----|
| TIME  |     | FRC | OM NEW SALT | IS FARM ROAI | D TO NEW SA | ALTS FARM RO | DAD |     |     | FR  | OM BRIGHTO | N ROAD (SW) | TO NEW SA | LTS FARM RO | AD  |     |
|       | CAR | LGV | OGV1        | OGV2         | PSV         | MCL          | PCL | TOT | CAR | LGV | OGV1       | OGV2        | PSV       | MCL         | PCL | тот |
| 07:00 | 0   | 0   | 0           | 0            | 0           | 0            | 0   | 0   | 9   | 1   | 0          | 0           | 0         | 0           | 0   | 10  |
| 07:15 | 0   | 0   | 0           | 0            | 0           | 0            | 0   | 0   | 5   | 2   | 0          | 0           | 0         | 1           | 0   | 8   |
| 07:30 | 0   | 0   | 0           | 0            | 0           | 0            | 0   | 0   | 8   | 1   | 0          | 0           | 0         | 1           | 2   | 12  |
| 07:45 | 0   | 0   | 0           | 0            | 0           | 0            | 0   | 0   | 11  | 0   | 0          | 0           | 0         | 4           | 1   | 16  |
| н/тот | 0   | 0   | 0           | 0            | 0           | 0            | 0   | 0   | 33  | 4   | 0          | 0           | 0         | 6           | 3   | 46  |
| 08:00 | 0   | 0   | 0           | 0            | 0           | 0            | 0   | 0   | 17  | 0   | 0          | 0           | 0         | 0           | 3   | 20  |
| 08:15 | 0   | 0   | 0           | 0            | 0           | 0            | 0   | 0   | 16  | 1   | 0          | 0           | 0         | 1           | 2   | 20  |
| 08:30 | 0   | 0   | 0           | 0            | 0           | 0            | 0   | 0   | 11  | 1   | 0          | 0           | 0         | 0           | 3   | 15  |
| 08:45 | 0   | 0   | 0           | 0            | 0           | 0            | 0   | 0   | 21  | 0   | 0          | 0           | 0         | 0           | 2   | 23  |
| н/тот | 0   | 0   | 0           | 0            | 0           | 0            | 0   | 0   | 65  | 2   | 0          | 0           | 0         | 1           | 10  | 78  |
| 09:00 | 0   | 0   | 0           | 0            | 0           | 0            | 0   | 0   | 7   | 0   | 0          | 0           | 0         | 0           | 0   | 7   |
| 09:15 | 0   | 0   | 0           | 0            | 0           | 0            | 0   | 0   | 5   | 0   | 0          | 0           | 0         | 0           | 1   | 6   |
| 09:30 | 0   | 0   | 0           | 0            | 0           | 0            | 0   | 0   | 1   | 0   | 0          | 0           | 0         | 0           | 0   | 1   |
| 09:45 | 0   | 0   | 0           | 0            | 0           | 0            | 0   | 0   | 5   | 1   | 0          | 0           | 0         | 0           | 0   | 6   |
| н/тот | 0   | 0   | 0           | 0            | 0           | 0            | 0   | 0   | 18  | 1   | 0          | 0           | 0         | 0           | 1   | 20  |
| P/TOT | 0   | 0   | 0           | 0            | 0           | 0            | 0   | 0   | 116 | 7   | 0          | 0           | 0         | 7           | 14  | 144 |



JOB REF: 18988

JOB NAME: SHOREHAM ON SEA

1

SITE:

### LOCATION: NEW SALTS FARM ROAD / BRIGHTON ROAD / THE SALTINGS / PFS

AXIOM Traffic Limited

|       |     |     |             | A -         | A           |              |     |     |     |     |            | В -         | A         |             |     |     |
|-------|-----|-----|-------------|-------------|-------------|--------------|-----|-----|-----|-----|------------|-------------|-----------|-------------|-----|-----|
| TIME  |     | FRO | OM NEW SALT | S FARM ROAI | D TO NEW SA | ALTS FARM RO | DAD |     |     | FR  | OM BRIGHTO | N ROAD (SW) | TO NEW SA | LTS FARM RO | AD  |     |
|       | CAR | LGV | OGV1        | OGV2        | PSV         | MCL          | PCL | тот | CAR | LGV | OGV1       | OGV2        | PSV       | MCL         | PCL | тот |
| 16:00 | 0   | 0   | 0           | 0           | 0           | 0            | 0   | 0   | 2   | 0   | 0          | 0           | 0         | 0           | 1   | 3   |
| 16:15 | 0   | 1   | 0           | 0           | 0           | 0            | 0   | 1   | 3   | 0   | 0          | 0           | 0         | 0           | 1   | 4   |
| 16:30 | 0   | 0   | 0           | 0           | 0           | 0            | 0   | 0   | 2   | 0   | 0          | 0           | 0         | 0           | 0   | 2   |
| 16:45 | 0   | 0   | 0           | 0           | 0           | 0            | 0   | 0   | 5   | 0   | 0          | 0           | 0         | 1           | 4   | 10  |
| н/тот | 0   | 1   | 0           | 0           | 0           | 0            | 0   | 1   | 12  | 0   | 0          | 0           | 0         | 1           | 6   | 19  |
| 17:00 | 0   | 0   | 0           | 0           | 0           | 0            | 0   | 0   | 2   | 0   | 0          | 0           | 0         | 0           | 1   | 3   |
| 17:15 | 0   | 0   | 0           | 0           | 0           | 0            | 0   | 0   | 1   | 0   | 0          | 0           | 0         | 0           | 0   | 1   |
| 17:30 | 0   | 0   | 0           | 0           | 0           | 0            | 0   | 0   | 3   | 0   | 0          | 0           | 0         | 0           | 2   | 5   |
| 17:45 | 0   | 0   | 0           | 0           | 0           | 0            | 0   | 0   | 1   | 0   | 0          | 0           | 0         | 0           | 1   | 2   |
| н/тот | 0   | 0   | 0           | 0           | 0           | 0            | 0   | 0   | 7   | 0   | 0          | 0           | 0         | 0           | 4   | 11  |
| 18:00 | 0   | 0   | 0           | 0           | 0           | 0            | 0   | 0   | 2   | 0   | 0          | 0           | 0         | 0           | 1   | 3   |
| 18:15 | 0   | 0   | 0           | 0           | 0           | 0            | 0   | 0   | 3   | 0   | 0          | 0           | 0         | 0           | 1   | 4   |
| 18:30 | 0   | 0   | 0           | 0           | 0           | 0            | 0   | 0   | 2   | 0   | 0          | 0           | 0         | 0           | 0   | 2   |
| 18:45 | 0   | 0   | 0           | 0           | 0           | 0            | 0   | 0   | 4   | 0   | 0          | 0           | 0         | 0           | 1   | 5   |
| н/тот | 0   | 0   | 0           | 0           | 0           | 0            | 0   | 0   | 11  | 0   | 0          | 0           | 0         | 0           | 3   | 14  |
| P/TOT | 0   | 1   | 0           | 0           | 0           | 0            | 0   | 1   | 30  | 0   | 0          | 0           | 0         | 1           | 13  | 44  |



JOB REF: 18988

JOB NAME: SHOREHAM ON SEA

1

SITE:

#### NEW SALTS FARM ROAD / BRIGHTON ROAD / THE SALTINGS / PFS LOCATION:

AXIOM Traffic Limited

DATE:

DAY:

|       |      |     |            | В -         | E            |            |     |      |     |     |      | В -          | D           |       |     |     |
|-------|------|-----|------------|-------------|--------------|------------|-----|------|-----|-----|------|--------------|-------------|-------|-----|-----|
| TIME  |      | F   | ROM BRIGHT | ON ROAD (SW | /) TO BRIGHT | ON ROAD (N | IE) |      |     |     | FROM | 1 BRIGHTON F | ROAD (SW) T | O PFS |     |     |
|       | CAR  | LGV | OGV1       | OGV2        | PSV          | MCL        | PCL | тот  | CAR | LGV | OGV1 | OGV2         | PSV         | MCL   | PCL | тот |
| 07:00 | 126  | 38  | 4          | 2           | 1            | 6          | 3   | 180  | 5   | 1   | 0    | 0            | 0           | 1     | 0   | 7   |
| 07:15 | 152  | 50  | 2          | 1           | 3            | 4          | 5   | 217  | 2   | 2   | 0    | 0            | 0           | 0     | 0   | 4   |
| 07:30 | 165  | 43  | 7          | 0           | 4            | 4          | 5   | 228  | 10  | 4   | 0    | 0            | 0           | 0     | 0   | 14  |
| 07:45 | 166  | 36  | 2          | 0           | 5            | 2          | 3   | 214  | 3   | 1   | 0    | 0            | 0           | 0     | 0   | 4   |
| н/тот | 609  | 167 | 15         | 3           | 13           | 16         | 16  | 839  | 20  | 8   | 0    | 0            | 0           | 1     | 0   | 29  |
| 08:00 | 168  | 23  | 4          | 0           | 2            | 4          | 1   | 202  | 7   | 0   | 0    | 0            | 0           | 0     | 0   | 7   |
| 08:15 | 123  | 28  | 4          | 0           | 5            | 5          | 8   | 173  | 1   | 1   | 0    | 0            | 0           | 0     | 0   | 2   |
| 08:30 | 120  | 21  | 2          | 0           | 1            | 3          | 3   | 150  | 3   | 0   | 0    | 0            | 0           | 0     | 0   | 3   |
| 08:45 | 113  | 19  | 5          | 0           | 3            | 2          | 4   | 146  | 3   | 0   | 0    | 0            | 0           | 0     | 0   | 3   |
| н/тот | 524  | 91  | 15         | 0           | 11           | 14         | 16  | 671  | 14  | 1   | 0    | 0            | 0           | 0     | 0   | 15  |
| 09:00 | 130  | 26  | 4          | 0           | 2            | 4          | 2   | 168  | 4   | 1   | 0    | 0            | 0           | 0     | 0   | 5   |
| 09:15 | 128  | 28  | 6          | 0           | 1            | 4          | 3   | 170  | 1   | 0   | 0    | 0            | 0           | 0     | 0   | 1   |
| 09:30 | 115  | 33  | 1          | 0           | 2            | 2          | 0   | 153  | 3   | 0   | 0    | 0            | 0           | 0     | 0   | 3   |
| 09:45 | 105  | 22  | 3          | 0           | 2            | 0          | 3   | 135  | 2   | 0   | 0    | 0            | 0           | 1     | 0   | 3   |
| н/тот | 478  | 109 | 14         | 0           | 7            | 10         | 8   | 626  | 10  | 1   | 0    | 0            | 0           | 1     | 0   | 12  |
| P/TOT | 1611 | 367 | 44         | 3           | 31           | 40         | 40  | 2136 | 44  | 10  | 0    | 0            | 0           | 2     | 0   | 56  |



18/06/2015

JOB REF: 18988

JOB NAME: SHOREHAM ON SEA

1

SITE:

#### NEW SALTS FARM ROAD / BRIGHTON ROAD / THE SALTINGS / PFS LOCATION:

AXIOM Traffic Limited

DATE:

DAY:

|       |      |     |            | В -         | E           |            |     |      |     |     |      | В -          | D           |       |     |     |
|-------|------|-----|------------|-------------|-------------|------------|-----|------|-----|-----|------|--------------|-------------|-------|-----|-----|
| TIME  |      | F   | ROM BRIGHT | ON ROAD (SW | ) TO BRIGHT | ON ROAD (N | E)  |      |     |     | FROM | 1 BRIGHTON F | ROAD (SW) T | O PFS |     |     |
|       | CAR  | LGV | OGV1       | OGV2        | PSV         | MCL        | PCL | тот  | CAR | LGV | OGV1 | OGV2         | PSV         | MCL   | PCL | тот |
| 16:00 | 117  | 23  | 1          | 0           | 2           | 4          | 4   | 151  | 5   | 1   | 0    | 0            | 0           | 0     | 0   | 6   |
| 16:15 | 139  | 22  | 2          | 1           | 2           | 3          | 1   | 170  | 1   | 0   | 0    | 0            | 0           | 0     | 0   | 1   |
| 16:30 | 125  | 23  | 2          | 0           | 2           | 1          | 4   | 157  | 2   | 1   | 1    | 0            | 0           | 0     | 0   | 4   |
| 16:45 | 136  | 12  | 1          | 0           | 1           | 7          | 5   | 162  | 3   | 0   | 0    | 0            | 0           | 0     | 0   | 3   |
| н/тот | 517  | 80  | 6          | 1           | 7           | 15         | 14  | 640  | 11  | 2   | 1    | 0            | 0           | 0     | 0   | 14  |
| 17:00 | 159  | 21  | 3          | 0           | 2           | 5          | 3   | 193  | 2   | 1   | 0    | 0            | 0           | 0     | 0   | 3   |
| 17:15 | 155  | 13  | 4          | 0           | 1           | 2          | 9   | 184  | 3   | 0   | 0    | 0            | 0           | 0     | 0   | 3   |
| 17:30 | 150  | 18  | 2          | 0           | 2           | 3          | 2   | 177  | 3   | 0   | 0    | 0            | 0           | 0     | 0   | 3   |
| 17:45 | 175  | 9   | 1          | 0           | 1           | 2          | 5   | 193  | 4   | 1   | 0    | 0            | 0           | 0     | 0   | 5   |
| н/тот | 639  | 61  | 10         | 0           | 6           | 12         | 19  | 747  | 12  | 2   | 0    | 0            | 0           | 0     | 0   | 14  |
| 18:00 | 173  | 12  | 0          | 0           | 2           | 4          | 5   | 196  | 4   | 0   | 0    | 0            | 0           | 0     | 0   | 4   |
| 18:15 | 131  | 12  | 0          | 0           | 1           | 3          | 8   | 155  | 2   | 1   | 0    | 0            | 0           | 0     | 0   | 3   |
| 18:30 | 136  | 9   | 1          | 0           | 1           | 0          | 4   | 151  | 6   | 1   | 0    | 0            | 0           | 0     | 0   | 7   |
| 18:45 | 106  | 24  | 0          | 0           | 1           | 3          | 3   | 137  | 2   | 0   | 0    | 0            | 0           | 0     | 0   | 2   |
| н/тот | 546  | 57  | 1          | 0           | 5           | 10         | 20  | 639  | 14  | 2   | 0    | 0            | 0           | 0     | 0   | 16  |
| P/TOT | 1702 | 198 | 17         | 1           | 18          | 37         | 53  | 2026 | 37  | 6   | 1    | 0            | 0           | 0     | 0   | 44  |



18/06/2015

JOB REF: 18988

JOB NAME: SHOREHAM ON SEA

1

SITE:

### LOCATION: NEW SALTS FARM ROAD / BRIGHTON ROAD / THE SALTINGS / PFS

AXIOM Traffic Limited

DATE:

|       |     |     |           | В -        | C          |            |     |     |     |     |             | В -         | В           |             |     |     |
|-------|-----|-----|-----------|------------|------------|------------|-----|-----|-----|-----|-------------|-------------|-------------|-------------|-----|-----|
| TIME  |     |     | FROM BRIG | GHTON ROAD | (SW) TO TH | E SALTINGS |     |     |     | F   | ROM BRIGHTO | ON ROAD (SW | ) TO BRIGHT | ON ROAD (SV | V)  |     |
|       | CAR | LGV | OGV1      | OGV2       | PSV        | MCL        | PCL | тот | CAR | LGV | OGV1        | OGV2        | PSV         | MCL         | PCL | тот |
| 07:00 | 2   | 2   | 1         | 0          | 0          | 0          | 0   | 5   | 1   | 0   | 0           | 0           | 0           | 0           | 0   | 1   |
| 07:15 | 13  | 3   | 0         | 0          | 1          | 0          | 0   | 17  | 2   | 0   | 0           | 0           | 0           | 0           | 0   | 2   |
| 07:30 | 11  | 7   | 1         | 0          | 1          | 0          | 0   | 20  | 4   | 0   | 0           | 0           | 0           | 0           | 0   | 4   |
| 07:45 | 7   | 8   | 1         | 0          | 0          | 1          | 0   | 17  | 1   | 0   | 0           | 0           | 0           | 0           | 0   | 1   |
| н/тот | 33  | 20  | 3         | 0          | 2          | 1          | 0   | 59  | 8   | 0   | 0           | 0           | 0           | 0           | 0   | 8   |
| 08:00 | 10  | 6   | 0         | 0          | 0          | 0          | 0   | 16  | 3   | 0   | 0           | 0           | 0           | 0           | 0   | 3   |
| 08:15 | 9   | 3   | 1         | 0          | 0          | 0          | 0   | 13  | 0   | 0   | 0           | 0           | 0           | 0           | 0   | 0   |
| 08:30 | 14  | 4   | 0         | 0          | 1          | 0          | 0   | 19  | 1   | 0   | 0           | 0           | 0           | 0           | 0   | 1   |
| 08:45 | 18  | 7   | 0         | 0          | 1          | 1          | 0   | 27  | 2   | 0   | 0           | 0           | 0           | 0           | 0   | 2   |
| н/тот | 51  | 20  | 1         | 0          | 2          | 1          | 0   | 75  | 6   | 0   | 0           | 0           | 0           | 0           | 0   | 6   |
| 09:00 | 19  | 5   | 1         | 0          | 0          | 0          | 0   | 25  | 1   | 0   | 0           | 0           | 0           | 0           | 0   | 1   |
| 09:15 | 8   | 6   | 0         | 0          | 0          | 1          | 0   | 15  | 1   | 0   | 0           | 0           | 0           | 0           | 0   | 1   |
| 09:30 | 12  | 5   | 1         | 0          | 0          | 0          | 0   | 18  | 0   | 0   | 0           | 0           | 0           | 0           | 0   | 0   |
| 09:45 | 22  | 3   | 0         | 0          | 0          | 0          | 0   | 25  | 1   | 1   | 0           | 0           | 0           | 0           | 0   | 2   |
| н/тот | 61  | 19  | 2         | 0          | 0          | 1          | 0   | 83  | 3   | 1   | 0           | 0           | 0           | 0           | 0   | 4   |
| Р/ТОТ | 145 | 59  | 6         | 0          | 4          | 3          | 0   | 217 | 17  | 1   | 0           | 0           | 0           | 0           | 0   | 18  |



DAY: THURSDAY

18/06/2015

JOB REF: 18988

JOB NAME: SHOREHAM ON SEA

1

SITE:

### LOCATION: NEW SALTS FARM ROAD / BRIGHTON ROAD / THE SALTINGS / PFS

AXIOM Traffic Limited

DATE:

DAY:

|       |     |     |           | В -        | · C        |            |     |     |     |     |             | В -         | в           |             |     |     |
|-------|-----|-----|-----------|------------|------------|------------|-----|-----|-----|-----|-------------|-------------|-------------|-------------|-----|-----|
| TIME  |     |     | FROM BRIG | GHTON ROAD | (SW) TO TH | E SALTINGS |     |     |     | F   | ROM BRIGHTO | ON ROAD (SW | ) TO BRIGHT | ON ROAD (SV | V)  |     |
|       | CAR | LGV | OGV1      | OGV2       | PSV        | MCL        | PCL | тот | CAR | LGV | OGV1        | OGV2        | PSV         | MCL         | PCL | тот |
| 16:00 | 12  | 4   | 0         | 0          | 0          | 0          | 0   | 16  | 1   | 0   | 0           | 0           | 0           | 0           | 0   | 1   |
| 16:15 | 20  | 6   | 0         | 0          | 0          | 0          | 0   | 26  | 2   | 0   | 0           | 0           | 0           | 0           | 0   | 2   |
| 16:30 | 19  | 6   | 0         | 0          | 0          | 0          | 0   | 25  | 0   | 0   | 0           | 0           | 0           | 0           | 0   | 0   |
| 16:45 | 20  | 5   | 0         | 0          | 0          | 0          | 1   | 26  | 2   | 0   | 0           | 0           | 0           | 0           | 0   | 2   |
| н/тот | 71  | 21  | 0         | 0          | 0          | 0          | 1   | 93  | 5   | 0   | 0           | 0           | 0           | 0           | 0   | 5   |
| 17:00 | 24  | 7   | 0         | 0          | 0          | 0          | 0   | 31  | 2   | 0   | 0           | 0           | 0           | 0           | 0   | 2   |
| 17:15 | 18  | 2   | 0         | 0          | 0          | 1          | 0   | 21  | 2   | 0   | 0           | 0           | 0           | 0           | 0   | 2   |
| 17:30 | 18  | 5   | 0         | 0          | 0          | 0          | 0   | 23  | 1   | 1   | 0           | 0           | 0           | 0           | 0   | 2   |
| 17:45 | 30  | 6   | 0         | 0          | 0          | 0          | 0   | 36  | 1   | 0   | 0           | 0           | 0           | 0           | 0   | 1   |
| н/тот | 90  | 20  | 0         | 0          | 0          | 1          | 0   | 111 | 6   | 1   | 0           | 0           | 0           | 0           | 0   | 7   |
| 18:00 | 33  | 3   | 0         | 0          | 0          | 1          | 0   | 37  | 0   | 0   | 0           | 0           | 0           | 0           | 0   | 0   |
| 18:15 | 13  | 3   | 0         | 0          | 0          | 0          | 0   | 16  | 1   | 0   | 0           | 0           | 0           | 0           | 0   | 1   |
| 18:30 | 24  | 4   | 0         | 0          | 0          | 0          | 0   | 28  | 0   | 0   | 0           | 0           | 0           | 0           | 0   | 0   |
| 18:45 | 20  | 2   | 0         | 0          | 0          | 0          | 0   | 22  | 0   | 0   | 0           | 0           | 0           | 0           | 0   | 0   |
| н/тот | 90  | 12  | 0         | 0          | 0          | 1          | 0   | 103 | 1   | 0   | 0           | 0           | 0           | 0           | 0   | 1   |
| Р/ТОТ | 251 | 53  | 0         | 0          | 0          | 2          | 1   | 307 | 12  | 1   | 0           | 0           | 0           | 0           | 0   | 13  |



18/06/2015

JOB REF: 18988

JOB NAME: SHOREHAM ON SEA

1

SITE:

### LOCATION: NEW SALTS FARM ROAD / BRIGHTON ROAD / THE SALTINGS / PFS



| DATE: | 18/06/2015 |
|-------|------------|
|-------|------------|

|       |     |     |          | C -         | В        |           |     |     |   |     |     |          | C -         | A           |          |     |     |
|-------|-----|-----|----------|-------------|----------|-----------|-----|-----|---|-----|-----|----------|-------------|-------------|----------|-----|-----|
| TIME  |     |     | FROM THE | SALTINGS TO | BRIGHTON | ROAD (SW) |     |     |   |     |     | FROM THE | SALTINGS TO | NEW SALTS F | ARM ROAD |     |     |
|       | CAR | LGV | OGV1     | OGV2        | PSV      | MCL       | PCL | тот | C | CAR | LGV | OGV1     | OGV2        | PSV         | MCL      | PCL | тот |
| 07:00 | 15  | 3   | 0        | 0           | 0        | 0         | 1   | 19  |   | 4   | 0   | 0        | 0           | 0           | 0        | 0   | 4   |
| 07:15 | 7   | 5   | 0        | 0           | 0        | 0         | 0   | 12  |   | 2   | 0   | 0        | 0           | 0           | 0        | 1   | 3   |
| 07:30 | 32  | 3   | 0        | 0           | 1        | 1         | 0   | 37  |   | 11  | 0   | 0        | 0           | 0           | 0        | 0   | 11  |
| 07:45 | 24  | 5   | 0        | 0           | 0        | 0         | 0   | 29  |   | 11  | 2   | 0        | 0           | 0           | 0        | 0   | 13  |
| н/тот | 78  | 16  | 0        | 0           | 1        | 1         | 1   | 97  |   | 28  | 2   | 0        | 0           | 0           | 0        | 1   | 31  |
| 08:00 | 23  | 12  | 1        | 1           | 0        | 1         | 0   | 38  |   | 17  | 0   | 0        | 0           | 0           | 0        | 1   | 18  |
| 08:15 | 21  | 4   | 2        | 0           | 0        | 1         | 0   | 28  |   | 15  | 0   | 0        | 0           | 0           | 1        | 1   | 17  |
| 08:30 | 22  | 11  | 1        | 0           | 0        | 1         | 0   | 35  |   | 11  | 0   | 0        | 0           | 0           | 0        | 0   | 11  |
| 08:45 | 33  | 0   | 1        | 0           | 0        | 0         | 0   | 34  |   | 5   | 0   | 0        | 0           | 0           | 0        | 0   | 5   |
| н/тот | 99  | 27  | 5        | 1           | 0        | 3         | 0   | 135 |   | 48  | 0   | 0        | 0           | 0           | 1        | 2   | 51  |
| 09:00 | 34  | 3   | 1        | 0           | 0        | 0         | 0   | 38  |   | 9   | 0   | 0        | 0           | 0           | 0        | 0   | 9   |
| 09:15 | 27  | 5   | 2        | 0           | 0        | 0         | 0   | 34  |   | 5   | 0   | 0        | 0           | 0           | 0        | 0   | 5   |
| 09:30 | 24  | 5   | 5        | 0           | 0        | 0         | 0   | 34  |   | 3   | 1   | 0        | 0           | 0           | 1        | 0   | 5   |
| 09:45 | 18  | 5   | 2        | 1           | 0        | 0         | 0   | 26  |   | 3   | 2   | 0        | 0           | 0           | 0        | 0   | 5   |
| н/тот | 103 | 18  | 10       | 1           | 0        | 0         | 0   | 132 |   | 20  | 3   | 0        | 0           | 0           | 1        | 0   | 24  |
| Р/ТОТ | 280 | 61  | 15       | 2           | 1        | 4         | 1   | 364 |   | 96  | 5   | 0        | 0           | 0           | 2        | 3   | 106 |

JOB REF: 18988

JOB NAME: SHOREHAM ON SEA

1

SITE:

#### LOCATION: NEW SALTS FARM ROAD / BRIGHTON ROAD / THE SALTINGS / PES

**AXIOM** Traffic Limited

| OCATION: | NEW SALI | S FARIVI R | UAD / BRIC | SHION ROA   | AD / THE S | ALTINGS / | PF5 |     |     |     |          |             |             | DAY: | THURSDA | Ŷ   |
|----------|----------|------------|------------|-------------|------------|-----------|-----|-----|-----|-----|----------|-------------|-------------|------|---------|-----|
|          |          |            |            | C -         | ·B         |           |     |     |     |     |          | C -         | A           |      |         |     |
| TIME     |          |            | FROM THE   | SALTINGS TO | BRIGHTON   | ROAD (SW) |     |     |     |     | FROM THE | SALTINGS TO | NEW SALTS F |      | )       |     |
|          | CAR      | LGV        | OGV1       | OGV2        | PSV        | MCL       | PCL | тот | CAR | LGV | OGV1     | OGV2        | PSV         | MCL  | PCL     | тот |
| 16:00    | 31       | 9          | 0          | 0           | 0          | 1         | 0   | 41  | 3   | 0   | 0        | 0           | 0           | 0    | 0       | 3   |
| 16:15    | 27       | 8          | 0          | 0           | 0          | 0         | 0   | 35  | 2   | 1   | 0        | 0           | 0           | 0    | 1       | 4   |
| 16:30    | 21       | 9          | 0          | 0           | 1          | 0         | 0   | 31  | 3   | 0   | 0        | 0           | 0           | 0    | 0       | 3   |
| 16:45    | 15       | 9          | 1          | 0           | 0          | 1         | 0   | 26  | 4   | 0   | 0        | 0           | 0           | 0    | 2       | 6   |
| н/тот    | 94       | 35         | 1          | 0           | 1          | 2         | 0   | 133 | 12  | 1   | 0        | 0           | 0           | 0    | 3       | 16  |
| 17:00    | 20       | 7          | 0          | 0           | 0          | 0         | 0   | 27  | 5   | 1   | 0        | 0           | 0           | 0    | 0       | 6   |
| 17:15    | 17       | 6          | 0          | 0           | 0          | 1         | 0   | 24  | 3   | 0   | 0        | 0           | 0           | 0    | 0       | 3   |
| 17:30    | 27       | 2          | 0          | 0           | 0          | 1         | 0   | 30  | 3   | 0   | 0        | 0           | 0           | 0    | 0       | 3   |
| 17:45    | 24       | 2          | 0          | 0           | 0          | 1         | 0   | 27  | 2   | 0   | 0        | 0           | 0           | 0    | 0       | 2   |
| н/тот    | 88       | 17         | 0          | 0           | 0          | 3         | 0   | 108 | 13  | 1   | 0        | 0           | 0           | 0    | 0       | 14  |
| 18:00    | 39       | 6          | 0          | 0           | 0          | 0         | 0   | 45  | 2   | 0   | 0        | 0           | 0           | 0    | 0       | 2   |
| 18:15    | 20       | 4          | 0          | 0           | 0          | 0         | 3   | 27  | 3   | 0   | 0        | 0           | 0           | 0    | 0       | 3   |
| 18:30    | 29       | 2          | 0          | 0           | 1          | 0         | 3   | 35  | 4   | 0   | 0        | 0           | 0           | 0    | 1       | 5   |
| 18:45    | 24       | 2          | 0          | 0           | 0          | 0         | 0   | 26  | 4   | 0   | 0        | 0           | 0           | 0    | 0       | 4   |
| н/тот    | 112      | 14         | 0          | 0           | 1          | 0         | 6   | 133 | 13  | 0   | 0        | 0           | 0           | 0    | 1       | 14  |
| P/TOT    | 294      | 66         | 1          | 0           | 2          | 5         | 6   | 374 | 38  | 2   | 0        | 0           | 0           | 0    | 4       | 44  |



THURSDAY DAV.

JOB REF: 18988

JOB NAME: SHOREHAM ON SEA

1

SITE:

### LOCATION: NEW SALTS FARM ROAD / BRIGHTON ROAD / THE SALTINGS / PFS

AXIOM Traffic Limited

|       |     |     |          | C -         | E        |           |     |      |     |     |      | C -         | D           |     |     |     |
|-------|-----|-----|----------|-------------|----------|-----------|-----|------|-----|-----|------|-------------|-------------|-----|-----|-----|
| TIME  |     |     | FROM THE | SALTINGS TO | BRIGHTON | ROAD (NE) |     |      |     |     | F    | ROM THE SAL | TINGS TO PF | S   |     |     |
|       | CAR | LGV | OGV1     | OGV2        | PSV      | MCL       | PCL | тот  | CAR | LGV | OGV1 | OGV2        | PSV         | MCL | PCL | тот |
| 07:00 | 52  | 12  | 0        | 0           | 0        | 2         | 0   | 66   | 0   | 0   | 0    | 0           | 0           | 0   | 0   | 0   |
| 07:15 | 55  | 16  | 2        | 1           | 0        | 2         | 0   | 76   | 0   | 0   | 0    | 0           | 0           | 0   | 0   | 0   |
| 07:30 | 91  | 17  | 0        | 0           | 2        | 0         | 0   | 110  | 0   | 0   | 0    | 0           | 0           | 0   | 0   | 0   |
| 07:45 | 91  | 16  | 0        | 0           | 2        | 3         | 1   | 113  | 0   | 0   | 0    | 0           | 0           | 0   | 0   | 0   |
| н/тот | 289 | 61  | 2        | 1           | 4        | 7         | 1   | 365  | 0   | 0   | 0    | 0           | 0           | 0   | 0   | 0   |
| 08:00 | 100 | 22  | 1        | 0           | 0        | 1         | 0   | 124  | 0   | 0   | 0    | 0           | 0           | 0   | 0   | 0   |
| 08:15 | 118 | 20  | 0        | 1           | 0        | 1         | 0   | 140  | 0   | 0   | 0    | 0           | 0           | 0   | 0   | 0   |
| 08:30 | 118 | 10  | 1        | 0           | 1        | 2         | 0   | 132  | 0   | 0   | 0    | 0           | 0           | 0   | 0   | 0   |
| 08:45 | 77  | 12  | 0        | 0           | 0        | 1         | 0   | 90   | 0   | 0   | 0    | 0           | 0           | 0   | 0   | 0   |
| н/тот | 413 | 64  | 2        | 1           | 1        | 5         | 0   | 486  | 0   | 0   | 0    | 0           | 0           | 0   | 0   | 0   |
| 09:00 | 74  | 9   | 0        | 0           | 1        | 0         | 0   | 84   | 2   | 0   | 0    | 0           | 0           | 0   | 0   | 2   |
| 09:15 | 60  | 7   | 0        | 0           | 1        | 1         | 0   | 69   | 0   | 0   | 0    | 0           | 0           | 0   | 0   | 0   |
| 09:30 | 60  | 13  | 0        | 0           | 2        | 0         | 1   | 76   | 0   | 0   | 0    | 0           | 0           | 0   | 0   | 0   |
| 09:45 | 60  | 7   | 1        | 0           | 1        | 0         | 0   | 69   | 0   | 0   | 0    | 0           | 0           | 0   | 0   | 0   |
| н/тот | 254 | 36  | 1        | 0           | 5        | 1         | 1   | 298  | 2   | 0   | 0    | 0           | 0           | 0   | 0   | 2   |
| P/TOT | 956 | 161 | 5        | 2           | 10       | 13        | 2   | 1149 | 2   | 0   | 0    | 0           | 0           | 0   | 0   | 2   |

DATE: 18/06/2015

JOB REF: 18988

JOB NAME: SHOREHAM ON SEA

1

SITE:

#### NEW SALTS FARM ROAD / BRIGHTON ROAD / THE SALTINGS / PFS LOCATION:

AXIOM Traffic Limited

DATE:

DAY:

|       |     |     |          | C ·         | E        |           |     |     |     |     |      | C -         | D           |     |     |     |
|-------|-----|-----|----------|-------------|----------|-----------|-----|-----|-----|-----|------|-------------|-------------|-----|-----|-----|
| TIME  |     |     | FROM THE | SALTINGS TO | BRIGHTON | ROAD (NE) |     |     |     |     | F    | ROM THE SAL | TINGS TO PF | S   |     |     |
|       | CAR | LGV | OGV1     | OGV2        | PSV      | MCL       | PCL | тот | CAR | LGV | OGV1 | OGV2        | PSV         | MCL | PCL | тот |
| 16:00 | 52  | 9   | 2        | 0           | 1        | 1         | 3   | 68  | 0   | 0   | 0    | 0           | 0           | 0   | 0   | 0   |
| 16:15 | 68  | 8   | 0        | 1           | 1        | 0         | 1   | 79  | 0   | 0   | 0    | 0           | 0           | 0   | 0   | 0   |
| 16:30 | 72  | 11  | 0        | 0           | 2        | 2         | 2   | 89  | 0   | 0   | 0    | 0           | 0           | 0   | 0   | 0   |
| 16:45 | 44  | 14  | 1        | 0           | 0        | 2         | 2   | 63  | 0   | 1   | 0    | 0           | 0           | 0   | 0   | 1   |
| н/тот | 236 | 42  | 3        | 1           | 4        | 5         | 8   | 299 | 0   | 1   | 0    | 0           | 0           | 0   | 0   | 1   |
| 17:00 | 56  | 10  | 0        | 0           | 0        | 0         | 1   | 67  | 0   | 0   | 0    | 0           | 0           | 0   | 0   | 0   |
| 17:15 | 43  | 14  | 0        | 0           | 0        | 1         | 4   | 62  | 0   | 0   | 0    | 0           | 0           | 0   | 0   | 0   |
| 17:30 | 54  | 14  | 0        | 0           | 1        | 0         | 0   | 69  | 0   | 0   | 0    | 0           | 0           | 0   | 0   | 0   |
| 17:45 | 58  | 4   | 0        | 0           | 0        | 0         | 1   | 63  | 0   | 0   | 0    | 0           | 0           | 0   | 0   | 0   |
| н/тот | 211 | 42  | 0        | 0           | 1        | 1         | 6   | 261 | 0   | 0   | 0    | 0           | 0           | 0   | 0   | 0   |
| 18:00 | 46  | 3   | 0        | 0           | 0        | 1         | 1   | 51  | 0   | 0   | 0    | 0           | 0           | 0   | 0   | 0   |
| 18:15 | 46  | 7   | 0        | 0           | 0        | 0         | 0   | 53  | 0   | 0   | 0    | 0           | 0           | 0   | 0   | 0   |
| 18:30 | 49  | 6   | 0        | 1           | 0        | 1         | 1   | 58  | 0   | 1   | 0    | 0           | 0           | 0   | 0   | 1   |
| 18:45 | 54  | 2   | 0        | 0           | 0        | 2         | 1   | 59  | 0   | 0   | 0    | 0           | 0           | 0   | 0   | 0   |
| н/тот | 195 | 18  | 0        | 1           | 0        | 4         | 3   | 221 | 0   | 1   | 0    | 0           | 0           | 0   | 0   | 1   |
| P/TOT | 642 | 102 | 3        | 2           | 5        | 10        | 17  | 781 | 0   | 2   | 0    | 0           | 0           | 0   | 0   | 2   |



18/06/2015

JOB REF: 18988

JOB NAME: SHOREHAM ON SEA

1

SITE:

### LOCATION: NEW SALTS FARM ROAD / BRIGHTON ROAD / THE SALTINGS / PFS

AXIOM Traffic Limited

|       |     |     |      | C -         | C           |        |     |     |     |     |      | D          | - C         |     |     |     |
|-------|-----|-----|------|-------------|-------------|--------|-----|-----|-----|-----|------|------------|-------------|-----|-----|-----|
| TIME  |     |     | FROM | THE SALTING | S TO THE SA | LTINGS |     |     |     |     | F    | ROM PFS TO | THE SALTING | iS  |     |     |
|       | CAR | LGV | OGV1 | OGV2        | PSV         | MCL    | PCL | тот | CAR | LGV | OGV1 | OGV2       | PSV         | MCL | PCL | тот |
| 07:00 | 0   | 0   | 0    | 0           | 0           | 0      | 0   | 0   | 0   | 0   | 0    | 0          | 0           | 0   | 1   | 1   |
| 07:15 | 0   | 0   | 0    | 0           | 0           | 0      | 0   | 0   | 0   | 0   | 0    | 0          | 0           | 0   | 0   | 0   |
| 07:30 | 0   | 0   | 0    | 0           | 0           | 0      | 0   | 0   | 0   | 0   | 0    | 0          | 0           | 1   | 0   | 1   |
| 07:45 | 0   | 0   | 0    | 0           | 0           | 0      | 0   | 0   | 0   | 0   | 1    | 0          | 0           | 0   | 2   | 3   |
| н/тот | 0   | 0   | 0    | 0           | 0           | 0      | 0   | 0   | 0   | 0   | 1    | 0          | 0           | 1   | 3   | 5   |
| 08:00 | 0   | 0   | 0    | 0           | 0           | 0      | 0   | 0   | 0   | 0   | 0    | 0          | 0           | 0   | 0   | 0   |
| 08:15 | 0   | 0   | 0    | 0           | 0           | 0      | 0   | 0   | 0   | 0   | 0    | 0          | 0           | 0   | 0   | 0   |
| 08:30 | 0   | 0   | 0    | 0           | 0           | 0      | 0   | 0   | 0   | 0   | 0    | 0          | 0           | 0   | 0   | 0   |
| 08:45 | 0   | 0   | 0    | 0           | 0           | 0      | 0   | 0   | 1   | 0   | 0    | 0          | 0           | 0   | 1   | 2   |
| н/тот | 0   | 0   | 0    | 0           | 0           | 0      | 0   | 0   | 1   | 0   | 0    | 0          | 0           | 0   | 1   | 2   |
| 09:00 | 0   | 0   | 0    | 0           | 0           | 0      | 0   | 0   | 0   | 0   | 0    | 0          | 0           | 0   | 0   | 0   |
| 09:15 | 0   | 0   | 0    | 0           | 0           | 0      | 0   | 0   | 0   | 0   | 0    | 0          | 0           | 0   | 4   | 4   |
| 09:30 | 0   | 0   | 0    | 0           | 0           | 0      | 0   | 0   | 1   | 0   | 0    | 0          | 0           | 0   | 1   | 2   |
| 09:45 | 0   | 0   | 0    | 0           | 0           | 0      | 0   | 0   | 0   | 0   | 0    | 0          | 0           | 0   | 3   | 3   |
| н/тот | 0   | 0   | 0    | 0           | 0           | 0      | 0   | 0   | 1   | 0   | 0    | 0          | 0           | 0   | 8   | 9   |
| P/TOT | 0   | 0   | 0    | 0           | 0           | 0      | 0   | 0   | 2   | 0   | 1    | 0          | 0           | 1   | 12  | 16  |

DATE: 18/06/2015

JOB REF: 18988

JOB NAME: SHOREHAM ON SEA

1

SITE:

### LOCATION: NEW SALTS FARM ROAD / BRIGHTON ROAD / THE SALTINGS / PFS

AXIOM Traffic Limited

|       |     |     |      | C ·         | · C         |        |     |     |     |     |      | D·         | · C         |     |     |     |
|-------|-----|-----|------|-------------|-------------|--------|-----|-----|-----|-----|------|------------|-------------|-----|-----|-----|
| TIME  |     |     | FROM | THE SALTING | S TO THE SA | LTINGS |     |     |     |     | F    | ROM PFS TO | THE SALTING | iS  |     |     |
|       | CAR | LGV | OGV1 | OGV2        | PSV         | MCL    | PCL | тот | CAR | LGV | OGV1 | OGV2       | PSV         | MCL | PCL | тот |
| 16:00 | 1   | 0   | 0    | 0           | 0           | 0      | 0   | 1   | 0   | 0   | 0    | 0          | 0           | 0   | 2   | 2   |
| 16:15 | 0   | 0   | 0    | 0           | 0           | 0      | 0   | 0   | 2   | 0   | 0    | 0          | 0           | 0   | 2   | 4   |
| 16:30 | 0   | 0   | 0    | 0           | 0           | 0      | 0   | 0   | 3   | 0   | 0    | 0          | 0           | 0   | 4   | 7   |
| 16:45 | 0   | 0   | 0    | 0           | 0           | 0      | 0   | 0   | 1   | 0   | 0    | 0          | 0           | 0   | 0   | 1   |
| н/тот | 1   | 0   | 0    | 0           | 0           | 0      | 0   | 1   | 6   | 0   | 0    | 0          | 0           | 0   | 8   | 14  |
| 17:00 | 0   | 0   | 0    | 0           | 0           | 0      | 0   | 0   | 1   | 0   | 0    | 0          | 0           | 0   | 0   | 1   |
| 17:15 | 0   | 0   | 0    | 0           | 0           | 0      | 0   | 0   | 0   | 0   | 0    | 0          | 0           | 0   | 1   | 1   |
| 17:30 | 0   | 0   | 0    | 0           | 0           | 0      | 0   | 0   | 0   | 1   | 0    | 0          | 0           | 0   | 1   | 2   |
| 17:45 | 0   | 0   | 0    | 0           | 0           | 0      | 0   | 0   | 3   | 0   | 0    | 0          | 0           | 0   | 3   | 6   |
| н/тот | 0   | 0   | 0    | 0           | 0           | 0      | 0   | 0   | 4   | 1   | 0    | 0          | 0           | 0   | 5   | 10  |
| 18:00 | 0   | 1   | 0    | 0           | 0           | 0      | 0   | 1   | 3   | 0   | 0    | 0          | 0           | 0   | 0   | 3   |
| 18:15 | 0   | 0   | 0    | 0           | 0           | 0      | 0   | 0   | 2   | 0   | 0    | 0          | 0           | 0   | 1   | 3   |
| 18:30 | 0   | 0   | 0    | 0           | 0           | 0      | 0   | 0   | 1   | 0   | 0    | 0          | 0           | 0   | 3   | 4   |
| 18:45 | 0   | 0   | 0    | 0           | 0           | 0      | 0   | 0   | 1   | 0   | 0    | 0          | 0           | 0   | 0   | 1   |
| н/тот | 0   | 1   | 0    | 0           | 0           | 0      | 0   | 1   | 7   | 0   | 0    | 0          | 0           | 0   | 4   | 11  |
| P/TOT | 1   | 1   | 0    | 0           | 0           | 0      | 0   | 2   | 17  | 1   | 0    | 0          | 0           | 0   | 17  | 35  |

DATE: 18/06/2015

JOB REF: 18988

JOB NAME: SHOREHAM ON SEA

1

SITE:

#### NEW SALTS FARM ROAD / BRIGHTON ROAD / THE SALTINGS / PFS LOCATION:

AXIOM Traffic Limited

DATE:

DAY:

|       |     |     |      | D -           | В         |      |     |     |     |     |      | D -        | A          |      |     |     |
|-------|-----|-----|------|---------------|-----------|------|-----|-----|-----|-----|------|------------|------------|------|-----|-----|
| TIME  |     |     | FROM | I PFS TO BRIG | HTON ROAD | (SW) |     |     |     |     | FROM | PFS TO NEW | SALTS FARM | ROAD |     |     |
|       | CAR | LGV | OGV1 | OGV2          | PSV       | MCL  | PCL | тот | CAR | LGV | OGV1 | OGV2       | PSV        | MCL  | PCL | тот |
| 07:00 | 0   | 0   | 0    | 0             | 0         | 0    | 1   | 1   | 1   | 0   | 0    | 0          | 0          | 0    | 0   | 1   |
| 07:15 | 0   | 0   | 0    | 0             | 0         | 0    | 0   | 0   | 0   | 0   | 0    | 0          | 0          | 0    | 0   | 0   |
| 07:30 | 3   | 0   | 0    | 0             | 0         | 0    | 0   | 3   | 0   | 0   | 0    | 0          | 0          | 0    | 0   | 0   |
| 07:45 | 0   | 0   | 0    | 0             | 0         | 0    | 0   | 0   | 1   | 0   | 0    | 0          | 0          | 0    | 0   | 1   |
| н/тот | 3   | 0   | 0    | 0             | 0         | 0    | 1   | 4   | 2   | 0   | 0    | 0          | 0          | 0    | 0   | 2   |
| 08:00 | 1   | 0   | 0    | 1             | 0         | 0    | 0   | 2   | 2   | 0   | 0    | 0          | 0          | 0    | 0   | 2   |
| 08:15 | 0   | 0   | 0    | 0             | 0         | 0    | 2   | 2   | 0   | 0   | 0    | 0          | 0          | 0    | 0   | 0   |
| 08:30 | 2   | 0   | 0    | 0             | 0         | 0    | 0   | 2   | 0   | 0   | 0    | 0          | 0          | 0    | 0   | 0   |
| 08:45 | 0   | 1   | 0    | 0             | 0         | 0    | 0   | 1   | 0   | 0   | 0    | 0          | 0          | 0    | 0   | 0   |
| н/тот | 3   | 1   | 0    | 1             | 0         | 0    | 2   | 7   | 2   | 0   | 0    | 0          | 0          | 0    | 0   | 2   |
| 09:00 | 0   | 0   | 0    | 0             | 0         | 0    | 0   | 0   | 1   | 0   | 0    | 0          | 0          | 0    | 0   | 1   |
| 09:15 | 3   | 0   | 0    | 0             | 0         | 0    | 0   | 3   | 0   | 0   | 0    | 0          | 0          | 0    | 0   | 0   |
| 09:30 | 0   | 0   | 0    | 0             | 0         | 0    | 0   | 0   | 0   | 0   | 0    | 0          | 0          | 0    | 0   | 0   |
| 09:45 | 1   | 0   | 0    | 0             | 0         | 0    | 0   | 1   | 0   | 0   | 0    | 0          | 0          | 0    | 0   | 0   |
| н/тот | 4   | 0   | 0    | 0             | 0         | 0    | 0   | 4   | 1   | 0   | 0    | 0          | 0          | 0    | 0   | 1   |
| P/TOT | 10  | 1   | 0    | 1             | 0         | 0    | 3   | 15  | 5   | 0   | 0    | 0          | 0          | 0    | 0   | 5   |



18/06/2015

JOB REF: 18988

JOB NAME: SHOREHAM ON SEA

1

SITE:

#### NEW SALTS FARM ROAD / BRIGHTON ROAD / THE SALTINGS / PFS LOCATION:

Traffic Limited

DATE:

DAY:

|       |     |     |      | D -           | В         |      |     |     |     |     |      | D -        | Α          |      |     |     |
|-------|-----|-----|------|---------------|-----------|------|-----|-----|-----|-----|------|------------|------------|------|-----|-----|
| TIME  |     |     | FROM | 1 PFS TO BRIG | HTON ROAD | (SW) |     |     |     |     | FROM | PFS TO NEW | SALTS FARM | ROAD |     |     |
|       | CAR | LGV | OGV1 | OGV2          | PSV       | MCL  | PCL | тот | CAR | LGV | OGV1 | OGV2       | PSV        | MCL  | PCL | тот |
| 16:00 | 3   | 1   | 0    | 0             | 0         | 0    | 0   | 4   | 0   | 1   | 0    | 0          | 0          | 0    | 0   | 1   |
| 16:15 | 0   | 1   | 0    | 0             | 0         | 0    | 0   | 1   | 0   | 0   | 0    | 0          | 0          | 0    | 0   | 0   |
| 16:30 | 1   | 0   | 0    | 0             | 0         | 0    | 0   | 1   | 0   | 0   | 0    | 0          | 0          | 0    | 0   | 0   |
| 16:45 | 0   | 2   | 0    | 0             | 0         | 1    | 2   | 5   | 0   | 0   | 0    | 0          | 0          | 0    | 0   | 0   |
| н/тот | 4   | 4   | 0    | 0             | 0         | 1    | 2   | 11  | 0   | 1   | 0    | 0          | 0          | 0    | 0   | 1   |
| 17:00 | 2   | 0   | 0    | 0             | 0         | 0    | 0   | 2   | 0   | 0   | 0    | 0          | 0          | 0    | 0   | 0   |
| 17:15 | 1   | 0   | 0    | 0             | 0         | 0    | 0   | 1   | 0   | 0   | 0    | 0          | 0          | 0    | 0   | 0   |
| 17:30 | 2   | 0   | 0    | 0             | 0         | 0    | 2   | 4   | 0   | 0   | 0    | 0          | 0          | 0    | 0   | 0   |
| 17:45 | 0   | 0   | 0    | 0             | 0         | 0    | 1   | 1   | 2   | 0   | 0    | 0          | 0          | 0    | 0   | 2   |
| н/тот | 5   | 0   | 0    | 0             | 0         | 0    | 3   | 8   | 2   | 0   | 0    | 0          | 0          | 0    | 0   | 2   |
| 18:00 | 3   | 0   | 0    | 0             | 0         | 0    | 1   | 4   | 0   | 0   | 0    | 0          | 0          | 0    | 0   | 0   |
| 18:15 | 1   | 1   | 0    | 0             | 0         | 0    | 0   | 2   | 0   | 0   | 0    | 0          | 0          | 0    | 0   | 0   |
| 18:30 | 3   | 0   | 0    | 0             | 0         | 0    | 0   | 3   | 0   | 0   | 0    | 0          | 0          | 0    | 0   | 0   |
| 18:45 | 0   | 0   | 0    | 0             | 0         | 0    | 0   | 0   | 0   | 0   | 0    | 0          | 0          | 0    | 0   | 0   |
| н/тот | 7   | 1   | 0    | 0             | 0         | 0    | 1   | 9   | 0   | 0   | 0    | 0          | 0          | 0    | 0   | 0   |
| P/TOT | 16  | 5   | 0    | 0             | 0         | 1    | 6   | 28  | 2   | 1   | 0    | 0          | 0          | 0    | 0   | 3   |



18/06/2015

JOB REF: 18988

JOB NAME: SHOREHAM ON SEA

1

SITE:

### LOCA

AXIOM Traffic Limited

DATE: 18/06/2015

| ATION: | NEW SALT | 'S FARM R | OAD / BRIC | SHTON ROA      | AD / THE S | ALTINGS / | PFS |     |     |     |      |         |          | DAY: | THURSDA | Y   |
|--------|----------|-----------|------------|----------------|------------|-----------|-----|-----|-----|-----|------|---------|----------|------|---------|-----|
|        |          |           |            | D              | ·E         |           |     |     |     |     |      | D·      | · D      |      |         | _   |
| TIME   |          |           | FROM       | VI PFS TO BRIG | GHTON ROAD | ) (NE)    |     |     |     |     |      | FROM PF | S TO PFS |      |         |     |
|        | CAR      | LGV       | OGV1       | OGV2           | PSV        | MCL       | PCL | тот | CAR | LGV | OGV1 | OGV2    | PSV      | MCL  | PCL     | тот |
| 07:00  | 1        | 0         | 0          | 0              | 0          | 0         | 0   | 1   | 0   | 0   | 0    | 0       | 0        | 0    | 0       | 0   |
| 07:15  | 2        | 0         | 0          | 0              | 0          | 0         | 0   | 2   | 0   | 0   | 0    | 0       | 0        | 0    | 0       | 0   |
| 07:30  | 0        | 2         | 0          | 0              | 0          | 0         | 0   | 2   | 0   | 0   | 0    | 0       | 0        | 0    | 0       | 0   |
| 07:45  | 1        | 0         | 0          | 0              | 1          | 0         | 0   | 2   | 0   | 0   | 0    | 0       | 0        | 0    | 0       | 0   |
| н/тот  | 4        | 2         | 0          | 0              | 1          | 0         | 0   | 7   | 0   | 0   | 0    | 0       | 0        | 0    | 0       | 0   |
| 08:00  | 1        | 0         | 0          | 0              | 0          | 0         | 0   | 1   | 0   | 0   | 0    | 0       | 0        | 0    | 0       | 0   |
| 08:15  | 1        | 0         | 0          | 0              | 0          | 0         | 0   | 1   | 0   | 0   | 0    | 0       | 0        | 0    | 0       | 0   |
| 08:30  | 1        | 1         | 0          | 0              | 0          | 0         | 0   | 2   | 0   | 0   | 0    | 0       | 0        | 0    | 0       | 0   |
| 08:45  | 2        | 3         | 0          | 0              | 0          | 0         | 0   | 5   | 0   | 0   | 0    | 0       | 0        | 0    | 0       | 0   |
| н/тот  | 5        | 4         | 0          | 0              | 0          | 0         | 0   | 9   | 0   | 0   | 0    | 0       | 0        | 0    | 0       | 0   |
| 09:00  | 1        | 0         | 0          | 0              | 0          | 0         | 0   | 1   | 0   | 0   | 0    | 0       | 0        | 0    | 0       | 0   |
| 09:15  | 0        | 0         | 0          | 0              | 0          | 0         | 0   | 0   | 0   | 0   | 0    | 0       | 0        | 0    | 0       | 0   |
| 09:30  | 0        | 0         | 0          | 0              | 0          | 0         | 0   | 0   | 0   | 0   | 0    | 0       | 0        | 0    | 0       | 0   |
| 09:45  | 1        | 0         | 0          | 0              | 0          | 1         | 0   | 2   | 0   | 0   | 0    | 0       | 0        | 0    | 0       | 0   |
| н/тот  | 2        | 0         | 0          | 0              | 0          | 1         | 0   | 3   | 0   | 0   | 0    | 0       | 0        | 0    | 0       | 0   |
| P/TOT  | 11       | 6         | 0          | 0              | 1          | 1         | 0   | 19  | 0   | 0   | 0    | 0       | 0        | 0    | 0       | 0   |

JOB REF: 18988

JOB NAME: SHOREHAM ON SEA

1

SITE:

### LOCATION: NEW SALTS FARM ROAD / BRIGHTON ROAD / THE SALTINGS / PFS

AXIOM Traffic Limited

| DATE: | 18/06/2015 |
|-------|------------|
| DAY:  | THURSDAY   |

|       |     |     |      | D              | F          |        |     |     |     |     |      | D       | D        |     |     |     |
|-------|-----|-----|------|----------------|------------|--------|-----|-----|-----|-----|------|---------|----------|-----|-----|-----|
|       |     |     |      |                | · E        |        |     |     |     |     |      |         |          |     |     |     |
| TIME  |     |     | FROM | VI PFS TO BRIG | GHTON ROAD | D (NE) |     |     |     |     |      | FROM PF | S TO PFS |     |     | -   |
|       | CAR | LGV | OGV1 | OGV2           | PSV        | MCL    | PCL | тот | CAR | LGV | OGV1 | OGV2    | PSV      | MCL | PCL | тот |
| 16:00 | 0   | 0   | 0    | 1              | 0          | 0      | 0   | 1   | 0   | 0   | 0    | 0       | 0        | 0   | 0   | 0   |
| 16:15 | 1   | 0   | 0    | 0              | 0          | 0      | 0   | 1   | 0   | 0   | 0    | 0       | 0        | 0   | 0   | 0   |
| 16:30 | 0   | 0   | 0    | 0              | 0          | 0      | 0   | 0   | 0   | 0   | 0    | 0       | 0        | 0   | 0   | 0   |
| 16:45 | 0   | 0   | 0    | 0              | 0          | 0      | 0   | 0   | 0   | 0   | 0    | 0       | 0        | 0   | 0   | 0   |
| н/тот | 1   | 0   | 0    | 1              | 0          | 0      | 0   | 2   | 0   | 0   | 0    | 0       | 0        | 0   | 0   | 0   |
| 17:00 | 1   | 0   | 0    | 0              | 0          | 0      | 0   | 1   | 0   | 0   | 0    | 0       | 0        | 0   | 0   | 0   |
| 17:15 | 1   | 0   | 0    | 0              | 0          | 0      | 0   | 1   | 0   | 0   | 0    | 0       | 0        | 0   | 0   | 0   |
| 17:30 | 0   | 0   | 0    | 0              | 0          | 0      | 0   | 0   | 0   | 0   | 0    | 0       | 0        | 0   | 0   | 0   |
| 17:45 | 1   | 0   | 0    | 0              | 0          | 0      | 0   | 1   | 0   | 0   | 0    | 0       | 0        | 0   | 0   | 0   |
| н/тот | 3   | 0   | 0    | 0              | 0          | 0      | 0   | 3   | 0   | 0   | 0    | 0       | 0        | 0   | 0   | 0   |
| 18:00 | 1   | 0   | 0    | 0              | 0          | 0      | 0   | 1   | 0   | 0   | 0    | 0       | 0        | 0   | 0   | 0   |
| 18:15 | 0   | 0   | 0    | 0              | 0          | 0      | 0   | 0   | 0   | 0   | 0    | 0       | 0        | 0   | 0   | 0   |
| 18:30 | 0   | 1   | 0    | 0              | 0          | 0      | 0   | 1   | 0   | 0   | 0    | 0       | 0        | 0   | 0   | 0   |
| 18:45 | 1   | 0   | 0    | 0              | 0          | 0      | 0   | 1   | 0   | 0   | 0    | 0       | 0        | 0   | 0   | 0   |
| н/тот | 2   | 1   | 0    | 0              | 0          | 0      | 0   | 3   | 0   | 0   | 0    | 0       | 0        | 0   | 0   | 0   |
| Р/ТОТ | 6   | 1   | 0    | 1              | 0          | 0      | 0   | 8   | 0   | 0   | 0    | 0       | 0        | 0   | 0   | 0   |

JOB REF: 18988

JOB NAME: SHOREHAM ON SEA

1

SITE:

### LOCATION: NEW SALTS FARM ROAD / BRIGHTON ROAD / THE SALTINGS / PFS

AXIOM Traffic Limited

|       |     |     |      | E -         | D            |       |     |     |     |     |          | E -        | C           |          |     |     |
|-------|-----|-----|------|-------------|--------------|-------|-----|-----|-----|-----|----------|------------|-------------|----------|-----|-----|
| TIME  |     |     | FROM | /I BRIGHTON | ROAD (NE) TO | O PFS |     |     |     |     | FROM BRI | GHTON ROAD | (NE) TO THE | SALTINGS |     |     |
|       | CAR | LGV | OGV1 | OGV2        | PSV          | MCL   | PCL | тот | CAR | LGV | OGV1     | OGV2       | PSV         | MCL      | PCL | тот |
| 07:00 | 0   | 0   | 0    | 1           | 0            | 0     | 0   | 1   | 14  | 5   | 1        | 0          | 1           | 0        | 0   | 21  |
| 07:15 | 0   | 0   | 0    | 0           | 0            | 0     | 0   | 0   | 12  | 2   | 1        | 0          | 1           | 0        | 0   | 16  |
| 07:30 | 0   | 0   | 0    | 0           | 0            | 0     | 0   | 0   | 14  | 4   | 1        | 0          | 0           | 0        | 0   | 19  |
| 07:45 | 0   | 0   | 0    | 0           | 0            | 0     | 0   | 0   | 24  | 5   | 1        | 2          | 0           | 0        | 0   | 32  |
| н/тот | 0   | 0   | 0    | 1           | 0            | 0     | 0   | 1   | 64  | 16  | 4        | 2          | 2           | 0        | 0   | 88  |
| 08:00 | 0   | 0   | 0    | 0           | 0            | 0     | 0   | 0   | 21  | 9   | 2        | 0          | 0           | 2        | 0   | 34  |
| 08:15 | 1   | 1   | 0    | 0           | 0            | 0     | 0   | 2   | 41  | 10  | 1        | 0          | 1           | 0        | 0   | 53  |
| 08:30 | 0   | 0   | 0    | 0           | 0            | 0     | 0   | 0   | 36  | 7   | 0        | 0          | 0           | 0        | 2   | 45  |
| 08:45 | 2   | 0   | 0    | 0           | 0            | 0     | 0   | 2   | 41  | 4   | 2        | 0          | 0           | 1        | 0   | 48  |
| н/тот | 3   | 1   | 0    | 0           | 0            | 0     | 0   | 4   | 139 | 30  | 5        | 0          | 1           | 3        | 2   | 180 |
| 09:00 | 0   | 0   | 0    | 0           | 0            | 0     | 0   | 0   | 47  | 14  | 3        | 0          | 0           | 0        | 0   | 64  |
| 09:15 | 1   | 0   | 0    | 0           | 0            | 0     | 0   | 1   | 36  | 4   | 4        | 0          | 2           | 0        | 1   | 47  |
| 09:30 | 0   | 0   | 0    | 0           | 0            | 0     | 0   | 0   | 26  | 7   | 1        | 1          | 1           | 0        | 0   | 36  |
| 09:45 | 1   | 0   | 0    | 0           | 0            | 0     | 0   | 1   | 31  | 8   | 2        | 3          | 2           | 0        | 0   | 46  |
| н/тот | 2   | 0   | 0    | 0           | 0            | 0     | 0   | 2   | 140 | 33  | 10       | 4          | 5           | 0        | 1   | 193 |
| P/TOT | 5   | 1   | 0    | 1           | 0            | 0     | 0   | 7   | 343 | 79  | 19       | 6          | 8           | 3        | 3   | 461 |



JOB REF: 18988

JOB NAME: SHOREHAM ON SEA

1

SITE:

#### NEW SALTS FARM ROAD / BRIGHTON ROAD / THE SALTINGS / PFS LOCATION:

AXIOM Traffic Limited

DATE:

DAY:

|       |     |     |      | E -      | D           |       |     |     |      |     |          | E -        | С           |          |     |      |
|-------|-----|-----|------|----------|-------------|-------|-----|-----|------|-----|----------|------------|-------------|----------|-----|------|
| TIME  |     |     | FROM | BRIGHTON | ROAD (NE) T | O PFS |     |     |      |     | FROM BRI | GHTON ROAD | (NE) TO THE | SALTINGS |     |      |
|       | CAR | LGV | OGV1 | OGV2     | PSV         | MCL   | PCL | тот | CAR  | LGV | OGV1     | OGV2       | PSV         | MCL      | PCL | тот  |
| 16:00 | 0   | 0   | 0    | 0        | 0           | 0     | 0   | 0   | 78   | 10  | 1        | 0          | 1           | 0        | 1   | 91   |
| 16:15 | 0   | 0   | 0    | 0        | 0           | 0     | 0   | 0   | 81   | 16  | 0        | 0          | 2           | 2        | 0   | 101  |
| 16:30 | 0   | 0   | 0    | 0        | 0           | 0     | 0   | 0   | 83   | 14  | 0        | 0          | 1           | 3        | 2   | 103  |
| 16:45 | 0   | 0   | 0    | 0        | 0           | 0     | 0   | 0   | 73   | 20  | 0        | 0          | 0           | 0        | 0   | 93   |
| н/тот | 0   | 0   | 0    | 0        | 0           | 0     | 0   | 0   | 315  | 60  | 1        | 0          | 4           | 5        | 3   | 388  |
| 17:00 | 0   | 0   | 0    | 0        | 0           | 0     | 0   | 0   | 79   | 15  | 0        | 0          | 0           | 2        | 1   | 97   |
| 17:15 | 0   | 0   | 0    | 0        | 0           | 0     | 0   | 0   | 84   | 17  | 0        | 0          | 1           | 1        | 0   | 103  |
| 17:30 | 0   | 0   | 0    | 0        | 0           | 0     | 0   | 0   | 92   | 12  | 0        | 0          | 0           | 0        | 0   | 104  |
| 17:45 | 0   | 0   | 0    | 0        | 0           | 0     | 0   | 0   | 99   | 7   | 0        | 0          | 0           | 3        | 0   | 109  |
| н/тот | 0   | 0   | 0    | 0        | 0           | 0     | 0   | 0   | 354  | 51  | 0        | 0          | 1           | 6        | 1   | 413  |
| 18:00 | 0   | 0   | 0    | 0        | 0           | 0     | 0   | 0   | 90   | 8   | 0        | 0          | 0           | 0        | 1   | 99   |
| 18:15 | 1   | 0   | 0    | 0        | 0           | 0     | 0   | 1   | 84   | 10  | 0        | 0          | 1           | 1        | 0   | 96   |
| 18:30 | 0   | 0   | 0    | 0        | 0           | 0     | 0   | 0   | 96   | 5   | 0        | 0          | 0           | 0        | 0   | 101  |
| 18:45 | 0   | 0   | 0    | 0        | 0           | 0     | 0   | 0   | 87   | 8   | 0        | 0          | 0           | 0        | 1   | 96   |
| н/тот | 1   | 0   | 0    | 0        | 0           | 0     | 0   | 1   | 357  | 31  | 0        | 0          | 1           | 1        | 2   | 392  |
| P/TOT | 1   | 0   | 0    | 0        | 0           | 0     | 0   | 1   | 1026 | 142 | 1        | 0          | 6           | 12       | 6   | 1193 |



18/06/2015

JOB REF: 18988

JOB NAME: SHOREHAM ON SEA

1

SITE:

#### NEW SALTS FARM ROAD / BRIGHTON ROAD / THE SALTINGS / PFS LOCATION:



|   |     |     |      |      |                | DATE:       | 18/06/201 | 15 |
|---|-----|-----|------|------|----------------|-------------|-----------|----|
|   |     |     |      |      |                | DAY:        | THURSDA   | Y  |
|   |     | FR  |      | E -  | A<br>TO NEW SA | LITS FARM R | ΟΔD       |    |
| т | CAR | LGV | OGV1 | OGV2 | PSV            | MCL         | PCL       |    |
| 0 | 1   | 0   | 0    | 0    | 0              | 0           | 0         |    |
| 4 | 4   | 0   | 0    | 0    | 0              | 0           | 1         |    |
| 7 | 3   | 0   | 0    | 0    | 0              | 0           | 0         |    |
| 5 | 10  | 1   | 0    | 0    | 0              | 0           | 0         |    |

|       |      |     |            | E -         | В           |             |     |      |     |     |            | E -         | Α         |             |     |     |
|-------|------|-----|------------|-------------|-------------|-------------|-----|------|-----|-----|------------|-------------|-----------|-------------|-----|-----|
| TIME  |      | F   | ROM BRIGHT | ON ROAD (NE | ) TO BRIGHT | ON ROAD (SV | V)  |      |     | FF  | OM BRIGHTO | N ROAD (NE) | TO NEW SA | LTS FARM RO | AD  |     |
|       | CAR  | LGV | OGV1       | OGV2        | PSV         | MCL         | PCL | тот  | CAR | LGV | OGV1       | OGV2        | PSV       | MCL         | PCL | тот |
| 07:00 | 71   | 16  | 4          | 0           | 1           | 2           | 6   | 100  | 1   | 0   | 0          | 0           | 0         | 0           | 0   | 1   |
| 07:15 | 92   | 22  | 9          | 1           | 2           | 4           | 4   | 134  | 4   | 0   | 0          | 0           | 0         | 0           | 1   | 5   |
| 07:30 | 109  | 24  | 2          | 1           | 1           | 2           | 8   | 147  | 3   | 0   | 0          | 0           | 0         | 0           | 0   | 3   |
| 07:45 | 112  | 21  | 2          | 1           | 2           | 4           | 3   | 145  | 10  | 1   | 0          | 0           | 0         | 0           | 0   | 11  |
| н/тот | 384  | 83  | 17         | 3           | 6           | 12          | 21  | 526  | 18  | 1   | 0          | 0           | 0         | 0           | 1   | 20  |
| 08:00 | 116  | 26  | 5          | 2           | 1           | 3           | 4   | 157  | 5   | 0   | 0          | 0           | 0         | 0           | 0   | 5   |
| 08:15 | 122  | 16  | 5          | 0           | 3           | 5           | 5   | 156  | 3   | 0   | 0          | 0           | 0         | 0           | 1   | 4   |
| 08:30 | 108  | 18  | 1          | 0           | 2           | 2           | 3   | 134  | 4   | 1   | 0          | 0           | 0         | 2           | 0   | 7   |
| 08:45 | 112  | 26  | 4          | 0           | 3           | 2           | 3   | 150  | 15  | 1   | 0          | 0           | 0         | 0           | 1   | 17  |
| н/тот | 458  | 86  | 15         | 2           | 9           | 12          | 15  | 597  | 27  | 2   | 0          | 0           | 0         | 2           | 2   | 33  |
| 09:00 | 107  | 30  | 2          | 2           | 1           | 1           | 0   | 143  | 8   | 0   | 0          | 0           | 0         | 1           | 0   | 9   |
| 09:15 | 89   | 21  | 6          | 2           | 0           | 0           | 2   | 120  | 2   | 1   | 0          | 0           | 0         | 0           | 0   | 3   |
| 09:30 | 103  | 14  | 3          | 3           | 0           | 2           | 0   | 125  | 3   | 0   | 0          | 0           | 0         | 0           | 0   | 3   |
| 09:45 | 86   | 20  | 7          | 1           | 3           | 4           | 1   | 122  | 3   | 8   | 0          | 0           | 0         | 0           | 0   | 11  |
| н/тот | 385  | 85  | 18         | 8           | 4           | 7           | 3   | 510  | 16  | 9   | 0          | 0           | 0         | 1           | 0   | 26  |
| P/TOT | 1227 | 254 | 50         | 13          | 19          | 31          | 39  | 1633 | 61  | 12  | 0          | 0           | 0         | 3           | 3   | 79  |

JOB REF: 18988

JOB NAME: SHOREHAM ON SEA

1

SITE:

#### NEW SALTS FARM ROAD / BRIGHTON ROAD / THE SALTINGS / PFS LOCATION:



|   |     |     |            |                    |                | DATE:       | 18/06/201 | 15 |
|---|-----|-----|------------|--------------------|----------------|-------------|-----------|----|
|   |     |     |            |                    |                | DAY:        | THURSDAY  | Y  |
|   |     | FR  | OM BRIGHTO | E -<br>N ROAD (NE) | A<br>TO NEW SA | ALTS FARM R | OAD       |    |
| г | CAR | LGV | OGV1       | OGV2               | PSV            | MCL         | PCL       |    |
| 5 | 3   | 0   | 0          | 0                  | 0              | 1           | 0         |    |
| Ð | 3   | 0   | 0          | 0                  | 0              | 0           | 1         |    |
| 5 | 6   | 0   | 0          | 0                  | 0              | 0           | 1         |    |
| Ð | 4   | 0   | 0          | 0                  | 0              | 0           | 0         |    |

|       |      |   |      | E -  | В   |     |     |      |     |  |      | E -  | Α   |     |     |     |
|-------|------|---|------|------|-----|-----|-----|------|-----|--|------|------|-----|-----|-----|-----|
| TIME  |      | FROM BRIGHTON ROAD (NE) TO BRIGHTON ROAD (SW) |      |      |     |     |     |      |     | FROM BRIGHTON ROAD (NE) TO NEW SALTS FARM ROAD |      |      |     |     |     |     |
|       | CAR  | LGV   | OGV1 | OGV2 | PSV | MCL | PCL | TOT  | CAR | LGV  | OGV1 | OGV2 | PSV | MCL | PCL | тот |
| 16:00 | 138  | 35  | 2    | 0    | 1   | 5   | 4   | 185  | 3   | 0  | 0    | 0    | 0   | 1   | 0   | 4   |
| 16:15 | 135  | 32  | 2    | 1    | 2   | 4   | 3   | 179  | 3   | 0  | 0    | 0    | 0   | 0   | 1   | 4   |
| 16:30 | 173  | 25  | 0    | 1    | 3   | 3   | 1   | 206  | 6   | 0  | 0    | 0    | 0   | 0   | 1   | 7   |
| 16:45 | 178  | 31  | 4    | 0    | 3   | 3   | 0   | 219  | 4   | 0  | 0    | 0    | 0   | 0   | 0   | 4   |
| н/тот | 624  | 123   | 8    | 2    | 9   | 15  | 8   | 789  | 16  | 0  | 0    | 0    | 0   | 1   | 2   | 19  |
| 17:00 | 161  | 28  | 3    | 0    | 2   | 6   | 4   | 204  | 4   | 1  | 0    | 0    | 0   | 0   | 0   | 5   |
| 17:15 | 167  | 33  | 1    | 0    | 2   | 5   | 3   | 211  | 2   | 0  | 0    | 0    | 0   | 0   | 0   | 2   |
| 17:30 | 175  | 21  | 0    | 0    | 2   | 9   | 10  | 217  | 3   | 2  | 0    | 0    | 0   | 0   | 2   | 7   |
| 17:45 | 197  | 23  | 0    | 0    | 2   | 4   | 3   | 229  | 2   | 1  | 0    | 0    | 0   | 1   | 0   | 4   |
| н/тот | 700  | 105   | 4    | 0    | 8   | 24  | 20  | 861  | 11  | 4  | 0    | 0    | 0   | 1   | 2   | 18  |
| 18:00 | 173  | 18  | 2    | 0    | 3   | 5   | 10  | 211  | 3   | 0  | 0    | 0    | 0   | 0   | 0   | 3   |
| 18:15 | 161  | 14  | 1    | 0    | 0   | 3   | 7   | 186  | 3   | 0  | 0    | 0    | 0   | 0   | 0   | 3   |
| 18:30 | 130  | 21  | 1    | 0    | 4   | 3   | 4   | 163  | 1   | 1  | 0    | 0    | 0   | 0   | 1   | 3   |
| 18:45 | 128  | 15  | 1    | 0    | 1   | 2   | 4   | 151  | 1   | 0  | 0    | 0    | 0   | 0   | 1   | 2   |
| н/тот | 592  | 68  | 5    | 0    | 8   | 13  | 25  | 711  | 8   | 1  | 0    | 0    | 0   | 0   | 2   | 11  |
| P/TOT | 1916 | 296   | 17   | 2    | 25  | 52  | 53  | 2361 | 35  | 5  | 0    | 0    | 0   | 2   | 6   | 48  |

- JOB REF: 18988
- JOB NAME: SHOREHAM ON SEA

1

SITE:

#### LOCATION: NEW SALTS FARM ROAD / BRIGHTON ROAD / THE SALTINGS / PFS



#### DATE: 18/06/2015

|      |   |   |     |      | E۰   | Е   |     |     |     |  |  |  |  |
|------|---|---|-----|------|------|-----|-----|-----|-----|--|--|--|--|
| тімі | E | FROM BRIGHTON ROAD (NE) TO BRIGHTON ROAD (NE) |     |      |      |     |     |     |     |  |  |  |  |
|      |   | CAR   | LGV | OGV1 | OGV2 | PSV | MCL | PCL | тот |  |  |  |  |
| 07:0 | 0 | 0   | 0   | 0    | 1    | 0   | 0   | 0   | 1   |  |  |  |  |
| 07:1 | 5 | 1   | 0   | 0    | 0    | 0   | 0   | 0   | 1   |  |  |  |  |
| 07:3 | 0 | 1   | 0   | 0    | 0    | 0   | 0   | 0   | 1   |  |  |  |  |
| 07:4 | 5 | 4   | 0   | 0    | 0    | 0   | 0   | 0   | 4   |  |  |  |  |
| Н/ТО | т | 6   | 0   | 0    | 1    | 0   | 0   | 0   | 7   |  |  |  |  |
| 08:0 | 0 | 1   | 0   | 0    | 0    | 0   | 0   | 0   | 1   |  |  |  |  |
| 08:1 | 5 | 0   | 0   | 0    | 0    | 0   | 0   | 0   | 0   |  |  |  |  |
| 08:3 | 0 | 4   | 0   | 0    | 0    | 0   | 0   | 0   | 4   |  |  |  |  |
| 08:4 | 5 | 5   | 1   | 0    | 0    | 0   | 0   | 0   | 6   |  |  |  |  |
| Н/ТО | т | 10  | 1   | 0    | 0    | 0   | 0   | 0   | 11  |  |  |  |  |
| 09:0 | 0 | 9   | 0   | 0    | 0    | 0   | 0   | 0   | 9   |  |  |  |  |
| 09:1 | 5 | 3   | 0   | 0    | 0    | 0   | 0   | 0   | 3   |  |  |  |  |
| 09:3 | 0 | 2   | 1   | 0    | 0    | 0   | 0   | 0   | 3   |  |  |  |  |
| 09:4 | 5 | 4   | 0   | 0    | 0    | 0   | 0   | 0   | 4   |  |  |  |  |
| Н/ТО | т | 18  | 1   | 0    | 0    | 0   | 0   | 0   | 19  |  |  |  |  |
| P/TO | т | 34  | 2   | 0    | 1    | 0   | 0   | 0   | 37  |  |  |  |  |

- JOB REF: 18988
- JOB NAME: SHOREHAM ON SEA

1

SITE:

#### LOCATION: NEW SALTS FARM ROAD / BRIGHTON ROAD / THE SALTINGS / PFS



#### DATE: 18/06/2015

|       |   |     |      | E۰   | E   |     |     |     |  |  |  |
|-------|---|-----|------|------|-----|-----|-----|-----|--|--|--|
| TIME  | FROM BRIGHTON ROAD (NE) TO BRIGHTON ROAD (NE) |     |      |      |     |     |     |     |  |  |  |
|       | CAR   | LGV | OGV1 | OGV2 | PSV | MCL | PCL | TOT |  |  |  |
| 16:00 | 2   | 1   | 0    | 0    | 0   | 1   | 0   | 4   |  |  |  |
| 16:15 | 8   | 0   | 0    | 0    | 0   | 0   | 0   | 8   |  |  |  |
| 16:30 | 1   | 0   | 0    | 0    | 0   | 0   | 0   | 1   |  |  |  |
| 16:45 | 5   | 1   | 0    | 0    | 0   | 0   | 0   | 6   |  |  |  |
| Н/ТОТ | 16  | 2   | 0    | 0    | 0   | 1   | 0   | 19  |  |  |  |
| 17:00 | 2   | 0   | 0    | 0    | 0   | 0   | 0   | 2   |  |  |  |
| 17:15 | 2   | 0   | 0    | 0    | 0   | 0   | 0   | 2   |  |  |  |
| 17:30 | 3   | 0   | 0    | 0    | 0   | 0   | 0   | 3   |  |  |  |
| 17:45 | 1   | 1   | 0    | 0    | 0   | 0   | 0   | 2   |  |  |  |
| Н/ТОТ | 8   | 1   | 0    | 0    | 0   | 0   | 0   | 9   |  |  |  |
| 18:00 | 6   | 1   | 0    | 0    | 0   | 0   | 0   | 7   |  |  |  |
| 18:15 | 9   | 0   | 0    | 0    | 0   | 0   | 1   | 10  |  |  |  |
| 18:30 | 1   | 0   | 0    | 0    | 0   | 0   | 0   | 1   |  |  |  |
| 18:45 | 1   | 0   | 0    | 0    | 0   | 0   | 0   | 1   |  |  |  |
| Н/ТОТ | 17  | 1   | 0    | 0    | 0   | 0   | 1   | 19  |  |  |  |
| P/TOT | 41  | 4   | 0    | 0    | 0   | 1   | 1   | 47  |  |  |  |



# Appendix D

Local Facilities Map





# Appendix E

Emerging Masterplan





# Appendix E

Proposed Site Access Junction



| Highway Boundar |                       | r t h          |
|-----------------|-----------------------|----------------|
| Highway Boundar | ry                    |                |
| noreham         |                       |                |
| rategy          |                       |                |
|                 | Drawing:<br>150137-01 | Revision:<br>B |



# Appendix F

Swept Path Anaysis



|          | <u>e</u> s | noreham |   |  |
|----------|------------|---------|---|--|
| 150137   | ,          |         | and a set of the lock to Lock Time Large Refuse Vehicle (3 axle) Overall Width Overall Width Overall Width Overall Width Clearance Track Width Time Lock to Lock Time Lock to Lock Time Kerb to Kerb Turning Radius |  |
| 7-TKO1 - | n          |         | 94N03N9<br>50460458<br>005064000<br>3 33333   |  |



# **Appendix G**

TRICS – Residential Use

Motion High Street Guildford

#### Calculation Reference: AUDIT-734001-160307-0338

TRIP RATE CALCULATION SELECTION PARAMETERS:

| Land Use | : | 03 - RESIDENTIAL                     |
|----------|---|--------------------------------------|
| Category | : | M - MIXED PRIVATE/AFFORDABLE HOUSING |
| VEHIČLES | 5 |                                      |

Selected regions and areas:

| 02 | SOUTH EAST |                |        |  |  |  |  |  |  |
|----|------------|----------------|--------|--|--|--|--|--|--|
|    | ES         | EAST SUSSEX    | 2 days |  |  |  |  |  |  |
|    | HC         | HAMPSHIRE      | 2 days |  |  |  |  |  |  |
|    | KC         | KENT           | 1 days |  |  |  |  |  |  |
|    | SC         | SURREY         | 3 days |  |  |  |  |  |  |
|    | WS         | WEST SUSSEX    | 7 days |  |  |  |  |  |  |
| 03 | SOU        | SOUTH WEST     |        |  |  |  |  |  |  |
|    | BR         | BRISTOL CITY   | 1 days |  |  |  |  |  |  |
|    | DV         | DEVON          | 1 days |  |  |  |  |  |  |
| 05 | EAS        | T MIDLANDS     | -      |  |  |  |  |  |  |
|    | DS         | DERBYSHIRE     | 1 days |  |  |  |  |  |  |
|    | LE         | LEICESTERSHIRE | 1 days |  |  |  |  |  |  |

This section displays the number of survey days per TRICS® sub-region in the selected set

#### Filtering Stage 2 selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

| Parameter:              | Number of dwellings |
|-------------------------|---------------------|
| Actual Range:           | 16 to 500 (units: ) |
| Range Selected by User: | 0 to 1000 (units: ) |

Public Transport Provision: Selection by:

Include all surveys

Date Range: 01/01/07 to 04/11/15

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

| <u>Selected survey days:</u> |        |
|------------------------------|--------|
| Monday                       | 2 days |
| Tuesday                      | 3 days |
| Wednesday                    | 5 days |
| Thursday                     | 7 days |
| Friday                       | 2 days |
|                              |        |

This data displays the number of selected surveys by day of the week.

| Selected survey types: |         |
|------------------------|---------|
| Manual count           | 19 days |
| Directional ATC Count  | 0 days  |

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

| Selected Locations:                |    |
|------------------------------------|----|
| Suburban Area (PPS6 Out of Centre) | 11 |
| Edge of Town                       | 8  |

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories: Residential Zone

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Guildford

Filtering Stage 3 selection:

#### Use Class:

High Street

C3

Motion

19 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

| Population within 1 mile: |        |
|---------------------------|--------|
| 1,001 to 5,000            | 2 days |
| 5,001 to 10,000           | 4 days |
| 10,001 to 15,000          | 1 days |
| 15,001 to 20,000          | 1 days |
| 20,001 to 25,000          | 4 days |
| 25,001 to 50,000          | 7 days |
|                           |        |

This data displays the number of selected surveys within stated 1-mile radii of population.

| Population within 5 miles: |        |
|----------------------------|--------|
| 25,001 to 50,000           | 1 days |
| 50,001 to 75,000           | 1 days |
| 75,001 to 100,000          | 2 days |
| 100,001 to 125,000         | 5 days |
| 125,001 to 250,000         | 6 days |
| 250,001 to 500,000         | 4 days |

This data displays the number of selected surveys within stated 5-mile radii of population.

### Car ownership within 5 miles:

| 0.6 to 1.0 | 2 days  |
|------------|---------|
| 1.1 to 1.5 | 15 days |
| 1.6 to 2.0 | 2 days  |

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

| Travel Plan: |         |
|--------------|---------|
| Yes          | 13 days |
| Νο           | 6 days  |

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

LIST OF SITES relevant to selection parameters

High Street Guildford

Motion

| 1 | BR-03-M-02<br>CLARENCE ROAD  | BLOCKS OF FLATS  |                 | BRISTOL CITY                       |
|---|--|--|-----------------|------------------------------------|
| 2 | BRISTOL<br>Suburban Area (PPS<br>Residential Zone<br>Total Number of dwa<br>Survey date:<br>DS-03-M-01 | 6 Out of Centre)<br>ellings:<br>MONDAY<br>TERRACED/SEMI DE | 42<br>12/10/09  | Survey Type: MANUAL                |
| 2 | COCKAYNE STREET<br>BOULTON<br>DERBY<br>Suburban Area (PPS<br>Residential Zone<br>Total Number of dwa   | 6 Out of Centre)   | 32              | DERDISTINE                         |
| 3 | Survey date:<br>DV-03-M-01<br>TOPSHAM ROAD   | TUESDAY<br>HOUSES & FLATS                                  | 21/10/14        | Survey Type: MANUAL<br>DEVON       |
|   | EXETER<br>Suburban Area (PPS   | 6 Out of Centre)   |                 |                                    |
| 4 | Residential Zone<br>Total Number of dwo<br>Survey date:<br>ES-03-M-04<br>SOUTH COAST ROAI              | ellings:<br>THURSDAY<br>MIXED HOUSING<br>D                 | 61<br>06/10/11  | Survey Type: MANUAL<br>EAST SUSSEX |
|   | PEACEHAVEN<br>Edge of Town   |  |                 |                                    |
| 5 | Residential Zone<br>Total Number of dwe<br>Survey date:<br>ES-03-M-06<br>FIELD END                     | ellings:<br>FRIDAY<br>MIXED HOUSES                         | 188<br>25/10/13 | Survey Type: MANUAL<br>EAST SUSSEX |
|   | MARESFIELD<br>Edge of Town   |  |                 |                                    |
| , | Residential Zone<br>Total Number of dwe<br>Survey date:  | ellings:<br>WEDNESDAY                                      | 80<br>01/10/14  | Survey Type: MANUAL                |
| O | MC-03-M-05<br>WIMPSON LANE<br>MAYBUSH<br>SOUTHAMPTON<br>Suburban Aroa (PPS                             | A Out of Control   |                 | HAMPSHIKE                          |
|   | Residential Zone<br>Total Number of dwe<br>Survey date:  | ellings:<br>FRIDAY   | 62<br>03/10/14  | Survey Type: MANUAL                |
| 7 | HC-03-M-06<br>HUNTS POND ROAD<br>TITCHFIELD<br>NEAR FAREHAM<br>Edge of Town                            | HOUSES & FLATS   |                 | HAMPSHIRË                          |
|   | Residential Zone<br>Total Number of dwe  | ellings:   | 328             |                                    |
|   | Survey date:   | WEDNESDAY  | 04/11/15        | Survey Type: MANUAL                |

Guildford

Motion

High Street

# LIST OF SITES relevant to selection parameters (Cont.)

| 8  | KC-03-M-01<br>HIGH STREET   | BLOCKS OF FLATS   |                 | KENT                                  |
|----|---|---|-----------------|---------------------------------------|
| 9  | RAMSGATE<br>Suburban Area (PPS&<br>Residential Zone<br>Total Number of dwe<br>Survey date:<br>LE-03-M-01<br>RYDER ROAD<br>BRAUNSTONE FRITH<br>LEICESTER | o Out of Centre)<br>Illings:<br>TUESDAY<br>SEMI DETACHED            | 103<br>08/12/09 | Survey Type: MANUAL<br>LEICESTERSHIRE |
| 10 | Edge of Town<br>Residential Zone<br>Total Number of dwe<br>Survey date:<br>SC-03-M-05<br>HOLYWELL WAY<br>STANWELL                                       | Illings:<br>THURSDAY<br>HOUSES & FLATS                              | 16<br>27/09/12  | Survey Type: MANUAL<br>SURREY         |
| 11 | STAINES<br>Suburban Area (PPS6<br>Residential Zone<br>Total Number of dwe<br>Survey date: I<br>SC-03-M-06<br>ST ANNE'S DRIVE                            | o Out of Centre)<br>Ilings:<br>MONDAY<br>HOUSES & FLATS             | 52<br>19/11/12  | Survey Type: MANUAL<br>SURREY         |
| 12 | REDHILL<br>Edge of Town<br>Residential Zone<br>Total Number of dwe<br>Survey date: V<br>SC-03-M-07<br>EPSOM ROAD  | ·llings:<br>WEDNESDAY<br>HOUSES/FLATS                               | 500<br>11/12/13 | Survey Type: MANUAL<br>SURREY         |
| 13 | GUILDFORD<br>Suburban Area (PPS6<br>Residential Zone<br>Total Number of dwe<br>Survey date:<br>WS-03-M-03<br>UPPER SHOREHAM R                           | o Out of Centre)<br>Ilings:<br>THURSDAY<br>TERRACED & FLATS<br>COAD | 199<br>24/10/13 | Survey Type: MANUAL<br>WEST SUSSEX    |
| 14 | SHOREHAM BY SEA<br>Suburban Area (PPS6<br>Residential Zone<br>Total Number of dwe<br>Survey date: V<br>WS-03-M-04<br>SUMMERSDALE ROA                    | o Out of Centre)<br>Ilings:<br>WEDNESDAY<br>HOUSES & FLATS<br>D     | 48<br>18/04/12  | Survey Type: MANUAL<br>WEST SUSSEX    |
|    | CHICHESTER<br>Suburban Area (PPS6<br>Residential Zone<br>Total Number of dwe<br>Survey date:  | Out of Centre)<br>Ilings:<br>THURSDAY                               | 214<br>08/05/14 | Survey Type: MANUAL                   |
Guildford

Motion

High Street

#### LIST OF SITES relevant to selection parameters (Cont.)

| 15 | WS-03-M-05<br>ELLIS ROAD<br>S BROADBRIDGE HE<br>WEST HORSHAM<br>Edge of Town<br>Residential Zone  | MIXED HOUSING<br>ATH   |                         | WEST SUSSEX                        |
|----|---|--|-------------------------|------------------------------------|
| 16 | Total Number of dwe<br>Survey date:<br>WS-03-M-06<br>SOUTHFIELDS CLOS   | ellings:<br>THURSDAY<br>SEMI DETACHED/DET<br>E                       | 92<br>23/10/14<br>ACHED | Survey Type: MANUAL<br>WEST SUSSEX |
| 17 | CHICHESTER<br>Edge of Town<br>Residential Zone<br>Total Number of dwe<br>Survey date:<br>WS-03-M-07<br>ROSE GREEN ROAD<br>ALDWICK<br>BOGNOR REGIS | ellings:<br>TUESDAY<br>HOUSES & FLATS                                | 67<br>27/01/15          | Survey Type: MANUAL<br>WEST SUSSEX |
| 18 | Edge of Town<br>Residential Zone<br>Total Number of dwe<br>Survey date:<br>WS-03-M-08<br>WESTLOATS LANE<br>NORTH BERSTED<br>BOGNOR REGIS          | ellings:<br>WEDNESDAY<br>MIXED HOUSES & FLA                          | 90<br>05/03/14<br>ATS   | Survey Type: MANUAL<br>WEST SUSSEX |
| 19 | Suburban Area (PPS6<br>Residential Zone<br>Total Number of dwe<br>Survey date:<br>WS-03-M-09<br>ADLINGTON GARDEI                                  | 5 Out of Centre)<br>ellings:<br>THURSDAY<br>MIXED HOUSES & FLA<br>NS | 86<br>22/10/15<br>ATS   | Survey Type: MANUAL<br>WEST SUSSEX |
|    | BOGNOR REGIS<br>Suburban Area (PPS<br>Residential Zone<br>Total Number of dwe<br>Survey date:   | 6 Out of Centre)<br>ellings:<br>THURSDAY                             | 32<br>22/10/15          | Survey Type: MANUAL                |

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

Motion High Street Guildford

### TRIP RATE for Land Use 03 - RESIDENTIAL/M - MIXED PRIVATE/AFFORDABLE HOUSING VEHICLES Calculation factor: 1 DWELLS BOLD print indicates peak (busiest) period

|               |      | ARRIVALS |       | [    | DEPARTURES | S     |      | TOTALS |       |
|---------------|------|----------|-------|------|------------|-------|------|--------|-------|
|               | No.  | Ave.     | Trip  | No.  | Ave.       | Trip  | No.  | Ave.   | Trip  |
| Time Range    | Days | DWELLS   | Rate  | Days | DWELLS     | Rate  | Days | DWELLS | Rate  |
| 00:00 - 01:00 |      |          |       |      |            |       |      |        |       |
| 01:00 - 02:00 |      |          |       |      |            |       |      |        |       |
| 02:00 - 03:00 |      |          |       |      |            |       |      |        |       |
| 03:00 - 04:00 |      |          |       |      |            |       |      |        |       |
| 04:00 - 05:00 |      |          |       |      |            |       |      |        |       |
| 05:00 - 06:00 |      |          |       |      |            |       |      |        |       |
| 06:00 - 07:00 |      |          |       |      |            |       |      |        |       |
| 07:00 - 08:00 | 19   | 121      | 0.067 | 19   | 121        | 0.225 | 19   | 121    | 0.292 |
| 08:00 - 09:00 | 19   | 121      | 0.116 | 19   | 121        | 0.314 | 19   | 121    | 0.430 |
| 09:00 - 10:00 | 19   | 121      | 0.116 | 19   | 121        | 0.147 | 19   | 121    | 0.263 |
| 10:00 - 11:00 | 19   | 121      | 0.116 | 19   | 121        | 0.129 | 19   | 121    | 0.245 |
| 11:00 - 12:00 | 19   | 121      | 0.114 | 19   | 121        | 0.123 | 19   | 121    | 0.237 |
| 12:00 - 13:00 | 19   | 121      | 0.109 | 19   | 121        | 0.120 | 19   | 121    | 0.229 |
| 13:00 - 14:00 | 19   | 121      | 0.116 | 19   | 121        | 0.116 | 19   | 121    | 0.232 |
| 14:00 - 15:00 | 19   | 121      | 0.109 | 19   | 121        | 0.144 | 19   | 121    | 0.253 |
| 15:00 - 16:00 | 19   | 121      | 0.205 | 19   | 121        | 0.140 | 19   | 121    | 0.345 |
| 16:00 - 17:00 | 19   | 121      | 0.201 | 19   | 121        | 0.137 | 19   | 121    | 0.338 |
| 17:00 - 18:00 | 19   | 121      | 0.250 | 19   | 121        | 0.127 | 19   | 121    | 0.377 |
| 18:00 - 19:00 | 19   | 121      | 0.247 | 19   | 121        | 0.124 | 19   | 121    | 0.371 |
| 19:00 - 20:00 |      |          |       |      |            |       |      |        |       |
| 20:00 - 21:00 |      |          |       |      |            |       |      |        |       |
| 21:00 - 22:00 |      |          |       |      |            |       |      |        |       |
| 22:00 - 23:00 |      |          |       |      |            |       |      |        |       |
| 23:00 - 24:00 |      |          |       |      |            |       |      |        |       |
| Total Rates:  |      |          | 1.766 |      |            | 1.846 |      |        | 3.612 |

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP\*FACT. Trip rates are then rounded to 3 decimal places.

#### Parameter summary

| Trip rate parameter range selected:      | 16 - 500 (units: )  |
|--|---------------------|
| Survey date date range:                  | 01/01/07 - 04/11/15 |
| Number of weekdays (Monday-Friday):      | 19                  |
| Number of Saturdays:                     | 0                   |
| Number of Sundays:                       | 0                   |
| Surveys manually removed from selection: | 5                   |

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.



### **Appendix H**

Nomis Census Data



#### 2011 Census Data (Journey to Work Data)

|                                      | E001 | 59980   | Ad          | lur            |
|--------------------------------------|------|---------|-------------|----------------|
|                                      | Outp | ut Area | Non-Metropo | litan District |
| All Usual Residents Aged 16 to 74    | 206  |         | 43860       |                |
| Work Mainly at or From Home          | 5    |         | 1558        |                |
| Underground, Metro, Light Rail, Tram | 0    | 0.0%    | 30          | 0.1%           |
| Train                                | 11   | 7.6%    | 2222        | 8.0%           |
| Bus, Minibus or Coach                | 11   | 7.6%    | 1648        | 5.9%           |
| Taxi                                 | 0    | 0.0%    | 102         | 0.4%           |
| Motorcycle, Scooter or Moped         | 2    | 1.4%    | 366         | 1.3%           |
| Driving a Car or Van                 | 108  | 75.0%   | 18121       | 65.2%          |
| Passenger in a Car or Van            | 3    | 2.1%    | 1545        | 5.6%           |
| Bicycle                              | 4    | 2.8%    | 1115        | 4.0%           |
| On Foot                              | 5    | 3.5%    | 2472        | 8.9%           |
| Other Method of Travel to Work       | 0    | 0.0%    | 177         | 0.6%           |
| Not in Employment                    | 57   |         | 14504       |                |





### Appendix I

Junction Modelling Output Files





### **Junctions 9**

#### **ARCADY 9 - Roundabout Module**

Version: 9.0.0.4211 [] © Copyright TRL Limited, 2016

For sales and distribution information, program advice and maintenance, contact TRL: Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk

The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Ropetackle Roundabout 500 units with Updated TRICS.j9 Path: N:\Projects\hdshor 150137\Analysis\ARCADY Report generation date: 10/03/2016 12:02:48

»2015 Observed, AM
»2020 Without Development, AM
»2020 With Development, AM
»2015 Observed, PM
»2020 Without Development, PM
»2020 With Development, PM

#### Summary of junction performance

|       | AM                       |           |       |        | PM          |           |      |     |
|-------|--------------------------|-----------|-------|--------|-------------|-----------|------|-----|
|       | Queue (Veh)              | Delay (s) | RFC   | LOS    | Queue (Veh) | Delay (s) | RFC  | LOS |
|       |                          |           | 20    | 15 OI  | oserved     |           |      |     |
| Arm 1 | 0.6                      | 4.67      | 0.37  | A      | 0.8         | 4.32      | 0.45 | А   |
| Arm 2 | 0.6                      | 4.04      | 0.38  | А      | 2.1         | 7.74      | 0.68 | А   |
| Arm 3 | 0.0                      | 3.39      | 0.01  | А      | 0.0         | 5.25      | 0.01 | А   |
| Arm 4 | 4.2                      | 11.42     | 0.82  | В      | 1.6         | 5.48      | 0.62 | А   |
|       | 2020 Without Development |           |       |        | :           |           |      |     |
| Arm 1 | 0.6                      | 4.84      | 0.39  | Α      | 0.9         | 4.71      | 0.48 | А   |
| Arm 2 | 0.7                      | 4.18      | 0.40  | А      | 2.7         | 9.17      | 0.74 | А   |
| Arm 3 | 0.0                      | 3.47      | 0.01  | А      | 0.0         | 5.46      | 0.01 | А   |
| Arm 4 | 4.8                      | 12.87     | 0.84  | В      | 1.8         | 5.87      | 0.64 | А   |
|       |                          | 20        | 020 V | /ith D | evelopment  |           |      |     |
| Arm 1 | 0.7                      | 5.11      | 0.42  | Α      | 1.0         | 4.80      | 0.49 | A   |
| Arm 2 | 0.7                      | 4.30      | 0.41  | А      | 3.0         | 9.97      | 0.76 | A   |
| Arm 3 | 0.0                      | 3.54      | 0.01  | Α      | 0.0         | 5.83      | 0.01 | А   |
| Arm 4 | 6.1                      | 15.65     | 0.87  | С      | 2.0         | 6.35      | 0.67 | А   |

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.



### File summary

#### **File Description**

| Title       | (untitled)         |
|-------------|--------------------|
| Location    |                    |
| Site number |                    |
| Date        | 05/08/2015         |
| Version     |                    |
| Status      | (new file)         |
| Identifier  |                    |
| Client      |                    |
| Jobnumber   |                    |
| Enumerator  | MOTION"emmastonard |
| Description |                    |
|             |                    |

### Units

| Distance units | Speed units | Traffic units input | Traffic units results | Flow units     | Average delay units | Total delay units | Rate of delay units |
|----------------|-------------|---------------------|-----------------------|----------------|---------------------|-------------------|---------------------|
| m              | kph         | Veh                 | Veh                   | perTimeSegment | S                   | -Min              | perMin              |

### **Analysis Options**

| Calculate Queue Percentiles | Calculate residual capacity | RFC Threshold | Average Delay threshold (s) | Queue threshold (PCU) |
|-----------------------------|-----------------------------|---------------|-----------------------------|-----------------------|
|                             |                             | 0.85          | 36.00                       | 20.00                 |

### **Demand Set Summary**

| Scenario name               | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|-----------------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| 2015 Observed               | AM                  | DIRECT                  | 07:30                       | 08:30                        | 60                                | 15                           |
| 2020 Without<br>Development | AM                  | DIRECT                  | 07:30                       | 08:30                        | 60                                | 15                           |
| 2020 With Development       | AM                  | DIRECT                  | 07:30                       | 08:30                        | 60                                | 15                           |
| 2015 Observed               | FM                  | DIRECT                  | 17:00                       | 18:00                        | 60                                | 15                           |
| 2020 Without<br>Development | ΡM                  | DIRECT                  | 17:00                       | 18:00                        | 60                                | 15                           |
| 2020 With Development       | ΡM                  | DIRECT                  | 17:00                       | 18:00                        | 60                                | 15                           |



## 2015 Observed, AM

#### **Data Errors and Warnings**

No errors or warnings

#### **Analysis Set Details**

| ID | Network flow scaling factor (%) |
|----|---------------------------------|
| A1 | 100.000                         |

## **Junction Network**

#### Junctions

| Junction | Name     | Junction Type       | Junction Delay (s) | Junction LOS |
|----------|----------|---------------------|--------------------|--------------|
| 1        | untitled | Standard Roundabout | 8.43               | А            |

#### **Junction Network Options**

| Driving side | Lighting       |  |  |
|--------------|----------------|--|--|
| Left         | Normal/unknown |  |  |

### Arms

#### Arms

| Arm | Name              | Description |
|-----|-------------------|-------------|
| 1   | Old Shoreham Road |             |
| 2   | High Street       |             |
| 3   | Pub               |             |
| 4   | A259              |             |

#### **Capacity Options**

| Arm | Minimum capacity (PCU/TS) | Maximum capacity (PCU/TS) |
|-----|---------------------------|---------------------------|
| 1   | 0.00                      | 24999.75                  |
| 2   | 0.00                      | 24999.75                  |
| 3   | 0.00                      | 24999.75                  |
| 4   | 0.00                      | 24999.75                  |

### **Roundabout Geometry**

| Arm | V - Approach road half-<br>width (m) | E - Entry width<br>(m) | l' - Effective flare<br>length (m) | R - Entry radius<br>(m) | D - Inscribed circle<br>diameter (m) | PHI - Conflict (entry) angle<br>(deg) | Exit<br>only |
|-----|--------------------------------------|------------------------|------------------------------------|-------------------------|--------------------------------------|---------------------------------------|--------------|
| 1   | 5.50                                 | 8.50                   | 4.0                                | 20.0                    | 26.0                                 | 25.0                                  |              |
| 2   | 4.50                                 | 8.00                   | 6.0                                | 30.0                    | 26.0                                 | 17.5                                  |              |
| 3   | 6.00                                 | 6.00                   | 0.0                                | 10.0                    | 26.0                                 | 52.5                                  |              |
| 4   | 3.50                                 | 7.00                   | 25.0                               | 20.0                    | 26.0                                 | 25.0                                  |              |



### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

| Arm | Final slope | Final intercept (PCU/TS) |
|-----|-------------|--------------------------|
| 1   | 0.722       | 491.851                  |
| 2   | 0.708       | 459.221                  |
| 3   | 0.598       | 396.790                  |
| 4   | 0.692       | 455.999                  |

The slope and intercept shown above include any corrections and adjustments.

## **Traffic Demand**

#### **Demand Set Details**

| ID | Scenario name    | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|----|------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| D1 | 2015<br>Observed | AM                  | DIRECT                  | 07:30                       | 08:30                        | 60                                | 15                           |

| Vehicle mix varies over turn | Vehicle mix varies over entry | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
|------------------------------|-------------------------------|--------------------|---------------------------|---------------------------|
| ✓                            | ✓                             | HV Percentages     | 2.00                      | ✓                         |

#### **Demand overview (Traffic)**

| Arm | Linked arm | Use O-D data | Scaling Factor (%) |
|-----|------------|--------------|--------------------|
| 1   |            | ✓            | 100.000            |
| 2   |            | ✓            | 100.000            |
| 3   |            | ✓            | 100.000            |
| 4   |            | ✓            | 100.000            |

## **Origin-Destination Data**

#### Demand (Veh/TS)

(07:30-07:45)

|      |   | То      |         |       |        |  |  |  |  |
|------|---|---------|---------|-------|--------|--|--|--|--|
|      |   | 1       | 2       | 3     | 4      |  |  |  |  |
|      | 1 | 0.000   | 13.000  | 0.000 | 51.000 |  |  |  |  |
| From | 2 | 19.000  | 1.000   | 0.000 | 81.000 |  |  |  |  |
|      | 3 | 0.000   | 0.000   | 0.000 | 0.000  |  |  |  |  |
|      | 4 | 141.000 | 193.000 | 0.000 | 0.000  |  |  |  |  |

#### Demand (Veh/TS)

(07:45-08:00)

|      |   | То      |         |       |         |  |  |  |
|------|---|---------|---------|-------|---------|--|--|--|
|      |   | 1       | 2       | 3     | 4       |  |  |  |
|      | 1 | 0.000   | 33.000  | 0.000 | 60.000  |  |  |  |
| From | 2 | 16.000  | 0.000   | 0.000 | 123.000 |  |  |  |
|      | 3 | 0.000   | 2.000   | 0.000 | 0.000   |  |  |  |
|      | 4 | 126.000 | 190.000 | 0.000 | 1.000   |  |  |  |



#### Demand (Veh/TS)

(08:00-08:15)

|      |   | То      |         |       |         |  |  |  |
|------|---|---------|---------|-------|---------|--|--|--|
|      |   | 1       | 2       | 3     | 4       |  |  |  |
|      | 1 | 0.000   | 37.000  | 0.000 | 78.000  |  |  |  |
| From | 2 | 26.000  | 0.000   | 0.000 | 113.000 |  |  |  |
|      | 3 | 0.000   | 0.000   | 0.000 | 0.000   |  |  |  |
|      | 4 | 129.000 | 202.000 | 0.000 | 0.000   |  |  |  |

#### Demand (Veh/TS)

(08:15-08:30)

|      |   | То      |         |       |         |  |  |  |
|------|---|---------|---------|-------|---------|--|--|--|
|      |   | 1       | 2       | 3     | 4       |  |  |  |
|      | 1 | 1.000   | 45.000  | 0.000 | 67.000  |  |  |  |
| From | 2 | 22.000  | 1.000   | 0.000 | 118.000 |  |  |  |
|      | 3 | 0.000   | 0.000   | 0.000 | 0.000   |  |  |  |
|      | 4 | 127.000 | 216.000 | 0.000 | 0.000   |  |  |  |

## **Vehicle Mix**

#### **Heavy Vehicle proportion**

|      | То |    |    |   |   |
|------|----|----|----|---|---|
|      |    | 1  | 2  | 3 | 4 |
|      | 1  | 0  | 10 | 0 | 6 |
| From | 2  | 30 | 50 | 0 | 6 |
|      | 3  | 0  | 0  | 0 | 0 |
|      | 4  | 3  | 4  | 0 | 0 |

## **Results**

### **Results Summary for whole modelled period**

| Arm | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|-----|---------|---------------|-----------------|---------|
| 1   | 0.37    | 4.67          | 0.6             | А       |
| 2   | 0.38    | 4.04          | 0.6             | A       |
| 3   | 0.01    | 3.39          | 0.0             | A       |
| 4   | 0.82    | 11.42         | 4.2             | В       |



### Main Results for each time segment

#### Main results: (07:30-07:45)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 64.00                 | 191.95                    | 324.96            | 0.197 | 63.76               | 0.2             | 3.442     | A   |
| 2   | 101.00                | 50.81                     | 378.28            | 0.267 | 100.64              | 0.4             | 3.237     | A   |
| 3   | 0.00                  | 151.44                    | 297.44            | 0.000 | 0.00                | 0.0             | 0.000     | A   |
| 4   | 334.00                | 19.93                     | 423.91            | 0.788 | 330.47              | 3.5             | 9.309     | A   |

#### Main results: (07:45-08:00)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 93.00                 | 193.24                    | 322.67            | 0.288 | 92.84               | 0.4             | 3.913     | A   |
| 2   | 139.00                | 60.93                     | 378.81            | 0.367 | 138.79              | 0.6             | 3.746     | A   |
| 3   | 2.00                  | 199.71                    | 267.42            | 0.007 | 1.99                | 0.0             | 3.390     | Α   |
| 4   | 317.00                | 18.00                     | 426.10            | 0.744 | 317.54              | 3.0             | 8.338     | Α   |

#### Main results: (08:00-08:15)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 115.00                | 201.61                    | 317.16            | 0.363 | 114.84              | 0.6             | 4.444     | A   |
| 2   | 139.00                | 77.89                     | 361.47            | 0.385 | 138.96              | 0.6             | 4.043     | A   |
| 3   | 0.00                  | 216.84                    | 255.07            | 0.000 | 0.01                | 0.0             | 0.000     | A   |
| 4   | 331.00                | 25.96                     | 418.70            | 0.791 | 330.38              | 3.6             | 10.102    | В   |

#### Main results: (08:15-08:30)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 113.00                | 216.55                    | 305.77            | 0.370 | 112.98              | 0.6             | 4.668     | Α   |
| 2   | 141.00                | 68.03                     | 369.59            | 0.382 | 141.00              | 0.6             | 3.937     | A   |
| 3   | 0.00                  | 209.03                    | 260.37            | 0.000 | 0.00                | 0.0             | 0.000     | Α   |
| 4   | 343.00                | 24.01                     | 420.40            | 0.816 | 342.40              | 4.2             | 11.415    | В   |



## 2020 Without Development, AM

#### **Data Errors and Warnings**

No errors or warnings

#### **Analysis Set Details**

| ID | Network flow scaling factor (%) |
|----|---------------------------------|
| A1 | 100.000                         |

## **Junction Network**

#### **Junctions**

| Junction | Name Junction Type |                     | Junction Delay (s) | Junction LOS |
|----------|--------------------|---------------------|--------------------|--------------|
| 1        | untitled           | Standard Roundabout | 9.28               | А            |

#### **Junction Network Options**

[same as above]

## Arms

Arms [same as above]

### **Capacity Options**

[same as above]

### **Roundabout Geometry**

[same as above]

### Slope / Intercept / Capacity

[same as above]

# **Traffic Demand**

### **Demand Set Details**

| ID | Scenario name               | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|----|-----------------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| D2 | 2020 Without<br>Development | AM                  | DIRECT                  | 07:30                       | 08:30                        | 60                                | 15                           |

| Vehicle mix varies over turn | Vehicle mix varies over entry | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
|------------------------------|-------------------------------|--------------------|---------------------------|---------------------------|
| ✓                            | ✓                             | HV Percentages     | 2.00                      | ✓                         |



#### **Demand overview (Traffic)**

| Arm | Linked arm | Use O-D data | Scaling Factor (%) |
|-----|------------|--------------|--------------------|
| 1   |            | ✓            | 100.000            |
| 2   |            | ✓            | 100.000            |
| 3   |            | ✓            | 100.000            |
| 4   |            | √            | 100.000            |

# **Origin-Destination Data**

#### Demand (Veh/TS)

(07:30-07:45)

|      | То |         |         |       |        |  |
|------|----|---------|---------|-------|--------|--|
|      |    | 1       | 2       | 3     | 4      |  |
|      | 1  | 0.000   | 16.000  | 0.000 | 55.000 |  |
| From | 2  | 21.000  | 1.000   | 0.000 | 85.000 |  |
|      | 3  | 0.000   | 0.000   | 0.000 | 0.000  |  |
|      | 4  | 147.000 | 195.000 | 0.000 | 0.000  |  |

#### Demand (Veh/TS)

(07:45-08:00)

|      | То |         |         |       |         |  |
|------|----|---------|---------|-------|---------|--|
|      |    | 1       | 2       | 3     | 4       |  |
|      | 1  | 0.000   | 36.000  | 0.000 | 64.000  |  |
| From | 2  | 18.000  | 0.000   | 0.000 | 127.000 |  |
|      | 3  | 0.000   | 2.000   | 0.000 | 0.000   |  |
|      | 4  | 132.000 | 192.000 | 0.000 | 1.000   |  |

#### Demand (Veh/TS)

(08:00-08:15)

|      |   | То      |         |       |         |  |  |  |  |
|------|---|---------|---------|-------|---------|--|--|--|--|
|      |   | 1       | 2       | 3     | 4       |  |  |  |  |
|      | 1 | 0.000   | 40.000  | 0.000 | 82.000  |  |  |  |  |
| From | 2 | 28.000  | 0.000   | 0.000 | 117.000 |  |  |  |  |
|      | 3 | 0.000   | 0.000   | 0.000 | 0.000   |  |  |  |  |
|      | 4 | 135.000 | 204.000 | 0.000 | 0.000   |  |  |  |  |

#### Demand (Veh/TS)

(08:15-08:30)

|      |   | То      |         |       |         |  |  |  |  |
|------|---|---------|---------|-------|---------|--|--|--|--|
|      |   | 1       | 2       | 3     | 4       |  |  |  |  |
| From | 1 | 1.000   | 48.000  | 0.000 | 71.000  |  |  |  |  |
|      | 2 | 24.000  | 1.000   | 0.000 | 122.000 |  |  |  |  |
|      | 3 | 0.000   | 0.000   | 0.000 | 0.000   |  |  |  |  |
|      | 4 | 133.000 | 218.000 | 0.000 | 0.000   |  |  |  |  |

### **Vehicle Mix**



#### Heavy Vehicle proportion

|      | То |    |    |   |   |  |
|------|----|----|----|---|---|--|
|      |    | 1  | 2  | 3 | 4 |  |
|      | 1  | 0  | 9  | 0 | 6 |  |
| From | 2  | 28 | 50 | 0 | 6 |  |
|      | 3  | 0  | 0  | 0 | 0 |  |
|      | 4  | 3  | 4  | 0 | 0 |  |

## **Results**

### **Results Summary for whole modelled period**

| Arm | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|-----|---------|---------------|-----------------|---------|
| 1   | 0.39    | 4.84          | 0.6             | А       |
| 2   | 0.40    | 4.18          | 0.7             | А       |
| 3   | 0.01    | 3.47          | 0.0             | А       |
| 4   | 0.84    | 12.87         | 4.8             | В       |

### Main Results for each time segment

#### Main results: (07:30-07:45)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 71.00                 | 193.72                    | 324.95            | 0.219 | 70.72               | 0.3             | 3.537     | A   |
| 2   | 107.00                | 54.78                     | 376.95            | 0.284 | 106.61              | 0.4             | 3.325     | A   |
| 3   | 0.00                  | 161.39                    | 291.29            | 0.000 | 0.00                | 0.0             | 0.000     | A   |
| 4   | 342.00                | 21.92                     | 422.64            | 0.809 | 338.01              | 4.0             | 10.201    | В   |

#### Main results: (07:45-08:00)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 100.00                | 195.27                    | 322.82            | 0.310 | 99.83               | 0.4             | 4.034     | A   |
| 2   | 145.00                | 64.92                     | 376.91            | 0.385 | 144.77              | 0.6             | 3.873     | A   |
| 3   | 2.00                  | 209.69                    | 261.29            | 0.008 | 1.99                | 0.0             | 3.470     | A   |
| 4   | 325.00                | 20.00                     | 424.78            | 0.765 | 325.62              | 3.4             | 9.145     | Α   |

#### Main results: (08:00-08:15)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 122.00                | 203.55                    | 317.31            | 0.384 | 121.83              | 0.6             | 4.600     | A   |
| 2   | 145.00                | 81.88                     | 360.22            | 0.403 | 144.95              | 0.7             | 4.179     | A   |
| 3   | 0.00                  | 226.83                    | 249.08            | 0.000 | 0.01                | 0.0             | 0.000     | A   |
| 4   | 339.00                | 27.96                     | 417.50            | 0.812 | 338.28              | 4.1             | 11.227    | В   |



#### Main results: (08:15-08:30)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 120.00                | 218.46                    | 306.00            | 0.392 | 119.98              | 0.6             | 4.838     | A   |
| 2   | 147.00                | 72.03                     | 368.11            | 0.399 | 147.00              | 0.7             | 4.071     | A   |
| 3   | 0.00                  | 219.03                    | 254.31            | 0.000 | 0.00                | 0.0             | 0.000     | A   |
| 4   | 351.00                | 26.01                     | 419.14            | 0.837 | 350.27              | 4.8             | 12.868    | В   |



## 2020 With Development, AM

#### **Data Errors and Warnings**

No errors or warnings

#### **Analysis Set Details**

| ID | Network flow scaling factor (%) |
|----|---------------------------------|
| A1 | 100.000                         |

## **Junction Network**

#### **Junctions**

| Junction | Name     | Junction Type       | Junction Delay (s) | Junction LOS |
|----------|----------|---------------------|--------------------|--------------|
| 1        | untitled | Standard Roundabout | 10.97              | В            |

#### **Junction Network Options**

[same as above]

## Arms

Arms [same as above]

### **Capacity Options**

[same as above]

### **Roundabout Geometry**

[same as above]

### Slope / Intercept / Capacity

[same as above]

# **Traffic Demand**

### **Demand Set Details**

| ID | Scenario name            | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|----|--------------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| D3 | 2020 With<br>Development | AM                  | DIRECT                  | 07:30                       | 08:30                        | 60                                | 15                           |

| Vehicle mix varies over turn | Vehicle mix varies over entry | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
|------------------------------|-------------------------------|--------------------|---------------------------|---------------------------|
| ✓                            | ✓                             | HV Percentages     | 2.00                      | ✓                         |



#### **Demand overview (Traffic)**

| Arm | Linked arm | Use O-D data | Scaling Factor (%) |
|-----|------------|--------------|--------------------|
| 1   |            | ✓            | 100.000            |
| 2   |            | ✓            | 100.000            |
| 3   |            | ✓            | 100.000            |
| 4   |            | ✓            | 100.000            |

# **Origin-Destination Data**

#### Demand (Veh/TS)

(07:30-07:45)

|      |   | То      |         |       |        |  |  |  |  |
|------|---|---------|---------|-------|--------|--|--|--|--|
|      |   | 1       | 2       | 3     | 4      |  |  |  |  |
|      | 1 | 0.000   | 16.000  | 0.000 | 61.000 |  |  |  |  |
| From | 2 | 21.000  | 1.000   | 0.000 | 88.000 |  |  |  |  |
|      | 3 | 0.000   | 0.000   | 0.000 | 0.000  |  |  |  |  |
|      | 4 | 153.000 | 204.000 | 0.000 | 0.000  |  |  |  |  |

#### Demand (Veh/TS)

(07:45-08:00)

|      |   | То      |         |       |         |  |  |  |
|------|---|---------|---------|-------|---------|--|--|--|
|      |   | 1       | 2       | 3     | 4       |  |  |  |
|      | 1 | 0.000   | 36.000  | 0.000 | 70.000  |  |  |  |
| From | 2 | 18.000  | 0.000   | 0.000 | 130.000 |  |  |  |
|      | 3 | 0.000   | 2.000   | 0.000 | 0.000   |  |  |  |
|      | 4 | 138.000 | 201.000 | 0.000 | 1.000   |  |  |  |

#### Demand (Veh/TS)

(08:00-08:15)

|      |   | То      |         |       |         |  |  |  |
|------|---|---------|---------|-------|---------|--|--|--|
|      |   | 1       | 2       | 3     | 4       |  |  |  |
|      | 1 | 0.000   | 40.000  | 0.000 | 88.000  |  |  |  |
| From | 2 | 28.000  | 0.000   | 0.000 | 120.000 |  |  |  |
|      | 3 | 0.000   | 0.000   | 0.000 | 0.000   |  |  |  |
|      | 4 | 141.000 | 213.000 | 0.000 | 0.000   |  |  |  |

#### Demand (Veh/TS)

(08:15-08:30)

|      |   | То      |               |       |         |  |  |  |  |
|------|---|---------|---------------|-------|---------|--|--|--|--|
|      |   | 1       | 1 2 3         |       |         |  |  |  |  |
|      | 1 | 1.000   | 00 48.000 0.0 |       | 77.000  |  |  |  |  |
| From | 2 | 24.000  | 1.000         | 0.000 | 125.000 |  |  |  |  |
|      | 3 | 0.000   | 0.000         | 0.000 | 0.000   |  |  |  |  |
|      | 4 | 139.000 | 227.000       | 0.000 | 0.000   |  |  |  |  |

### **Vehicle Mix**



#### Heavy Vehicle proportion

|      |   |    | То |   |   |
|------|---|----|----|---|---|
|      |   | 1  | 2  | 3 | 4 |
|      | 1 | 0  | 9  | 0 | 5 |
| From | 2 | 28 | 50 | 0 | 6 |
|      | 3 | 0  | 0  | 0 | 0 |
|      | 4 | 3  | 3  | 0 | 0 |

## **Results**

### **Results Summary for whole modelled period**

| Arm | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|-----|---------|---------------|-----------------|---------|
| 1   | 0.42    | 5.11          | 0.7             | А       |
| 2   | 0.41    | 4.30          | 0.7             | А       |
| 3   | 0.01    | 3.54          | 0.0             | А       |
| 4   | 0.87    | 15.65         | 6.1             | С       |

### Main Results for each time segment

#### Main results: (07:30-07:45)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 77.00                 | 202.21                    | 321.43            | 0.240 | 76.69               | 0.3             | 3.672     | A   |
| 2   | 110.00                | 60.75                     | 374.13            | 0.294 | 109.59              | 0.4             | 3.402     | A   |
| 3   | 0.00                  | 170.34                    | 285.94            | 0.000 | 0.00                | 0.0             | 0.000     | A   |
| 4   | 357.00                | 21.92                     | 424.39            | 0.841 | 352.13              | 4.9             | 11.767    | В   |

#### Main results: (07:45-08:00)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 106.00                | 204.34                    | 318.70            | 0.333 | 105.82              | 0.5             | 4.224     | A   |
| 2   | 148.00                | 70.91                     | 373.85            | 0.396 | 147.76              | 0.7             | 3.976     | A   |
| 3   | 2.00                  | 218.67                    | 256.00            | 0.008 | 1.99                | 0.0             | 3.542     | A   |
| 4   | 340.00                | 20.00                     | 426.58            | 0.797 | 340.77              | 4.1             | 10.602    | В   |

#### Main results: (08:00-08:15)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 128.00                | 212.41                    | 313.34            | 0.409 | 127.81              | 0.7             | 4.846     | A   |
| 2   | 148.00                | 87.87                     | 357.29            | 0.414 | 147.95              | 0.7             | 4.298     | A   |
| 3   | 0.00                  | 235.82                    | 243.84            | 0.000 | 0.01                | 0.0             | 0.000     | A   |
| 4   | 354.00                | 27.95                     | 419.28            | 0.844 | 353.06              | 5.0             | 13.335    | В   |



#### Main results: (08:15-08:30)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 126.00                | 227.26                    | 301.99            | 0.417 | 125.97              | 0.7             | 5.113     | A   |
| 2   | 150.00                | 78.03                     | 365.13            | 0.411 | 150.00              | 0.7             | 4.185     | A   |
| 3   | 0.00                  | 228.03                    | 249.03            | 0.000 | 0.00                | 0.0             | 0.000     | A   |
| 4   | 366.00                | 26.01                     | 420.97            | 0.869 | 364.97              | 6.1             | 15.647    | С   |



## 2015 Observed, PM

#### **Data Errors and Warnings**

No errors or warnings

#### **Analysis Set Details**

| ID | Network flow scaling factor (%) |
|----|---------------------------------|
| A1 | 100.000                         |

## **Junction Network**

#### **Junctions**

| Junction | nction Name Junction Type |                     | Junction Delay (s) | Junction LOS |
|----------|---------------------------|---------------------|--------------------|--------------|
| 1        | untitled                  | Standard Roundabout | 5.99               | А            |

#### **Junction Network Options**

[same as above]

## Arms

Arms [same as above]

### **Capacity Options**

[same as above]

#### **Roundabout Geometry**

[same as above]

### Slope / Intercept / Capacity

[same as above]

## **Traffic Demand**

#### **Demand Set Details**

| ID | Scenario name    | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|----|------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| D4 | 2015<br>Observed | PM                  | DIRECT                  | 17:00                       | 18:00                        | 60                                | 15                           |

| Vehicle mix varies over turn | Vehicle mix varies over entry | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
|------------------------------|-------------------------------|--------------------|---------------------------|---------------------------|
| ✓                            | ✓                             | HV Percentages     | 2.00                      | ✓                         |



#### **Demand overview (Traffic)**

| Arm | Linked arm | Use O-D data | Scaling Factor (%) |
|-----|------------|--------------|--------------------|
| 1   |            | ✓            | 100.000            |
| 2   |            | ✓            | 100.000            |
| 3   |            | ✓            | 100.000            |
| 4   |            | √            | 100.000            |

# **Origin-Destination Data**

#### Demand (Veh/TS)

(17:00-17:15)

|      |   |         | То      |       |         |
|------|---|---------|---------|-------|---------|
|      |   | 1       | 2       | 3     | 4       |
|      | 1 | 1.000   | 15.000  | 0.000 | 134.000 |
| From | 2 | 22.000  | 1.000   | 0.000 | 214.000 |
|      | 3 | 0.000   | 0.000   | 0.000 | 0.000   |
|      | 4 | 105.000 | 149.000 | 0.000 | 3.000   |

#### Demand (Veh/TS)

(17:15-17:30)

|      |   |        | То      |       |         |
|------|---|--------|---------|-------|---------|
|      |   | 1      | 2       | 3     | 4       |
|      | 1 | 1.000  | 16.000  | 0.000 | 157.000 |
| From | 2 | 12.000 | 1.000   | 0.000 | 183.000 |
|      | 3 | 0.000  | 1.000   | 0.000 | 0.000   |
|      | 4 | 78.000 | 132.000 | 0.000 | 4.000   |

#### Demand (Veh/TS)

(17:30-17:45)

|      |   |        | То      |       |         |
|------|---|--------|---------|-------|---------|
|      |   | 1      | 2       | 3     | 4       |
|      | 1 | 0.000  | 11.000  | 0.000 | 141.000 |
| From | 2 | 26.000 | 1.000   | 0.000 | 197.000 |
|      | 3 | 0.000  | 0.000   | 0.000 | 1.000   |
|      | 4 | 92.000 | 170.000 | 0.000 | 1.000   |

#### Demand (Veh/TS)

(17:45-18:00)

|      |   |        | То      |       |         |
|------|---|--------|---------|-------|---------|
|      |   | 1      | 2       | 3     | 4       |
|      | 1 | 1.000  | 11.000  | 0.000 | 138.000 |
| From | 2 | 11.000 | 0.000   | 0.000 | 200.000 |
|      | 3 | 0.000  | 0.000   | 0.000 | 0.000   |
|      | 4 | 76.000 | 163.000 | 0.000 | 3.000   |

### **Vehicle Mix**



#### Heavy Vehicle proportion

|      |   | То |    |   |   |  |  |  |
|------|---|----|----|---|---|--|--|--|
|      |   | 1  | 2  | 3 | 4 |  |  |  |
|      | 1 | 0  | 2  | 0 | 1 |  |  |  |
| From | 2 | 6  | 33 | 0 | 3 |  |  |  |
|      | 3 | 0  | 0  | 0 | 0 |  |  |  |
|      | 4 | 1  | 3  | 0 | 0 |  |  |  |

## **Results**

### **Results Summary for whole modelled period**

| Arm | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|-----|---------|---------------|-----------------|---------|
| 1   | 0.45    | 4.32          | 0.8             | А       |
| 2   | 0.68    | 7.74          | 2.1             | А       |
| 3   | 0.01    | 5.25          | 0.0             | А       |
| 4   | 0.62    | 5.48          | 1.6             | А       |

### Main Results for each time segment

#### Main results: (17:00-17:15)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 150.00                | 152.12                    | 375.00            | 0.400 | 149.34              | 0.7             | 3.977     | A   |
| 2   | 237.00                | 137.39                    | 349.33            | 0.678 | 234.95              | 2.1             | 7.736     | A   |
| 3   | 0.00                  | 372.33                    | 168.50            | 0.000 | 0.00                | 0.0             | 0.000     | A   |
| 4   | 257.00                | 23.80                     | 428.79            | 0.599 | 255.53              | 1.5             | 5.152     | A   |

#### Main results: (17:15-17:30)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 174.00                | 138.25                    | 385.27            | 0.452 | 173.84              | 0.8             | 4.254     | A   |
| 2   | 196.00                | 161.85                    | 332.60            | 0.589 | 196.60              | 1.5             | 6.648     | A   |
| 3   | 1.00                  | 358.45                    | 177.52            | 0.006 | 0.99                | 0.0             | 5.098     | A   |
| 4   | 214.00                | 15.10                     | 434.85            | 0.492 | 214.50              | 1.0             | 4.093     | A   |

#### Main results: (17:30-17:45)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 152.00                | 171.59                    | 360.72            | 0.421 | 152.08              | 0.7             | 4.316     | А   |
| 2   | 224.00                | 142.07                    | 345.85            | 0.648 | 223.66              | 1.8             | 7.342     | Α   |
| 3   | 1.00                  | 365.73                    | 172.54            | 0.006 | 1.00                | 0.0             | 5.245     | А   |
| 4   | 263.00                | 26.89                     | 426.08            | 0.617 | 262.39              | 1.6             | 5.477     | Α   |



#### Main results: (17:45-18:00)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 150.00                | 166.18                    | 364.98            | 0.411 | 150.03              | 0.7             | 4.187     | A   |
| 2   | 211.00                | 142.02                    | 346.90            | 0.608 | 211.22              | 1.6             | 6.647     | A   |
| 3   | 0.00                  | 353.24                    | 180.67            | 0.000 | 0.01                | 0.0             | 0.000     | A   |
| 4   | 242.00                | 12.13                     | 436.72            | 0.554 | 242.33              | 1.3             | 4.639     | A   |



## 2020 Without Development, PM

#### **Data Errors and Warnings**

No errors or warnings

#### **Analysis Set Details**

| ID | Network flow scaling factor (%) |
|----|---------------------------------|
| A1 | 100.000                         |

## **Junction Network**

#### Junctions

| Junction Name Junction Type |   | Junction Delay (s) | Junction LOS        |      |   |
|-----------------------------|---|--------------------|---------------------|------|---|
|                             | 1 | untitled           | Standard Roundabout | 6.78 | А |

#### **Junction Network Options**

[same as above]

## Arms

Arms [same as above]

### **Capacity Options**

[same as above]

### **Roundabout Geometry**

[same as above]

### Slope / Intercept / Capacity

[same as above]

# **Traffic Demand**

### **Demand Set Details**

| ID | Scenario name               | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|----|-----------------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| D5 | 2020 Without<br>Development | ΡM                  | DIRECT                  | 17:00                       | 18:00                        | 60                                | 15                           |

| Vehicle mix varies over turn | Vehicle mix varies over entry | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
|------------------------------|-------------------------------|--------------------|---------------------------|---------------------------|
| ✓                            | ✓                             | HV Percentages     | 2.00                      | ✓                         |



#### **Demand overview (Traffic)**

| Arm | Linked arm | Use O-D data | Scaling Factor (%) |
|-----|------------|--------------|--------------------|
| 1   |            | ✓            | 100.000            |
| 2   |            | ✓            | 100.000            |
| 3   |            | ✓            | 100.000            |
| 4   |            | √            | 100.000            |

# **Origin-Destination Data**

#### Demand (Veh/TS)

(17:00-17:15)

|      | То |         |         |       |         |  |
|------|----|---------|---------|-------|---------|--|
|      |    | 1       | 2       | 3     | 4       |  |
|      | 1  | 1.000   | 26.000  | 0.000 | 131.000 |  |
| From | 2  | 32.000  | 1.000   | 0.000 | 226.000 |  |
|      | 3  | 0.000   | 0.000   | 0.000 | 0.000   |  |
|      | 4  | 103.000 | 162.000 | 0.000 | 3.000   |  |

#### Demand (Veh/TS)

(17:15-17:30)

|      | То |        |         |       |         |  |  |  |
|------|----|--------|---------|-------|---------|--|--|--|
|      |    | 4      | 0       | 2     | 4       |  |  |  |
|      |    | 1      | 2       | 3     | 4       |  |  |  |
|      | 1  | 1.000  | 27.000  | 0.000 | 154.000 |  |  |  |
| From | 2  | 22.000 | 1.000   | 0.000 | 195.000 |  |  |  |
|      | 3  | 0.000  | 1.000   | 0.000 | 0.000   |  |  |  |
|      | 4  | 76.000 | 145.000 | 0.000 | 4.000   |  |  |  |

#### Demand (Veh/TS)

(17:30-17:45)

|      | То |        |         |       |         |  |  |  |
|------|----|--------|---------|-------|---------|--|--|--|
|      |    | 1      | 2       | 3     | 4       |  |  |  |
|      | 1  | 0.000  | 22.000  | 0.000 | 138.000 |  |  |  |
| From | 2  | 26.000 | 1.000   | 0.000 | 209.000 |  |  |  |
|      | 3  | 0.000  | 0.000   | 0.000 | 1.000   |  |  |  |
|      | 4  | 90.000 | 183.000 | 0.000 | 1.000   |  |  |  |

#### Demand (Veh/TS)

(17:45-18:00)

|      | То |        |         |       |         |  |  |
|------|----|--------|---------|-------|---------|--|--|
|      |    | 1      | 2       | 3     | 4       |  |  |
|      | 1  | 1.000  | 22.000  | 0.000 | 135.000 |  |  |
| From | 2  | 21.000 | 0.000   | 0.000 | 212.000 |  |  |
|      | 3  | 0.000  | 0.000   | 0.000 | 0.000   |  |  |
|      | 4  | 74.000 | 176.000 | 0.000 | 3.000   |  |  |

### **Vehicle Mix**



#### Heavy Vehicle proportion

|      | То |   |    |   |   |  |
|------|----|---|----|---|---|--|
|      |    | 1 | 2  | 3 | 4 |  |
|      | 1  | 0 | 1  | 0 | 1 |  |
| From | 2  | 4 | 33 | 0 | 3 |  |
|      | 3  | 0 | 0  | 0 | 0 |  |
|      | 4  | 2 | 3  | 0 | 0 |  |

## **Results**

### **Results Summary for whole modelled period**

| Arm | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|-----|---------|---------------|-----------------|---------|
| 1   | 0.48    | 4.71          | 0.9             | А       |
| 2   | 0.74    | 9.17          | 2.7             | А       |
| 3   | 0.01    | 5.46          | 0.0             | А       |
| 4   | 0.64    | 5.87          | 1.8             | А       |

### Main Results for each time segment

#### Main results: (17:00-17:15)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 158.00                | 164.94                    | 365.82            | 0.432 | 157.25              | 0.8             | 4.299     | A   |
| 2   | 259.00                | 134.35                    | 351.99            | 0.736 | 256.32              | 2.7             | 9.169     | A   |
| 3   | 0.00                  | 390.67                    | 157.36            | 0.000 | 0.00                | 0.0             | 0.000     | A   |
| 4   | 268.00                | 33.65                     | 421.84            | 0.635 | 266.29              | 1.7             | 5.726     | A   |

#### Main results: (17:15-17:30)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 182.00                | 151.31                    | 375.90            | 0.484 | 181.82              | 0.9             | 4.633     | A   |
| 2   | 218.00                | 158.84                    | 335.03            | 0.651 | 218.77              | 1.9             | 7.793     | A   |
| 3   | 1.00                  | 377.61                    | 165.76            | 0.006 | 0.99                | 0.0             | 5.461     | A   |
| 4   | 225.00                | 25.13                     | 427.65            | 0.526 | 225.59              | 1.1             | 4.468     | A   |

#### Main results: (17:30-17:45)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 160.00                | 184.56                    | 351.34            | 0.455 | 160.09              | 0.8             | 4.709     | А   |
| 2   | 236.00                | 139.08                    | 348.69            | 0.677 | 235.85              | 2.1             | 7.960     | A   |
| 3   | 1.00                  | 374.93                    | 167.13            | 0.006 | 1.00                | 0.0             | 5.416     | A   |
| 4   | 274.00                | 26.98                     | 426.08            | 0.643 | 273.35              | 1.8             | 5.868     | A   |



#### Main results: (17:45-18:00)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 158.00                | 179.17                    | 355.58            | 0.444 | 158.04              | 0.8             | 4.556     | A   |
| 2   | 233.00                | 139.02                    | 349.23            | 0.667 | 233.02              | 2.0             | 7.748     | A   |
| 3   | 0.00                  | 372.04                    | 169.12            | 0.000 | 0.01                | 0.0             | 0.000     | A   |
| 4   | 253.00                | 22.05                     | 429.65            | 0.589 | 253.32              | 1.5             | 5.113     | A   |





## 2020 With Development, PM

#### **Data Errors and Warnings**

No errors or warnings

#### **Analysis Set Details**

| ID | Network flow scaling factor (%) |
|----|---------------------------------|
| A1 | 100.000                         |

## **Junction Network**

#### Junctions

| Junction | Name     | Junction Type       | Junction Delay (s) | Junction LOS |
|----------|----------|---------------------|--------------------|--------------|
| 1        | untitled | Standard Roundabout | 7.31               | А            |

#### **Junction Network Options**

[same as above]

## Arms

Arms [same as above]

Capacity Options

[same as above]

#### **Roundabout Geometry**

[same as above]

### Slope / Intercept / Capacity

[same as above]

# **Traffic Demand**

### **Demand Set Details**

| ID | Scenario name            | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|----|--------------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| D6 | 2020 With<br>Development | PM                  | DIRECT                  | 17:00                       | 18:00                        | 60                                | 15                           |

| Vehicle mix varies over turn | Vehicle mix varies over entry | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
|------------------------------|-------------------------------|--------------------|---------------------------|---------------------------|
| ✓                            | ✓                             | HV Percentages     | 2.00                      | ✓                         |



#### **Demand overview (Traffic)**

| Arm | Linked arm | Use O-D data | Scaling Factor (%) |
|-----|------------|--------------|--------------------|
| 1   |            | ✓            | 100.000            |
| 2   |            | ✓            | 100.000            |
| 3   |            | ✓            | 100.000            |
| 4   |            | ✓            | 100.000            |

# **Origin-Destination Data**

#### Demand (Veh/TS)

(17:00-17:15)

|      | То |         |         |       |         |  |  |
|------|----|---------|---------|-------|---------|--|--|
|      |    | 1       | 2       | 3     | 4       |  |  |
|      | 1  | 1.000   | 26.000  | 0.000 | 133.000 |  |  |
| From | 2  | 32.000  | 1.000   | 0.000 | 234.000 |  |  |
|      | 3  | 0.000   | 0.000   | 0.000 | 0.000   |  |  |
|      | 4  | 106.000 | 165.000 | 0.000 | 3.000   |  |  |

#### Demand (Veh/TS)

(17:15-17:30)

|      |   | То     |         |       |         |  |  |  |
|------|---|--------|---------|-------|---------|--|--|--|
|      |   | 1      | 2       | 3     | 4       |  |  |  |
|      | 1 | 1.000  | 27.000  | 0.000 | 156.000 |  |  |  |
| From | 2 | 22.000 | 1.000   | 0.000 | 203.000 |  |  |  |
|      | 3 | 0.000  | 1.000   | 0.000 | 0.000   |  |  |  |
|      | 4 | 79.000 | 148.000 | 0.000 | 4.000   |  |  |  |

#### Demand (Veh/TS)

(17:30-17:45)

|      | То |        |         |       |         |  |  |
|------|----|--------|---------|-------|---------|--|--|
|      |    | 1      | 2       | 3     | 4       |  |  |
|      | 1  | 0.000  | 22.000  | 0.000 | 140.000 |  |  |
| From | 2  | 36.000 | 1.000   | 0.000 | 217.000 |  |  |
|      | 3  | 0.000  | 0.000   | 0.000 | 1.000   |  |  |
|      | 4  | 93.000 | 186.000 | 0.000 | 1.000   |  |  |

#### Demand (Veh/TS)

(17:45-18:00)

|      | То |        |         |       |         |  |  |  |
|------|----|--------|---------|-------|---------|--|--|--|
|      |    | 1      | 2       | 3     | 4       |  |  |  |
|      | 1  | 1.000  | 22.000  | 0.000 | 137.000 |  |  |  |
| From | 2  | 21.000 | 0.000   | 0.000 | 220.000 |  |  |  |
|      | 3  | 0.000  | 0.000   | 0.000 | 0.000   |  |  |  |
|      | 4  | 77.000 | 179.000 | 0.000 | 3.000   |  |  |  |

### **Vehicle Mix**



#### Heavy Vehicle proportion

|      | То |   |    |   |   |  |
|------|----|---|----|---|---|--|
|      |    | 1 | 2  | 3 | 4 |  |
|      | 1  | 0 | 1  | 0 | 1 |  |
| From | 2  | 4 | 33 | 0 | 3 |  |
|      | 3  | 0 | 0  | 0 | 0 |  |
|      | 4  | 1 | 3  | 0 | 0 |  |

## **Results**

### **Results Summary for whole modelled period**

| Arm | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|-----|---------|---------------|-----------------|---------|
| 1   | 0.49    | 4.80          | 1.0             | А       |
| 2   | 0.76    | 9.97          | 3.0             | А       |
| 3   | 0.01    | 5.83          | 0.0             | А       |
| 4   | 0.67    | 6.35          | 2.0             | А       |

### Main Results for each time segment

#### Main results: (17:00-17:15)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 160.00                | 167.88                    | 364.01            | 0.440 | 159.22              | 0.8             | 4.378     | A   |
| 2   | 267.00                | 136.33                    | 351.54            | 0.760 | 263.99              | 3.0             | 9.965     | A   |
| 3   | 0.00                  | 400.31                    | 151.86            | 0.000 | 0.00                | 0.0             | 0.000     | A   |
| 4   | 274.00                | 33.62                     | 422.78            | 0.648 | 272.19              | 1.8             | 5.909     | A   |

#### Main results: (17:15-17:30)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 184.00                | 154.33                    | 374.00            | 0.492 | 183.82              | 1.0             | 4.727     | A   |
| 2   | 226.00                | 160.83                    | 334.54            | 0.676 | 226.88              | 2.1             | 8.429     | A   |
| 3   | 1.00                  | 387.71                    | 159.93            | 0.006 | 0.99                | 0.0             | 5.662     | A   |
| 4   | 231.00                | 25.15                     | 428.60            | 0.539 | 231.63              | 1.2             | 4.584     | A   |

#### Main results: (17:30-17:45)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 162.00                | 187.48                    | 349.59            | 0.463 | 162.09              | 0.9             | 4.801     | A   |
| 2   | 254.00                | 141.08                    | 348.13            | 0.730 | 253.53              | 2.6             | 9.449     | A   |
| 3   | 1.00                  | 394.61                    | 155.37            | 0.006 | 1.00                | 0.0             | 5.829     | A   |
| 4   | 280.00                | 36.85                     | 420.14            | 0.666 | 279.22              | 2.0             | 6.351     | A   |



#### Main results: (17:45-18:00)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 160.00                | 182.24                    | 353.70            | 0.452 | 160.04              | 0.8             | 4.649     | A   |
| 2   | 241.00                | 141.02                    | 348.77            | 0.691 | 241.32              | 2.3             | 8.407     | A   |
| 3   | 0.00                  | 382.34                    | 163.20            | 0.000 | 0.01                | 0.0             | 0.000     | A   |
| 4   | 259.00                | 22.18                     | 430.58            | 0.602 | 259.43              | 1.5             | 5.271     | Α   |



### **Junctions 9**

#### **ARCADY 9 - Roundabout Module**

Version: 9.0.0.4211 [] © Copyright TRL Limited, 2016

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The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: The Saltings Roundabout 500 units Updated TRICS.j9 Path: N:\Projects\hdshor 150137\Analysis\ARCADY Report generation date: 10/03/2016 11:46:24

»2015 Observed, AM
»2020 Without Development, AM
»2020 With Development, AM
»2015 Observed, PM
»2020 Without Development, PM
»2020 With Development, PM

#### Summary of junction performance

|       |                          | AM        |       |        | PM          |           |      |     |  |
|-------|--------------------------|-----------|-------|--------|-------------|-----------|------|-----|--|
|       | Queue (Veh)              | Delay (s) | RFC   | LOS    | Queue (Veh) | Delay (s) | RFC  | LOS |  |
|       |                          |           | 20    | 15 OI  | oserved     |           |      |     |  |
| Arm 1 | 0.0                      | 5.72      | 0.04  | А      | 0.3         | 5.66      | 0.22 | А   |  |
| Arm 2 | 0.6                      | 2.57      | 0.37  | А      | 1.6         | 4.34      | 0.62 | А   |  |
| Arm 3 | 0.0                      | 3.33      | 0.02  | А      | 0.0         | 3.73      | 0.02 | А   |  |
| Arm 4 | 0.6                      | 2.83      | 0.36  | А      | 0.3         | 2.47      | 0.22 | Α   |  |
| Arm 5 | 1.3                      | 4.20      | 0.56  | А      | 0.8         | 3.08      | 0.44 | A   |  |
|       | 2020 Without Development |           |       |        |             |           |      |     |  |
| Arm 1 | 0.0                      | 5.83      | 0.04  | А      | 0.3         | 5.74      | 0.22 | А   |  |
| Arm 2 | 0.6                      | 2.65      | 0.39  | А      | 1.7         | 4.43      | 0.63 | А   |  |
| Arm 3 | 0.0                      | 3.37      | 0.02  | А      | 0.0         | 3.76      | 0.02 | А   |  |
| Arm 4 | 0.6                      | 2.85      | 0.37  | А      | 0.3         | 2.49      | 0.22 | Α   |  |
| Arm 5 | 1.3                      | 4.35      | 0.58  | А      | 0.8         | 3.14      | 0.45 | A   |  |
|       |                          | 20        | 020 W | /ith D | evelopment  |           | -    |     |  |
| Arm 1 | 0.0                      | 6.10      | 0.04  | А      | 0.3         | 5.85      | 0.22 | Α   |  |
| Arm 2 | 0.7                      | 2.78      | 0.42  | А      | 1.8         | 4.65      | 0.65 | А   |  |
| Arm 3 | 0.0                      | 3.45      | 0.02  | А      | 0.0         | 3.83      | 0.02 | А   |  |
| Arm 4 | 0.6                      | 2.97      | 0.38  | A      | 0.3         | 2.53      | 0.22 | А   |  |
| Arm 5 | 1.5                      | 4.67      | 0.61  | A      | 0.9         | 3.23      | 0.47 | А   |  |

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.



### File summary

#### **File Description**

| Title       | (untitled)         |
|-------------|--------------------|
| Location    |                    |
| Site number |                    |
| Date        | 31/07/2015         |
| Version     |                    |
| Status      | (new file)         |
| Identifier  |                    |
| Client      |                    |
| Jobnumber   |                    |
| Enumerator  | MOTION"emmastonard |
| Description |                    |
|             |                    |

### Units

| Distance units | Speed units | Traffic units input | Traffic units results | Flow units     | Average delay units | Total delay units | Rate of delay units |
|----------------|-------------|---------------------|-----------------------|----------------|---------------------|-------------------|---------------------|
| m              | kph         | Veh                 | Veh                   | perTimeSegment | S                   | -Min              | perMin              |

### **Analysis Options**

| Calculate Queue Percentiles | Calculate residual capacity | RFC Threshold | Average Delay threshold (s) | Queue threshold (PCU) |
|-----------------------------|-----------------------------|---------------|-----------------------------|-----------------------|
|                             |                             | 0.85          | 36.00                       | 20.00                 |

### **Demand Set Summary**

| Scenario name               | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|-----------------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| 2015 Observed               | AM                  | DIRECT                  | 07:30                       | 08:30                        | 60                                | 15                           |
| 2020 Without<br>Development | AM                  | DIRECT                  | 07:30                       | 08:30                        | 60                                | 15                           |
| 2020 With Development       | AM                  | DIRECT                  | 07:30                       | 08:30                        | 60                                | 15                           |
| 2015 Observed               | ΡM                  | DIRECT                  | 17:00                       | 18:00                        | 60                                | 15                           |
| 2020 Without<br>Development | PM                  | DIRECT                  | 17:00                       | 18:00                        | 60                                | 15                           |
| 2020 With Development       | PM                  | DIRECT                  | 17:00                       | 18:00                        | 60                                | 15                           |



## 2015 Observed, AM

#### **Data Errors and Warnings**

No errors or warnings

#### **Analysis Set Details**

| ID | Network flow scaling factor (%) |
|----|---------------------------------|
| A1 | 100.000                         |

## **Junction Network**

#### Junctions

| Junction Name |            | Name | Junction Type       | Junction Delay (s) | Junction LOS |
|---------------|------------|------|---------------------|--------------------|--------------|
|               | 1 untitled |      | Standard Roundabout | 3.32               | А            |

#### **Junction Network Options**

| Driving side | Lighting       |  |  |
|--------------|----------------|--|--|
| Left         | Normal/unknown |  |  |

### Arms

#### Arms

| Arm | Name                 | Description |
|-----|----------------------|-------------|
| 1   | New Salts Farm Road  |             |
| 2   | Brighton Road (East) |             |
| 3   | Petrol Station       |             |
| 4   | The Saltings         |             |
| 5   | Brighton Road (West) |             |

### **Capacity Options**

| Arm | Minimum capacity (PCU/TS) | Maximum capacity (PCU/TS) |
|-----|---------------------------|---------------------------|
| 1   | 0.00                      | 24999.75                  |
| 2   | 0.00                      | 24999.75                  |
| 3   | 0.00                      | 24999.75                  |
| 4   | 0.00                      | 24999.75                  |
| 5   | 0.00                      | 24999.75                  |

#### **Roundabout Geometry**

| Arm | V - Approach road half-<br>width (m) | E - Entry width<br>(m) | l' - Effective flare<br>length (m) | R - Entry radius<br>(m) | D - Inscribed circle<br>diameter (m) | PHI - Conflict (entry) angle<br>(deg) | Exit<br>only |
|-----|--------------------------------------|------------------------|------------------------------------|-------------------------|--------------------------------------|---------------------------------------|--------------|
| 1   | 3.75                                 | 4.50                   | 8.0                                | 15.0                    | 84.0                                 | 40.0                                  |              |
| 2   | 6.00                                 | 8.00                   | 18.0                               | 20.0                    | 84.0                                 | 17.5                                  |              |
| 3   | 6.00                                 | 6.00                   | 0.0                                | 10.0                    | 84.0                                 | 30.0                                  |              |
| 4   | 7.00                                 | 8.00                   | 6.0                                | 17.5                    | 84.0                                 | 15.0                                  |              |
| 5   | 6.00                                 | 8.00                   | 12.0                               | 15.0                    | 84.0                                 | 15.0                                  |              |



#### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

| Arm | Final slope | Final intercept (PCU/TS) |
|-----|-------------|--------------------------|
| 1   | 0.387       | 311.048                  |
| 2   | 0.569       | 590.824                  |
| 3   | 0.458       | 432.275                  |
| 4   | 0.578       | 605.774                  |
| 5   | 0.558       | 573.085                  |

The slope and intercept shown above include any corrections and adjustments.

## **Traffic Demand**

#### **Demand Set Details**

| ID | Scenario name    | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|----|------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| D1 | 2015<br>Observed | AM                  | DIRECT                  | 07:30                       | 08:30                        | 60                                | 15                           |

| Vehicle mix varies over turn | Vehicle mix varies over entry | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
|------------------------------|-------------------------------|--------------------|---------------------------|---------------------------|
| ✓                            | ✓                             | HV Percentages     | 2.00                      | ✓                         |

#### **Demand overview (Traffic)**

| Arm | Linked arm | Use O-D data | Scaling Factor (%) |
|-----|------------|--------------|--------------------|
| 1   |            | ✓            | 100.000            |
| 2   |            | ✓            | 100.000            |
| 3   |            | ✓            | 100.000            |
| 4   |            | ✓            | 100.000            |
| 5   |            | ✓            | 100.000            |

## **Origin-Destination Data**

#### Demand (Veh/TS)

(07:30-07:45)

|       | То |        |         |        |        |         |
|-------|----|--------|---------|--------|--------|---------|
|       |    | 1      | 2       | 3      | 4      | 5       |
|       | 1  | 0.000  | 4.000   | 0.000  | 1.000  | 0.000   |
| Erom  | 2  | 3.000  | 1.000   | 0.000  | 19.000 | 139.000 |
| FIUII | 3  | 0.000  | 2.000   | 0.000  | 1.000  | 3.000   |
|       | 4  | 11.000 | 110.000 | 0.000  | 0.000  | 37.000  |
|       | 5  | 10.000 | 223.000 | 14.000 | 20.000 | 4.000   |



#### Demand (Veh/TS)

(07:45-08:00)

|      | То |        |         |       |        |         |
|------|----|--------|---------|-------|--------|---------|
| From |    | 1      | 2       | 3     | 4      | 5       |
|      | 1  | 0.000  | 3.000   | 0.000 | 1.000  | 2.000   |
|      | 2  | 11.000 | 4.000   | 0.000 | 32.000 | 142.000 |
|      | 3  | 1.000  | 2.000   | 0.000 | 1.000  | 0.000   |
|      | 4  | 13.000 | 112.000 | 0.000 | 0.000  | 29.000  |
|      | 5  | 15.000 | 211.000 | 4.000 | 17.000 | 1.000   |

#### Demand (Veh/TS)

(08:00-08:15)

|      | То |        |         |       |        |         |
|------|----|--------|---------|-------|--------|---------|
| From |    | 1      | 2       | 3     | 4      | 5       |
|      | 1  | 0.000  | 3.000   | 1.000 | 0.000  | 1.000   |
|      | 2  | 5.000  | 1.000   | 0.000 | 34.000 | 153.000 |
|      | 3  | 2.000  | 1.000   | 0.000 | 0.000  | 2.000   |
|      | 4  | 17.000 | 124.000 | 0.000 | 0.000  | 38.000  |
|      | 5  | 17.000 | 201.000 | 7.000 | 16.000 | 3.000   |

#### Demand (Veh/TS)

(08:15-08:30)

|      | То |        |         |       |        |         |
|------|----|--------|---------|-------|--------|---------|
|      |    | 1      | 2       | 3     | 4      | 5       |
| From | 1  | 0.000  | 2.000   | 0.000 | 0.000  | 1.000   |
|      | 2  | 3.000  | 0.000   | 2.000 | 50.000 | 151.000 |
|      | 3  | 0.000  | 1.000   | 0.000 | 0.000  | 0.000   |
|      | 4  | 16.000 | 140.000 | 0.000 | 0.000  | 28.000  |
|      | 5  | 18.000 | 165.000 | 2.000 | 13.000 | 0.000   |

## **Vehicle Mix**

#### Heavy Vehicle proportion

|        | То |   |    |   |    |    |
|--------|----|---|----|---|----|----|
|        |    | 1 | 2  | 3 | 4  | 5  |
|        | 1  | 0 | 0  | 0 | 0  | 0  |
| From   | 2  | 0 | 0  | 0 | 6  | 4  |
| FIOIII | 3  | 0 | 17 | 0 | 50 | 20 |
|        | 4  | 0 | 1  | 0 | 0  | 4  |
|        | 5  | 0 | 4  | 0 | 6  | 0  |


# **Results**

### **Results Summary for whole modelled period**

| Arm | Max RFC     | Max delay (s) | Max Queue (Veh) | Max LOS |
|-----|-------------|---------------|-----------------|---------|
| 1   | 0.04        | 5.72          | 0.0             | А       |
| 2   | 2 0.37 2.57 |               | 0.6             |         |
| 3   | 0.02        | 3.33          | 0.0             | А       |
| 4   | 0.36        | 2.83          | 0.6             | А       |
| 5   | 0.56        | 4.20          | 1.3             | А       |

### Main Results for each time segment

### Main results: (07:30-07:45)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 5.00                  | 372.45                    | 162.12            | 0.031 | 4.97                | 0.0             | 5.725     | A   |
| 2   | 162.00                | 38.82                     | 545.03            | 0.297 | 161.58              | 0.4             | 2.345     | A   |
| 3   | 6.00                  | 186.46                    | 276.83            | 0.022 | 5.98                | 0.0             | 3.322     | A   |
| 4   | 158.00                | 151.59                    | 506.00            | 0.312 | 157.55              | 0.5             | 2.579     | A   |
| 5   | 271.00                | 126.64                    | 482.48            | 0.562 | 269.73              | 1.3             | 4.204     | Α   |

### Main results: (07:45-08:00)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 6.00                  | 351.16                    | 170.60            | 0.035 | 6.00                | 0.0             | 5.467     | Α   |
| 2   | 189.00                | 25.07                     | 553.30            | 0.342 | 188.90              | 0.5             | 2.470     | Α   |
| 3   | 4.00                  | 209.92                    | 274.50            | 0.015 | 4.01                | 0.0             | 3.326     | Α   |
| 4   | 154.00                | 162.95                    | 500.54            | 0.308 | 154.01              | 0.4             | 2.598     | Α   |
| 5   | 248.00                | 142.95                    | 473.31            | 0.524 | 248.16              | 1.1             | 4.001     | А   |

### Main results: (08:00-08:15)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 5.00                  | 352.98                    | 170.11            | 0.029 | 5.01                | 0.0             | 5.450     | A   |
| 2   | 193.00                | 27.99                     | 550.62            | 0.351 | 192.98              | 0.5             | 2.516     | A   |
| 3   | 5.00                  | 212.99                    | 296.65            | 0.017 | 5.00                | 0.0             | 3.085     | A   |
| 4   | 179.00                | 167.98                    | 496.99            | 0.360 | 178.89              | 0.6             | 2.829     | A   |
| 5   | 244.00                | 149.95                    | 470.19            | 0.519 | 244.02              | 1.1             | 3.981     | Α   |

### Main results: (08:15-08:30)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 3.00                  | 321.29                    | 182.98            | 0.016 | 3.01                | 0.0             | 5.002     | A   |
| 2   | 206.00                | 16.07                     | 556.41            | 0.370 | 205.95              | 0.6             | 2.567     | A   |
| 3   | 1.00                  | 217.99                    | 280.52            | 0.004 | 1.01                | 0.0             | 3.219     | A   |
| 4   | 184.00                | 156.03                    | 504.92            | 0.364 | 183.99              | 0.6             | 2.803     | A   |
| 5   | 198.00                | 159.97                    | 464.55            | 0.426 | 198.34              | 0.7             | 3.384     | A   |



# 2020 Without Development, AM

### **Data Errors and Warnings**

No errors or warnings

### **Analysis Set Details**

| ID | Network flow scaling factor (%) |
|----|---------------------------------|
| A1 | 100.000                         |

# **Junction Network**

### **Junctions**

| Junction Name |          | Junction Type       | Junction Delay (s) | Junction LOS |  |
|---------------|----------|---------------------|--------------------|--------------|--|
| 1             | untitled | Standard Roundabout | 3.41               | А            |  |

### **Junction Network Options**

[same as above]

# Arms

Arms [same as above]

**Capacity Options** 

[same as above]

### **Roundabout Geometry**

[same as above]

### Slope / Intercept / Capacity

[same as above]

# **Traffic Demand**

### **Demand Set Details**

| ID | Scenario name               | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|----|-----------------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| D2 | 2020 Without<br>Development | AM                  | DIRECT                  | 07:30                       | 08:30                        | 60                                | 15                           |

| Vehicle mix varies over turn | Vehicle mix varies over entry | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
|------------------------------|-------------------------------|--------------------|---------------------------|---------------------------|
| ✓                            | ✓                             | HV Percentages     | 2.00                      | ✓                         |



### **Demand overview (Traffic)**

| Arm | Linked arm | Use O-D data | Scaling Factor (%) |
|-----|------------|--------------|--------------------|
| 1   |            | ✓            | 100.000            |
| 2   |            | ✓            | 100.000            |
| 3   |            | ✓            | 100.000            |
| 4   |            | ✓            | 100.000            |
| 5   |            | ✓            | 100.000            |

F

Fr

# **Origin-Destination Data**

### Demand (Veh/TS)

(07:30-07:45)

|  | То |        |         |        |        |         |  |  |  |
|--|----|--------|---------|--------|--------|---------|--|--|--|
|  |    | 1      | 2       | 3      | 4      | 5       |  |  |  |
|  | 1  | 0.000  | 4.000   | 0.000  | 1.000  | 0.000   |  |  |  |
|  | 2  | 3.000  | 1.000   | 0.000  | 19.000 | 147.000 |  |  |  |
|  | 3  | 0.000  | 2.000   | 0.000  | 1.000  | 3.000   |  |  |  |
|  | 4  | 11.000 | 110.000 | 0.000  | 0.000  | 37.000  |  |  |  |
|  | 5  | 10.000 | 230.000 | 14.000 | 20.000 | 4.000   |  |  |  |

### Demand (Veh/TS)

(07:45-08:00)

|      | То |        |         |       |        |         |  |  |
|------|----|--------|---------|-------|--------|---------|--|--|
|      |    | 1      | 2       | 3     | 4      | 5       |  |  |
|      | 1  | 0.000  | 3.000   | 0.000 | 1.000  | 2.000   |  |  |
|      | 2  | 11.000 | 4.000   | 0.000 | 32.000 | 150.000 |  |  |
| 0111 | 3  | 1.000  | 2.000   | 0.000 | 1.000  | 0.000   |  |  |
|      | 4  | 13.000 | 112.000 | 0.000 | 0.000  | 29.000  |  |  |
|      | 5  | 15.000 | 218.000 | 4.000 | 17.000 | 1.000   |  |  |

### Demand (Veh/TS)

(08:00-08:15)

|        | То |        |         |       |        |         |  |  |
|--------|----|--------|---------|-------|--------|---------|--|--|
|        |    | 1      | 2       | 3     | 4      | 5       |  |  |
|        | 1  | 0.000  | 3.000   | 1.000 | 0.000  | 1.000   |  |  |
| From   | 2  | 5.000  | 1.000   | 0.000 | 34.000 | 161.000 |  |  |
| 110111 | 3  | 2.000  | 1.000   | 0.000 | 0.000  | 2.000   |  |  |
|        | 4  | 17.000 | 124.000 | 0.000 | 0.000  | 28.000  |  |  |
|        | 5  | 17.000 | 208.000 | 7.000 | 16.000 | 3.000   |  |  |

### Demand (Veh/TS)

(08:15-08:30)

|        | То |        |         |       |        |         |  |  |
|--------|----|--------|---------|-------|--------|---------|--|--|
|        |    | 1      | 2       | 3     | 4      | 5       |  |  |
|        | 1  | 0.000  | 2.000   | 0.000 | 0.000  | 1.000   |  |  |
| From   | 2  | 3.000  | 0.000   | 2.000 | 53.000 | 159.000 |  |  |
| FIOIII | 3  | 0.000  | 1.000   | 0.000 | 0.000  | 0.000   |  |  |
|        | 4  | 16.000 | 140.000 | 0.000 | 0.000  | 28.000  |  |  |
|        | 5  | 18.000 | 172.000 | 2.000 | 13.000 | 0.000   |  |  |



# **Vehicle Mix**

### Heavy Vehicle proportion

|       | То |   |    |   |    |    |  |
|-------|----|---|----|---|----|----|--|
|       |    | 1 | 2  | 3 | 4  | 5  |  |
|       | 1  | 0 | 0  | 0 | 0  | 0  |  |
| From  | 2  | 0 | 0  | 0 | 6  | 4  |  |
| FIOII | 3  | 0 | 17 | 0 | 50 | 20 |  |
|       | 4  | 0 | 1  | 0 | 0  | 4  |  |
|       | 5  | 0 | 4  | 0 | 6  | 0  |  |

# **Results**

### **Results Summary for whole modelled period**

| Arm | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|-----|---------|---------------|-----------------|---------|
| 1   | 0.04    | 5.83          | 0.0             | А       |
| 2   | 0.39    | 2.65          | 0.6             | А       |
| 3   | 0.02    | 3.37          | 0.0             | А       |
| 4   | 0.37    | 2.85          | 0.6             | А       |
| 5   | 0.58    | 4.35          | 1.3             | А       |

### Main Results for each time segment

### Main results: (07:30-07:45)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 5.00                  | 379.38                    | 159.32            | 0.031 | 4.97                | 0.0             | 5.829     | A   |
| 2   | 170.00                | 38.81                     | 545.06            | 0.312 | 169.55              | 0.5             | 2.393     | A   |
| 3   | 6.00                  | 194.43                    | 273.77            | 0.022 | 5.98                | 0.0             | 3.360     | A   |
| 4   | 158.00                | 159.56                    | 501.27            | 0.315 | 157.54              | 0.5             | 2.615     | A   |
| 5   | 278.00                | 126.63                    | 482.44            | 0.576 | 276.66              | 1.3             | 4.346     | A   |

### Main results: (07:45-08:00)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 6.00                  | 358.17                    | 167.77            | 0.036 | 6.00                | 0.0             | 5.562     | A   |
| 2   | 197.00                | 25.07                     | 553.30            | 0.356 | 196.90              | 0.6             | 2.525     | A   |
| 3   | 4.00                  | 217.92                    | 271.35            | 0.015 | 4.01                | 0.0             | 3.365     | A   |
| 4   | 154.00                | 170.95                    | 495.79            | 0.311 | 154.01              | 0.5             | 2.632     | A   |
| 5   | 255.00                | 142.95                    | 473.28            | 0.539 | 255.16              | 1.2             | 4.129     | Α   |



### Main results: (08:00-08:15)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 5.00                  | 359.99                    | 167.27            | 0.030 | 5.01                | 0.0             | 5.546     | A   |
| 2   | 201.00                | 27.99                     | 550.67            | 0.365 | 200.98              | 0.6             | 2.573     | A   |
| 3   | 5.00                  | 220.99                    | 293.23            | 0.017 | 5.00                | 0.0             | 3.121     | A   |
| 4   | 169.00                | 175.98                    | 492.95            | 0.343 | 168.93              | 0.5             | 2.777     | Α   |
| 5   | 251.00                | 149.96                    | 470.14            | 0.534 | 251.03              | 1.2             | 4.107     | Α   |

### Main results: (08:15-08:30)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 3.00                  | 328.29                    | 180.15            | 0.017 | 3.01                | 0.0             | 5.080     | A   |
| 2   | 217.00                | 16.07                     | 556.37            | 0.390 | 216.94              | 0.6             | 2.651     | A   |
| 3   | 1.00                  | 228.98                    | 276.02            | 0.004 | 1.01                | 0.0             | 3.272     | A   |
| 4   | 184.00                | 164.03                    | 500.17            | 0.368 | 183.94              | 0.6             | 2.845     | A   |
| 5   | 205.00                | 159.96                    | 464.51            | 0.441 | 205.36              | 0.8             | 3.479     | A   |



# 2020 With Development, AM

### **Data Errors and Warnings**

No errors or warnings

### **Analysis Set Details**

| ID | Network flow scaling factor (%) |
|----|---------------------------------|
| A1 | 100.000                         |

# **Junction Network**

### Junctions

| Junction | on Name Junction Type |                     | Junction Delay (s) | Junction LOS |
|----------|-----------------------|---------------------|--------------------|--------------|
| 1        | untitled              | Standard Roundabout | 3.62               | А            |

### **Junction Network Options**

[same as above]

# Arms

Arms [same as above]

Capacity Options

[same as above]

### **Roundabout Geometry**

[same as above]

### Slope / Intercept / Capacity

[same as above]

# **Traffic Demand**

### **Demand Set Details**

| ID | Scenario name            | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|----|--------------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| D3 | 2020 With<br>Development | AM                  | DIRECT                  | 07:30                       | 08:30                        | 60                                | 15                           |

| Vehicle mix varies over turn | Vehicle mix varies over entry | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
|------------------------------|-------------------------------|--------------------|---------------------------|---------------------------|
| ✓                            | ✓                             | HV Percentages     | 2.00                      | ✓                         |



### **Demand overview (Traffic)**

| Arm | Linked arm | Use O-D data | Scaling Factor (%) |
|-----|------------|--------------|--------------------|
| 1   |            | ✓            | 100.000            |
| 2   |            | ✓            | 100.000            |
| 3   |            | ✓            | 100.000            |
| 4   |            | ✓            | 100.000            |
| 5   |            | ✓            | 100.000            |

F

Fr

# **Origin-Destination Data**

### Demand (Veh/TS)

(07:30-07:45)

|     |   |        |         | То     |        |         |
|-----|---|--------|---------|--------|--------|---------|
|     |   | 1      | 2       | 3      | 4      | 5       |
| rom | 1 | 0.000  | 4.000   | 0.000  | 1.000  | 1.000   |
|     | 2 | 3.000  | 1.000   | 0.000  | 19.000 | 162.000 |
|     | 3 | 0.000  | 2.000   | 0.000  | 1.000  | 3.000   |
|     | 4 | 11.000 | 110.000 | 0.000  | 0.000  | 38.000  |
|     | 5 | 11.000 | 245.000 | 14.000 | 21.000 | 4.000   |

### Demand (Veh/TS)

(07:45-08:00)

|      |   | То     |         |       |        |         |  |  |
|------|---|--------|---------|-------|--------|---------|--|--|
|      |   | 1      | 2       | 3     | 4      | 5       |  |  |
| • •• | 1 | 0.000  | 3.000   | 0.000 | 1.000  | 3.000   |  |  |
|      | 2 | 11.000 | 4.000   | 0.000 | 32.000 | 165.000 |  |  |
| 0111 | 3 | 1.000  | 2.000   | 0.000 | 1.000  | 0.000   |  |  |
|      | 4 | 13.000 | 112.000 | 0.000 | 0.000  | 30.000  |  |  |
|      | 5 | 16.000 | 233.000 | 4.000 | 18.000 | 1.000   |  |  |

### Demand (Veh/TS)

(08:00-08:15)

|        |   | То     |         |       |        |         |  |  |
|--------|---|--------|---------|-------|--------|---------|--|--|
|        |   | 1      | 2       | 3     | 4      | 5       |  |  |
|        | 1 | 0.000  | 3.000   | 1.000 | 0.000  | 2.000   |  |  |
| From   | 2 | 5.000  | 1.000   | 0.000 | 34.000 | 176.000 |  |  |
| 110111 | 3 | 2.000  | 1.000   | 0.000 | 0.000  | 2.000   |  |  |
|        | 4 | 17.000 | 124.000 | 0.000 | 0.000  | 39.000  |  |  |
|        | 5 | 18.000 | 223.000 | 7.000 | 17.000 | 3.000   |  |  |

### Demand (Veh/TS)

(08:15-08:30)

|        |   | То     |         |       |        |         |  |  |
|--------|---|--------|---------|-------|--------|---------|--|--|
|        |   | 1      | 2       | 3     | 4      | 5       |  |  |
|        | 1 | 0.000  | 2.000   | 0.000 | 0.000  | 2.000   |  |  |
| From   | 2 | 3.000  | 0.000   | 2.000 | 53.000 | 174.000 |  |  |
| FIOIII | 3 | 0.000  | 1.000   | 0.000 | 0.000  | 0.000   |  |  |
|        | 4 | 16.000 | 140.000 | 0.000 | 0.000  | 29.000  |  |  |
|        | 5 | 19.000 | 187.000 | 2.000 | 14.000 | 0.000   |  |  |



# **Vehicle Mix**

### Heavy Vehicle proportion

|      | То |   |    |   |    |    |
|------|----|---|----|---|----|----|
| From |    | 1 | 2  | 3 | 4  | 5  |
|      | 1  | 0 | 0  | 0 | 0  | 0  |
|      | 2  | 0 | 0  | 0 | 6  | 4  |
|      | 3  | 0 | 17 | 0 | 50 | 20 |
|      | 4  | 0 | 1  | 0 | 0  | 4  |
|      | 5  | 0 | 4  | 0 | 6  | 0  |

# **Results**

### **Results Summary for whole modelled period**

| A | rm | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|---|----|---------|---------------|-----------------|---------|
|   | 1  | 0.04    | 6.10          | 0.0             | А       |
| : | 2  | 0.42    | 2.78          | 0.7             | А       |
| : | 3  | 0.02    | 3.45          | 0.0             | А       |
|   | 4  | 0.38    | 2.97          | 0.6             | А       |
|   | 5  | 0.61    | 4.67          | 1.5             | А       |

### Main Results for each time segment

### Main results: (07:30-07:45)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 6.00                  | 395.18                    | 153.49            | 0.039 | 5.96                | 0.0             | 6.099     | A   |
| 2   | 185.00                | 40.78                     | 544.45            | 0.340 | 184.49              | 0.5             | 2.497     | A   |
| 3   | 6.00                  | 211.34                    | 267.33            | 0.022 | 5.98                | 0.0             | 3.443     | Α   |
| 4   | 159.00                | 175.49                    | 492.11            | 0.323 | 158.52              | 0.5             | 2.694     | A   |
| 5   | 295.00                | 126.62                    | 484.69            | 0.609 | 293.47              | 1.5             | 4.669     | Α   |

### Main results: (07:45-08:00)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 7.00                  | 374.19                    | 161.83            | 0.043 | 7.00                | 0.0             | 5.812     | A   |
| 2   | 212.00                | 27.08                     | 552.57            | 0.384 | 211.89              | 0.6             | 2.642     | A   |
| 3   | 4.00                  | 234.92                    | 264.72            | 0.015 | 4.01                | 0.0             | 3.454     | A   |
| 4   | 155.00                | 186.94                    | 486.53            | 0.319 | 155.01              | 0.5             | 2.716     | A   |
| 5   | 272.00                | 142.95                    | 475.58            | 0.572 | 272.18              | 1.4             | 4.428     | А   |



### Main results: (08:00-08:15)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 6.00                  | 375.98                    | 161.32            | 0.037 | 6.01                | 0.0             | 5.796     | A   |
| 2   | 216.00                | 29.99                     | 550.04            | 0.393 | 215.98              | 0.6             | 2.693     | A   |
| 3   | 5.00                  | 237.98                    | 286.03            | 0.017 | 5.00                | 0.0             | 3.201     | A   |
| 4   | 180.00                | 191.97                    | 483.03            | 0.373 | 179.88              | 0.6             | 2.967     | Α   |
| 5   | 268.00                | 149.94                    | 472.33            | 0.567 | 268.03              | 1.3             | 4.405     | Α   |

### Main results: (08:15-08:30)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 4.00                  | 344.35                    | 174.09            | 0.023 | 4.02                | 0.0             | 5.293     | A   |
| 2   | 232.00                | 18.07                     | 555.76            | 0.417 | 231.93              | 0.7             | 2.779     | Α   |
| 3   | 1.00                  | 245.98                    | 269.17            | 0.004 | 1.01                | 0.0             | 3.355     | A   |
| 4   | 185.00                | 180.03                    | 490.87            | 0.377 | 184.99              | 0.6             | 2.941     | A   |
| 5   | 222.00                | 159.97                    | 466.68            | 0.476 | 222.41              | 0.9             | 3.692     | А   |



# 2015 Observed, PM

### **Data Errors and Warnings**

No errors or warnings

### **Analysis Set Details**

| ID | Network flow scaling factor (%) |
|----|---------------------------------|
| A1 | 100.000                         |

# **Junction Network**

### **Junctions**

| Junction | Name     | Junction Type       | Junction Delay (s) | Junction LOS |  |
|----------|----------|---------------------|--------------------|--------------|--|
| 1        | untitled | Standard Roundabout | 3.74               | А            |  |

### **Junction Network Options**

[same as above]

# Arms

Arms [same as above]

### **Capacity Options**

[same as above]

### **Roundabout Geometry**

[same as above]

### Slope / Intercept / Capacity

[same as above]

# **Traffic Demand**

### **Demand Set Details**

| ID | Scenario name    | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|----|------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| D4 | 2015<br>Observed | PM                  | DIRECT                  | 17:00                       | 18:00                        | 60                                | 15                           |

| Vehicle mix varies over turn | Vehicle mix varies over entry | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
|------------------------------|-------------------------------|--------------------|---------------------------|---------------------------|
| ✓                            | ✓                             | HV Percentages     | 2.00                      | ✓                         |



### **Demand overview (Traffic)**

| Arm | Linked arm | Use O-D data | Scaling Factor (%) |
|-----|------------|--------------|--------------------|
| 1   |            | ✓            | 100.000            |
| 2   |            | ✓            | 100.000            |
| 3   |            | ✓            | 100.000            |
| 4   |            | ✓            | 100.000            |
| 5   |            | ✓            | 100.000            |

# **Origin-Destination Data**

### Demand (Veh/TS)

(17:00-17:15)

|        |   | То    |         |       |        |         |  |  |  |
|--------|---|-------|---------|-------|--------|---------|--|--|--|
|        |   | 1     | 2       | 3     | 4      | 5       |  |  |  |
|        | 1 | 0.000 | 9.000   | 2.000 | 9.000  | 17.000  |  |  |  |
| From   | 2 | 5.000 | 2.000   | 0.000 | 96.000 | 200.000 |  |  |  |
| FIOIII | 3 | 0.000 | 1.000   | 0.000 | 1.000  | 2.000   |  |  |  |
|        | 4 | 6.000 | 66.000  | 0.000 | 0.000  | 27.000  |  |  |  |
|        | 5 | 2.000 | 190.000 | 3.000 | 31.000 | 2.000   |  |  |  |

### Demand (Veh/TS)

(17:15-17:30)

|        |   | То    |         |       |         |         |  |  |  |
|--------|---|-------|---------|-------|---------|---------|--|--|--|
|        |   | 1     | 2       | 3     | 4       | 5       |  |  |  |
|        | 1 | 0.000 | 10.000  | 2.000 | 6.000   | 14.000  |  |  |  |
| From   | 2 | 2.000 | 2.000   | 0.000 | 103.000 | 208.000 |  |  |  |
| 110111 | 3 | 0.000 | 1.000   | 0.000 | 0.000   | 1.000   |  |  |  |
|        | 4 | 3.000 | 58.000  | 0.000 | 0.000   | 24.000  |  |  |  |
|        | 5 | 1.000 | 175.000 | 3.000 | 21.000  | 2.000   |  |  |  |

### Demand (Veh/TS)

(17:30-17:45)

|        |   |       |         | То    |         |         |
|--------|---|-------|---------|-------|---------|---------|
|        |   | 1     | 2       | 3     | 4       | 5       |
|        | 1 | 0.000 | 14.000  | 0.000 | 10.000  | 20.000  |
| From   | 2 | 5.000 | 3.000   | 0.000 | 104.000 | 207.000 |
| 110111 | 3 | 0.000 | 0.000   | 0.000 | 1.000   | 2.000   |
|        | 4 | 3.000 | 69.000  | 0.000 | 0.000   | 30.000  |
|        | 5 | 3.000 | 175.000 | 3.000 | 23.000  | 2.000   |

### Demand (Veh/TS)

(17:45-18:00)

|        |   | То    |         |       |         |         |  |  |  |  |
|--------|---|-------|---------|-------|---------|---------|--|--|--|--|
|        |   | 1     | 2       | 3     | 4       | 5       |  |  |  |  |
|        | 1 | 0.000 | 7.000   | 1.000 | 11.000  | 13.000  |  |  |  |  |
| From   | 2 | 4.000 | 2.000   | 0.000 | 109.000 | 226.000 |  |  |  |  |
| FIOIII | 3 | 2.000 | 1.000   | 0.000 | 3.000   | 0.000   |  |  |  |  |
|        | 4 | 2.000 | 62.000  | 0.000 | 0.000   | 27.000  |  |  |  |  |
|        | 5 | 1.000 | 188.000 | 5.000 | 36.000  | 1.000   |  |  |  |  |





# **Vehicle Mix**

### Heavy Vehicle proportion

|       | То |   |   |   |   |   |
|-------|----|---|---|---|---|---|
|       |    | 1 | 2 | 3 | 4 | 5 |
|       | 1  | 0 | 0 | 0 | 0 | 0 |
| From  | 2  | 0 | 0 | 0 | 0 | 1 |
| 11011 | 3  | 0 | 0 | 0 | 0 | 0 |
|       | 4  | 0 | 0 | 0 | 0 | 0 |
|       | 5  | 0 | 2 | 0 | 0 | 0 |

# **Results**

### **Results Summary for whole modelled period**

| Arm | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|-----|---------|---------------|-----------------|---------|
| 1   | 0.22    | 5.66          | 0.3             | А       |
| 2   | 0.62    | 4.34          | 1.6             | А       |
| 3   | 0.02    | 3.73          | 0.0             | А       |
| 4   | 0.22    | 2.47          | 0.3             | А       |
| 5   | 0.44    | 3.08          | 0.8             | А       |

### Main Results for each time segment

### Main results: (17:00-17:15)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 37.00                 | 294.04                    | 195.58            | 0.189 | 36.77               | 0.2             | 5.659     | A   |
| 2   | 303.00                | 63.70                     | 549.47            | 0.551 | 301.78              | 1.2             | 3.616     | A   |
| 3   | 4.00                  | 360.50                    | 266.00            | 0.015 | 3.98                | 0.0             | 3.434     | A   |
| 4   | 99.00                 | 228.04                    | 472.25            | 0.210 | 98.74               | 0.3             | 2.408     | Α   |
| 5   | 228.00                | 79.78                     | 519.09            | 0.439 | 227.22              | 0.8             | 3.076     | Α   |

### Main results: (17:15-17:30)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 32.00                 | 262.18                    | 208.04            | 0.154 | 32.05               | 0.2             | 5.114     | A   |
| 2   | 315.00                | 48.09                     | 558.28            | 0.564 | 314.94              | 1.3             | 3.698     | A   |
| 3   | 2.00                  | 358.02                    | 267.08            | 0.007 | 2.01                | 0.0             | 3.394     | A   |
| 4   | 85.00                 | 230.00                    | 471.05            | 0.180 | 85.04               | 0.2             | 2.331     | A   |
| 5   | 202.00                | 66.05                     | 526.23            | 0.384 | 202.15              | 0.6             | 2.777     | Α   |



### Main results: (17:30-17:45)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 44.00                 | 274.94                    | 203.10            | 0.217 | 43.91               | 0.3             | 5.651     | A   |
| 2   | 319.00                | 57.93                     | 552.81            | 0.577 | 318.93              | 1.4             | 3.847     | A   |
| 3   | 3.00                  | 373.85                    | 259.84            | 0.012 | 3.00                | 0.0             | 3.503     | A   |
| 4   | 102.00                | 238.91                    | 465.91            | 0.219 | 101.94              | 0.3             | 2.472     | A   |
| 5   | 206.00                | 79.95                     | 518.82            | 0.397 | 205.97              | 0.7             | 2.876     | A   |

### Main results: (17:45-18:00)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 32.00                 | 294.88                    | 195.27            | 0.164 | 32.08               | 0.2             | 5.517     | A   |
| 2   | 341.00                | 66.98                     | 547.60            | 0.623 | 340.72              | 1.6             | 4.343     | Α   |
| 3   | 6.00                  | 401.71                    | 246.97            | 0.024 | 5.99                | 0.0             | 3.733     | A   |
| 4   | 91.00                 | 248.85                    | 460.01            | 0.198 | 91.03               | 0.2             | 2.440     | Α   |
| 5   | 231.00                | 73.02                     | 523.01            | 0.442 | 230.87              | 0.8             | 3.078     | Α   |



# 2020 Without Development, PM

### **Data Errors and Warnings**

No errors or warnings

### **Analysis Set Details**

| ID | Network flow scaling factor (%) |
|----|---------------------------------|
| A1 | 100.000                         |

# **Junction Network**

### **Junctions**

| Junction Name |          | Junction Type       | Junction Delay (s) | Junction LOS |
|---------------|----------|---------------------|--------------------|--------------|
| 1             | untitled | Standard Roundabout | 3.80               | А            |

### **Junction Network Options**

[same as above]

# Arms

Arms [same as above]

### **Capacity Options**

[same as above]

### **Roundabout Geometry**

[same as above]

### Slope / Intercept / Capacity

[same as above]

# **Traffic Demand**

### **Demand Set Details**

| ID | Scenario name               | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|----|-----------------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| D5 | 2020 Without<br>Development | PM                  | DIRECT                  | 17:00                       | 18:00                        | 60                                | 15                           |

| Vehicle mix varies over turn | Vehicle mix varies over entry | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
|------------------------------|-------------------------------|--------------------|---------------------------|---------------------------|
| ✓                            | ✓                             | HV Percentages     | 2.00                      | ✓                         |



### **Demand overview (Traffic)**

| Arm | Linked arm | Use O-D data | Scaling Factor (%) |
|-----|------------|--------------|--------------------|
| 1   |            | ✓            | 100.000            |
| 2   |            | ✓            | 100.000            |
| 3   |            | ✓            | 100.000            |
| 4   |            | ✓            | 100.000            |
| 5   |            | ✓            | 100.000            |

# **Origin-Destination Data**

### Demand (Veh/TS)

(17:00-17:15)

|        |   | То    |         |       |        |         |  |  |  |
|--------|---|-------|---------|-------|--------|---------|--|--|--|
|        |   | 1     | 2       | 3     | 4      | 5       |  |  |  |
|        | 1 | 0.000 | 9.000   | 2.000 | 9.000  | 17.000  |  |  |  |
| From   | 2 | 5.000 | 2.000   | 0.000 | 96.000 | 204.000 |  |  |  |
| FIOIII | 3 | 0.000 | 1.000   | 0.000 | 1.000  | 2.000   |  |  |  |
|        | 4 | 6.000 | 66.000  | 0.000 | 0.000  | 27.000  |  |  |  |
|        | 5 | 2.000 | 196.000 | 3.000 | 31.000 | 2.000   |  |  |  |

### Demand (Veh/TS)

(17:15-17:30)

|        |   | То    |         |       |         |         |  |  |  |
|--------|---|-------|---------|-------|---------|---------|--|--|--|
|        |   | 1     | 2       | 3     | 4       | 5       |  |  |  |
|        | 1 | 0.000 | 10.000  | 2.000 | 6.000   | 14.000  |  |  |  |
| From   | 2 | 2.000 | 2.000   | 0.000 | 103.000 | 212.000 |  |  |  |
| 110111 | 3 | 0.000 | 1.000   | 0.000 | 0.000   | 1.000   |  |  |  |
|        | 4 | 3.000 | 58.000  | 0.000 | 0.000   | 24.000  |  |  |  |
|        | 5 | 1.000 | 181.000 | 3.000 | 21.000  | 2.000   |  |  |  |

### Demand (Veh/TS)

(17:30-17:45)

|        |   | То    |         |       |         |         |  |  |  |
|--------|---|-------|---------|-------|---------|---------|--|--|--|
|        |   | 1     | 2       | 3     | 4       | 5       |  |  |  |
|        | 1 | 0.000 | 14.000  | 0.000 | 10.000  | 20.000  |  |  |  |
| From   | 2 | 5.000 | 3.000   | 0.000 | 104.000 | 211.000 |  |  |  |
| 110111 | 3 | 0.000 | 0.000   | 0.000 | 1.000   | 2.000   |  |  |  |
|        | 4 | 3.000 | 69.000  | 0.000 | 0.000   | 30.000  |  |  |  |
|        | 5 | 3.000 | 181.000 | 3.000 | 23.000  | 2.000   |  |  |  |

### Demand (Veh/TS)

(17:45-18:00)

|        |   | То    |         |       |         |         |  |  |  |
|--------|---|-------|---------|-------|---------|---------|--|--|--|
|        |   | 1     | 2       | 3     | 4       | 5       |  |  |  |
|        | 1 | 0.000 | 7.000   | 1.000 | 11.000  | 13.000  |  |  |  |
| From   | 2 | 4.000 | 2.000   | 0.000 | 109.000 | 230.000 |  |  |  |
| FIOIII | 3 | 2.000 | 1.000   | 0.000 | 3.000   | 0.000   |  |  |  |
|        | 4 | 2.000 | 62.000  | 0.000 | 0.000   | 27.000  |  |  |  |
|        | 5 | 1.000 | 194.000 | 5.000 | 36.000  | 1.000   |  |  |  |





# **Vehicle Mix**

### Heavy Vehicle proportion

|        | То |   |   |   |   |   |  |  |
|--------|----|---|---|---|---|---|--|--|
|        |    | 1 | 2 | 3 | 4 | 5 |  |  |
|        | 1  | 0 | 0 | 0 | 0 | 0 |  |  |
| From   | 2  | 0 | 0 | 0 | 0 | 1 |  |  |
| 110111 | 3  | 0 | 0 | 0 | 0 | 0 |  |  |
|        | 4  | 0 | 0 | 0 | 0 | 0 |  |  |
|        | 5  | 0 | 2 | 0 | 0 | 0 |  |  |

# **Results**

### **Results Summary for whole modelled period**

| Arm | Max RFC   | Max delay (s) | Max Queue (Veh) | Max LOS |
|-----|-----------|---------------|-----------------|---------|
| 1   | 0.22 5.74 |               | 0.3             | А       |
| 2   | 0.63 4.43 |               | 1.7             | А       |
| 3   | 0.02      | 3.76          | 0.0             | А       |
| 4   | 0.22      | 2.49          | 0.3             | А       |
| 5   | 0.45      | 3.14          | 0.8             | А       |

### Main Results for each time segment

### Main results: (17:00-17:15)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 37.00                 | 300.00                    | 193.30            | 0.191 | 36.77               | 0.2             | 5.741     | A   |
| 2   | 307.00                | 63.70                     | 549.44            | 0.559 | 305.75              | 1.3             | 3.676     | A   |
| 3   | 4.00                  | 364.47                    | 264.16            | 0.015 | 3.98                | 0.0             | 3.458     | A   |
| 4   | 99.00                 | 232.01                    | 469.93            | 0.211 | 98.73               | 0.3             | 2.424     | A   |
| 5   | 234.00                | 79.77                     | 519.47            | 0.450 | 233.19              | 0.8             | 3.134     | A   |

### Main results: (17:15-17:30)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 32.00                 | 268.18                    | 205.73            | 0.156 | 32.05               | 0.2             | 5.184     | A   |
| 2   | 319.00                | 48.09                     | 558.25            | 0.571 | 318.93              | 1.3             | 3.760     | A   |
| 3   | 2.00                  | 362.02                    | 265.23            | 0.008 | 2.01                | 0.0             | 3.418     | A   |
| 4   | 85.00                 | 234.00                    | 468.71            | 0.181 | 85.04               | 0.2             | 2.347     | A   |
| 5   | 208.00                | 66.05                     | 526.64            | 0.395 | 208.16              | 0.7             | 2.828     | Α   |



### Main results: (17:30-17:45)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 44.00                 | 280.94                    | 200.80            | 0.219 | 43.91               | 0.3             | 5.732     | А   |
| 2   | 323.00                | 57.93                     | 552.78            | 0.584 | 322.93              | 1.4             | 3.914     | A   |
| 3   | 3.00                  | 377.85                    | 257.99            | 0.012 | 3.00                | 0.0             | 3.528     | A   |
| 4   | 102.00                | 242.90                    | 463.56            | 0.220 | 101.94              | 0.3             | 2.488     | A   |
| 5   | 212.00                | 79.95                     | 519.20            | 0.408 | 211.97              | 0.7             | 2.929     | Α   |

### Main results: (17:45-18:00)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 32.00                 | 300.88                    | 192.97            | 0.166 | 32.08               | 0.2             | 5.598     | А   |
| 2   | 345.00                | 66.98                     | 547.58            | 0.630 | 344.71              | 1.7             | 4.430     | A   |
| 3   | 6.00                  | 405.70                    | 245.12            | 0.024 | 5.99                | 0.0             | 3.762     | A   |
| 4   | 91.00                 | 252.84                    | 457.66            | 0.199 | 91.03               | 0.2             | 2.456     | A   |
| 5   | 237.00                | 73.02                     | 523.38            | 0.453 | 236.86              | 0.8             | 3.139     | Α   |





# 2020 With Development, PM

### **Data Errors and Warnings**

No errors or warnings

### **Analysis Set Details**

| ID | Network flow scaling factor (%) |
|----|---------------------------------|
| A1 | 100.000                         |

# **Junction Network**

### Junctions

| Junction Name |          | Junction Type       | Junction Delay (s) | Junction LOS |  |
|---------------|----------|---------------------|--------------------|--------------|--|
| 1             | untitled | Standard Roundabout | 3.95               | А            |  |

### **Junction Network Options**

[same as above]

# Arms

Arms [same as above]

Capacity Options

[same as above]

### **Roundabout Geometry**

[same as above]

### Slope / Intercept / Capacity

[same as above]

# **Traffic Demand**

### **Demand Set Details**

| ID | Scenario name            | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|----|--------------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| D6 | 2020 With<br>Development | PM                  | DIRECT                  | 17:00                       | 18:00                        | 60                                | 15                           |

| Vehicle mix varies over turn | Vehicle mix varies over entry | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
|------------------------------|-------------------------------|--------------------|---------------------------|---------------------------|
| ✓                            | ✓                             | HV Percentages     | 2.00                      | ✓                         |



### **Demand overview (Traffic)**

| Arm | Linked arm | Use O-D data | Scaling Factor (%) |
|-----|------------|--------------|--------------------|
| 1   |            | ✓            | 100.000            |
| 2   |            | ✓            | 100.000            |
| 3   |            | ✓            | 100.000            |
| 4   |            | ✓            | 100.000            |
| 5   |            | ✓            | 100.000            |

# **Origin-Destination Data**

### Demand (Veh/TS)

(17:00-17:15)

|        | То |       |         |       |        |         |  |  |
|--------|----|-------|---------|-------|--------|---------|--|--|
|        |    | 1     | 2       | 3     | 4      | 5       |  |  |
|        | 1  | 0.000 | 9.000   | 2.000 | 9.000  | 17.000  |  |  |
| From   | 2  | 5.000 | 2.000   | 0.000 | 96.000 | 210.000 |  |  |
| 110111 | 3  | 0.000 | 1.000   | 0.000 | 1.000  | 2.000   |  |  |
|        | 4  | 6.000 | 66.000  | 0.000 | 0.000  | 28.000  |  |  |
|        | 5  | 2.000 | 202.000 | 3.000 | 32.000 | 2.000   |  |  |

### Demand (Veh/TS)

(17:15-17:30)

|        | То |       |         |       |         |         |  |  |
|--------|----|-------|---------|-------|---------|---------|--|--|
|        |    | 1     | 2       | 3     | 4       | 5       |  |  |
|        | 1  | 0.000 | 10.000  | 2.000 | 6.000   | 14.000  |  |  |
| From   | 2  | 2.000 | 2.000   | 0.000 | 103.000 | 218.000 |  |  |
| 110111 | 3  | 0.000 | 1.000   | 0.000 | 0.000   | 1.000   |  |  |
|        | 4  | 3.000 | 58.000  | 0.000 | 0.000   | 25.000  |  |  |
|        | 5  | 1.000 | 187.000 | 3.000 | 22.000  | 2.000   |  |  |

### Demand (Veh/TS)

(17:30-17:45)

|               | То |       |         |       |         |         |  |  |
|---------------|----|-------|---------|-------|---------|---------|--|--|
| <b>F</b> ue m |    | 1     | 2       | 3     | 4       | 5       |  |  |
|               | 1  | 0.000 | 14.000  | 0.000 | 10.000  | 20.000  |  |  |
|               | 2  | 5.000 | 3.000   | 0.000 | 104.000 | 217.000 |  |  |
| 110111        | 3  | 0.000 | 0.000   | 0.000 | 1.000   | 2.000   |  |  |
|               | 4  | 3.000 | 69.000  | 0.000 | 0.000   | 31.000  |  |  |
|               | 5  | 3.000 | 187.000 | 3.000 | 24.000  | 2.000   |  |  |

### Demand (Veh/TS)

(17:45-18:00)

|        |   | То    |         |       |         |         |  |  |  |  |
|--------|---|-------|---------|-------|---------|---------|--|--|--|--|
|        |   | 1     | 2       | 3     | 4       | 5       |  |  |  |  |
|        | 1 | 0.000 | 7.000   | 1.000 | 11.000  | 13.000  |  |  |  |  |
| From   | 2 | 4.000 | 2.000   | 0.000 | 109.000 | 236.000 |  |  |  |  |
| 110111 | 3 | 2.000 | 1.000   | 0.000 | 3.000   | 0.000   |  |  |  |  |
|        | 4 | 2.000 | 62.000  | 0.000 | 0.000   | 28.000  |  |  |  |  |
|        | 5 | 1.000 | 200.000 | 5.000 | 37.000  | 1.000   |  |  |  |  |





# **Vehicle Mix**

### **Heavy Vehicle proportion**

|        | То |   |   |   |   |   |
|--------|----|---|---|---|---|---|
|        |    | 1 | 2 | 3 | 4 | 5 |
|        | 1  | 0 | 0 | 0 | 0 | 0 |
| From   | 2  | 0 | 0 | 0 | 0 | 2 |
| 110111 | 3  | 0 | 0 | 0 | 0 | 0 |
|        | 4  | 0 | 0 | 0 | 0 | 0 |
|        | 5  | 0 | 2 | 0 | 0 | 0 |

# **Results**

### **Results Summary for whole modelled period**

| Arm | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|-----|---------|---------------|-----------------|---------|
| 1   | 0.22    | 5.85          | 0.3             | А       |
| 2   | 0.65    | 4.65          | 1.8             | А       |
| 3   | 0.02    | 3.83          | 0.0             | А       |
| 4   | 0.22    | 2.53          | 0.3             | А       |
| 5   | 0.47    | 3.23          | 0.9             | А       |

### Main Results for each time segment

### Main results: (17:00-17:15)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 37.00                 | 306.95                    | 190.32            | 0.194 | 36.76               | 0.2             | 5.853     | A   |
| 2   | 313.00                | 64.69                     | 545.93            | 0.573 | 311.67              | 1.3             | 3.821     | A   |
| 3   | 4.00                  | 371.38                    | 260.20            | 0.015 | 3.98                | 0.0             | 3.512     | A   |
| 4   | 100.00                | 237.95                    | 465.48            | 0.215 | 99.73               | 0.3             | 2.460     | A   |
| 5   | 241.00                | 79.77                     | 518.19            | 0.465 | 240.14              | 0.9             | 3.228     | A   |

### Main results: (17:15-17:30)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 32.00                 | 275.19                    | 202.75            | 0.158 | 32.05               | 0.2             | 5.275     | A   |
| 2   | 325.00                | 49.10                     | 554.68            | 0.586 | 324.93              | 1.4             | 3.916     | A   |
| 3   | 2.00                  | 369.02                    | 261.19            | 0.008 | 2.01                | 0.0             | 3.471     | A   |
| 4   | 86.00                 | 240.00                    | 464.18            | 0.185 | 86.04               | 0.2             | 2.379     | A   |
| 5   | 215.00                | 66.05                     | 525.30            | 0.409 | 215.17              | 0.7             | 2.902     | Α   |



### Main results: (17:30-17:45)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 44.00                 | 287.93                    | 197.82            | 0.222 | 43.90               | 0.3             | 5.843     | А   |
| 2   | 329.00                | 58.93                     | 549.30            | 0.599 | 328.92              | 1.5             | 4.081     | A   |
| 3   | 3.00                  | 384.84                    | 253.96            | 0.012 | 3.00                | 0.0             | 3.585     | A   |
| 4   | 103.00                | 248.90                    | 459.04            | 0.224 | 102.94              | 0.3             | 2.527     | A   |
| 5   | 219.00                | 79.95                     | 517.90            | 0.423 | 218.97              | 0.7             | 3.010     | Α   |

### Main results: (17:45-18:00)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 32.00                 | 307.87                    | 189.98            | 0.168 | 32.08               | 0.2             | 5.702     | A   |
| 2   | 351.00                | 67.98                     | 544.07            | 0.645 | 350.69              | 1.8             | 4.646     | Α   |
| 3   | 6.00                  | 412.68                    | 241.03            | 0.025 | 5.99                | 0.0             | 3.828     | A   |
| 4   | 92.00                 | 258.82                    | 453.06            | 0.203 | 92.03               | 0.3             | 2.494     | A   |
| 5   | 244.00                | 73.02                     | 522.11            | 0.467 | 243.86              | 0.9             | 3.232     | Α   |



# Junctions 9 PICADY 9 - Priority Intersection Module Version: 9.0.0.4211 [] © Copyright TRL Limited, 2016 For sales and distribution information, program advice and maintenance, contact TRL: Tel: +44 (0)1344 770758 email: software @trl.co.uk Web: http://www.trlsoftware.co.uk The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: The Broadway Brighton Road Junction AM Peak 500 units with Updated TRICS.j9 Path: N:\Projects\hdshor 150137\Analysis\PICADY Report generation date: 10/03/2016 11:36:18

- »Observed 2015, AM »2020 Without Development, AM
- »2020 With Development, AM

### Summary of junction performance

|             |                          | AM         |      |     |  |
|-------------|--------------------------|------------|------|-----|--|
|             | Queue (Veh)              | Delay (s)  | RFC  | LOS |  |
|             | Obse                     | erved 201  | 5    |     |  |
| Stream B-C  | 0.1                      | 8.14       | 0.12 | А   |  |
| Stream B-A  | 0.4                      | 12.27      | 0.27 | В   |  |
| Stream C-A  | 0.8                      | 3.39       | 0.29 | Α   |  |
| Stream C-B  | 0.0                      | 3.50       | 0.29 | Α   |  |
| Stream A-BC | 0.4                      | 1.54       | 0.28 | А   |  |
|             | 2020 Without Development |            |      |     |  |
| Stream B-C  | 0.2                      | 7.60       | 0.19 | А   |  |
| Stream B-A  | 0.2                      | 12.44      | 0.18 | В   |  |
| Stream C-A  | 0.8                      | 3.28       | 0.30 | Α   |  |
| Stream C-B  | 0.0                      | 3.39       | 0.30 | Α   |  |
| Stream A-BC | 0.4                      | 1.56       | 0.29 | А   |  |
|             | 2020 Wit                 | th Develop | ment |     |  |
| Stream B-C  | 0.2                      | 7.75       | 0.19 | А   |  |
| Stream B-A  | 0.2                      | 13.38      | 0.19 | В   |  |
| Stream C-A  | 0.9                      | 3.38       | 0.32 | A   |  |
| Stream C-B  | 0.0                      | 3.49       | 0.33 | А   |  |
| Stream A-BC | 0.4                      | 1.59       | 0.30 | А   |  |

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.



### File summary

### **File Description**

| Title       | (untitled)         |
|-------------|--------------------|
| Location    |                    |
| Site number |                    |
| Date        | 31/07/2015         |
| Version     |                    |
| Status      | (new file)         |
| Identifier  |                    |
| Client      |                    |
| Jobnumber   |                    |
| Enumerator  | MOTION"emmastonard |
| Description |                    |
|             |                    |

### Units

| Distance units | Speed units | Traffic units input | Traffic units results | Flow units     | Average delay units | Total delay units | Rate of delay units |
|----------------|-------------|---------------------|-----------------------|----------------|---------------------|-------------------|---------------------|
| m              | kph         | Veh                 | Veh                   | perTimeSegment | S                   | -Min              | perMin              |

### **Analysis Options**

| Calculate Queue Percentiles | Calculate residual capacity | RFC Threshold | Average Delay threshold (s) | Queue threshold (PCU) |
|-----------------------------|-----------------------------|---------------|-----------------------------|-----------------------|
|                             |                             | 0.85          | 36.00                       | 20.00                 |

### **Demand Set Summary**

| Scenario name               | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|-----------------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| Observed 2015               | red 2015 AM         |                         | 07:30                       | 08:30                        | 60                                | 15                           |
| 2020 Without<br>Development | AM                  | DIRECT                  | 07:30                       | 08:30                        | 60                                | 15                           |
| 2020 With Development       | AM                  | DIRECT                  | 07:30                       | 08:30                        | 60                                | 15                           |



# **Observed 2015, AM**

### **Data Errors and Warnings**

| Severity | Area                | ltem                           | Description  |
|----------|---------------------|--------------------------------|--|
| Warning  | Pedestrian Crossing | Arm A - Pedestrian<br>crossing | Pedestrian crossing uses default flow of 0. Is this correct? |

### **Analysis Set Details**

| ID | Network flow scaling factor (%) |
|----|---------------------------------|
| A1 | 100.000                         |

# **Junction Network**

### Junctions

| Junction | Name     | Junction Type | Major road direction | Junction Delay (s) | Junction LOS |  |
|----------|----------|---------------|----------------------|--------------------|--------------|--|
| 1        | untitled | T-Junction    | Two-way              | 3.10               | А            |  |

### **Junction Network Options**

| Driving side | Lighting       |
|--------------|----------------|
| Left         | Normal/unknown |

## Arms

### Arms

| Arm | Name                 | Description | Arm type |
|-----|----------------------|-------------|----------|
| Α   | Brighton Road (West) |             | Major    |
| В   | The Broadway         |             | Minor    |
| С   | Brighton Road (East) |             | Major    |

### **Major Arm Geometry**

| Arm | Width of carriageway (m) | Has kerbed central reserve | Has right turn bay | Visibility for right turn (m) | Blocks? | Blocking queue (PCU) |
|-----|--------------------------|----------------------------|--------------------|-------------------------------|---------|----------------------|
| С   | 13.00                    |                            |                    | 250.0                         |         | -                    |

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

### **Minor Arm Geometry**

| Arm | Minor arm              | Width at give- | Width at | Width at | Width at | Width at | Estimate flare | Flare length | Visibility to | Visibility to |
|-----|------------------------|----------------|----------|----------|----------|----------|----------------|--------------|---------------|---------------|
|     | type                   | way (m)        | 5m (m)   | 10m (m)  | 15m (m)  | 20m (m)  | length         | (PCU)        | left (m)      | right (m)     |
| в   | One lane<br>plus flare | 10.00          | 6.00     | 5.00     | 4.50     | 3.50     | ~              | 2.00         | 250           | 250           |



### **Pedestrian Crossings**

| Arm | Crossing type |
|-----|---------------|
| Α   | Pelican       |
| В   | None          |
| С   | Puffin        |

### **Pelican/Puffin Crossings**

| Arm | Space between crossing and junction entry (Signalised) (PCU) | Amber time<br>preceding red (s) | Amber time<br>regarded as green<br>(s) | Time from traffic red<br>start to green man start<br>(s) | Time period green<br>man shown (s) | Clearance<br>Period (s) | Traffic minimum<br>green (s) |
|-----|--|---------------------------------|--|--|------------------------------------|-------------------------|------------------------------|
| Α   | 6.00   | 3.50                            | 2.90                                   | 1.00   | 8.00                               | 6.00                    | 13.00                        |
| С   | 8.00   | 3.00                            | 3.00                                   | 2.00   | 8.00                               | 6.00                    | 16.00                        |

### Slope / Intercept / Capacity

### **Priority Intersection Slopes and Intercepts**

| Junction | Stream Intercept<br>(Veh/TS) |         | Slope<br>for<br>A-B | Slope<br>for<br>A-C | Slope<br>for<br>C-A | Slope<br>for<br>C-B |
|----------|------------------------------|---------|---------------------|---------------------|---------------------|---------------------|
| 1        | B-A                          | 194.481 | 0.099               | 0.249               | 0.157               | 0.356               |
| 1        | B-C                          | 179.992 | 0.077               | 0.194               | -                   | -                   |
| 1        | C-B                          | 179.685 | 0.194               | 0.194               | -                   | -                   |

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

# **Traffic Demand**

### **Demand Set Details**

| ID | Scenario name    | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|----|------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| D1 | Observed<br>2015 | AM                  | DIRECT                  | 07:30                       | 08:30                        | 60                                | 15                           |

| Vehicle mix varies over turn | Vehicle mix varies over entry | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
|------------------------------|-------------------------------|--------------------|---------------------------|---------------------------|
| ✓                            | ✓                             | HV Percentages     | 2.00                      | ✓                         |

### **Demand overview (Traffic)**

| Arm | Linked arm | Use O-D data | Scaling Factor (%) |
|-----|------------|--------------|--------------------|
| Α   |            | ✓            | 100.000            |
| В   |            | ✓            | 100.000            |
| С   |            | ✓            | 100.000            |

# **Origin-Destination Data**



### Demand (Veh/TS)

(07:30-07:45)

|      | То |         |       |         |  |  |
|------|----|---------|-------|---------|--|--|
|      |    | Α       | В     | С       |  |  |
| From | Α  | 0.000   | 5.000 | 224.000 |  |  |
| From | в  | 28.000  | 0.000 | 9.000   |  |  |
|      | С  | 181.000 | 2.000 | 0.000   |  |  |

### Demand (Veh/TS)

(07:45-08:00)

|      | То |         |       |         |  |  |
|------|----|---------|-------|---------|--|--|
| From |    | Α       | В     | С       |  |  |
|      | Α  | 0.000   | 6.000 | 203.000 |  |  |
|      | в  | 27.000  | 0.000 | 16.000  |  |  |
|      | С  | 205.000 | 3.000 | 0.000   |  |  |

### Demand (Veh/TS)

(08:00-08:15)

|      |   | То      |       |         |  |  |  |  |  |
|------|---|---------|-------|---------|--|--|--|--|--|
|      |   | Α       | В     | С       |  |  |  |  |  |
| From | Α | 0.000   | 8.000 | 196.000 |  |  |  |  |  |
| From | В | 23.000  | 0.000 | 10.000  |  |  |  |  |  |
|      | С | 227.000 | 3.000 | 0.000   |  |  |  |  |  |

### Demand (Veh/TS)

(08:15-08:30)

|      |   | То      |       |         |  |  |  |  |
|------|---|---------|-------|---------|--|--|--|--|
| From |   | Α       | В     | С       |  |  |  |  |
|      | Α | 0.000   | 8.000 | 208.000 |  |  |  |  |
|      | в | 20.000  | 0.000 | 11.000  |  |  |  |  |
|      | С | 199.000 | 7.000 | 0.000   |  |  |  |  |

# **Vehicle Mix**

Heavy Vehicle proportion

|      | То |   |    |   |  |
|------|----|---|----|---|--|
|      |    | Α | в  | С |  |
| From | Α  | 0 | 11 | 5 |  |
| From | В  | 1 | 0  | 4 |  |
|      | С  | 4 | 0  | 0 |  |



# **Results**

### **Results Summary for whole modelled period**

| Stream | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|--------|---------|---------------|-----------------|---------|
| B-C    | 0.12    | 8.14          | 0.1             | А       |
| B-A    | 0.27    | 12.27         | 0.4             | В       |
| C-A    | 0.29    | 3.39          | 0.8             | Α       |
| С-В    | 0.29    | 3.50          | 0.0             | А       |
| A-BC   | 0.28    | 1.54          | 0.4             | А       |

### Main Results for each time segment

### Main results: (07:30-07:45)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 9.00                  |                            | 119.36            | 0.075 | 8.92                | 0.1             | 8.143     | A   |
| B-A    | 28.00                 |                            | 104.17            | 0.269 | 27.64               | 0.4             | 11.705    | В   |
| C-A    | 181.00                | 0.00                       | 791.59            | 0.229 | 180.42              | 0.6             | 2.886     | A   |
| С-В    | 2.00                  | 0.00                       | 8.58              | 0.233 | 1.99                | 0.0             | 2.873     | A   |
| A-BC   | 229.00                | 0.00                       | 813.74            | 0.281 | 228.61              | 0.4             | 1.538     | A   |

### Main results: (07:45-08:00)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 16.00                 |                            | 129.55            | 0.124 | 15.94               | 0.1             | 7.918     | A   |
| B-A    | 27.00                 |                            | 100.33            | 0.269 | 27.00               | 0.4             | 12.272    | В   |
| C-A    | 205.00                | 0.00                       | 784.47            | 0.261 | 204.89              | 0.7             | 3.043     | A   |
| С-В    | 3.00                  | 0.00                       | 11.23             | 0.267 | 3.00                | 0.0             | 3.045     | Α   |
| A-BC   | 209.00                | 0.00                       | 813.40            | 0.257 | 209.04              | 0.3             | 1.488     | A   |

### Main results: (08:00-08:15)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 10.00                 |                            | 128.83            | 0.078 | 10.05               | 0.1             | 7.580     | A   |
| B-A    | 23.00                 |                            | 100.92            | 0.228 | 23.06               | 0.3             | 11.569    | В   |
| C-A    | 227.00                | 0.00                       | 787.65            | 0.288 | 226.90              | 0.8             | 3.140     | A   |
| С-В    | 3.00                  | 0.00                       | 10.24             | 0.293 | 3.00                | 0.0             | 3.141     | A   |
| A-BC   | 204.00                | 0.00                       | 812.88            | 0.251 | 204.01              | 0.3             | 1.479     | Α   |

### Main results: (08:15-08:30)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 11.00                 |                            | 130.27            | 0.084 | 10.99               | 0.1             | 7.544     | A   |
| B-A    | 20.00                 |                            | 99.10             | 0.202 | 20.04               | 0.3             | 11.392    | В   |
| C-A    | 199.00                | 3.00                       | 720.87            | 0.276 | 199.05              | 0.7             | 3.388     | A   |
| С-В    | 7.00                  | 3.00                       | 24.02             | 0.291 | 6.98                | 0.0             | 3.497     | A   |
| A-BC   | 216.00                | 0.00                       | 812.99            | 0.266 | 215.97              | 0.4             | 1.507     | A   |



# 2020 Without Development, AM

### **Data Errors and Warnings**

| Severity | Area                | ltem                           | Description  |
|----------|---------------------|--------------------------------|--|
| Warning  | Pedestrian Crossing | Arm A - Pedestrian<br>crossing | Pedestrian crossing uses default flow of 0. Is this correct? |
| Warning  | Pedestrian Crossing | Arm C - Pedestrian crossing    | Pedestrian crossing uses default flow of 0. Is this correct? |

### **Analysis Set Details**

| ID | Network flow scaling factor (%) |
|----|---------------------------------|
| A1 | 100.000                         |

# **Junction Network**

### Junctions

| Junction | Name     | Junction Type | Major road direction | Junction Delay (s) | Junction LOS |
|----------|----------|---------------|----------------------|--------------------|--------------|
| 1        | untitled | T-Junction    | Two-way              | 2.91               | A            |

### **Junction Network Options**

[same as above]

# Arms

Arms [same as above]

### **Major Arm Geometry**

[same as above]

### **Minor Arm Geometry**

[same as above]

### **Pedestrian Crossings**

| Arm | Crossing type |  |
|-----|---------------|--|
| Α   | Pelican       |  |
| В   | None          |  |
| С   | Puffin        |  |

### **Pelican/Puffin Crossings**

| Arm | Space between crossing and junction entry (Signalised) (PCU) | Amber time<br>preceding red (s) | Amber time<br>regarded as green<br>(s) | Time from traffic red<br>start to green man start<br>(s) | Time period green<br>man shown (s) | Clearance<br>Period (s) | Traffic minimum<br>green (s) |
|-----|--|---------------------------------|--|--|------------------------------------|-------------------------|------------------------------|
| Α   | 6.00   | 3.50                            | 2.90                                   | 1.00   | 8.00                               | 6.00                    | 13.00                        |
| С   | 8.00   | 3.00                            | 3.00                                   | 2.00   | 8.00                               | 6.00                    | 16.00                        |



### Slope / Intercept / Capacity

[same as above]

# **Traffic Demand**

### **Demand Set Details**

| ID | Scenario name               | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|----|-----------------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| D2 | 2020 Without<br>Development | AM                  | DIRECT                  | 07:30                       | 08:30                        | 60                                | 15                           |

| Vehicle mix varies over turn | Vehicle mix varies over entry | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
|------------------------------|-------------------------------|--------------------|---------------------------|---------------------------|
| ✓                            | ✓                             | HV Percentages     | 2.00                      | ✓                         |

### **Demand overview (Traffic)**

| Arm | Linked arm | Use O-D data | Scaling Factor (%) |
|-----|------------|--------------|--------------------|
| Α   |            | ✓            | 100.000            |
| В   |            | ✓            | 100.000            |
| С   |            | ✓            | 100.000            |

# **Origin-Destination Data**

### Demand (Veh/TS)

| (07:30-07:45) |
|---------------|
|---------------|

|        | То |         |       |         |  |
|--------|----|---------|-------|---------|--|
|        |    | Α       | В     | С       |  |
| From   | Α  | 0.000   | 5.000 | 231.000 |  |
| FIOIII | в  | 9.000   | 0.000 | 28.000  |  |
|        | С  | 189.000 | 2.000 | 0.000   |  |

### Demand (Veh/TS)

(07:45-08:00)

|        | То |         |       |         |  |  |
|--------|----|---------|-------|---------|--|--|
|        |    | Α       | В     | С       |  |  |
| From   | Α  | 0.000   | 6.000 | 210.000 |  |  |
| FIOIII | в  | 16.000  | 0.000 | 27.000  |  |  |
|        | С  | 213.000 | 3.000 | 0.000   |  |  |

### Demand (Veh/TS)

(08:00-08:15)

|        | То |         |       |         |  |  |
|--------|----|---------|-------|---------|--|--|
|        |    | Α       | В     | С       |  |  |
| From   | Α  | 0.000   | 8.000 | 203.000 |  |  |
| 110111 | в  | 10.000  | 0.000 | 23.000  |  |  |
|        | С  | 235.000 | 3.000 | 0.000   |  |  |



### Demand (Veh/TS)

(08:15-08:30)

|       |   | То      |       |         |  |  |  |  |  |
|-------|---|---------|-------|---------|--|--|--|--|--|
|       |   | Α       | В     | С       |  |  |  |  |  |
| Erom  | Α | 0.000   | 8.000 | 215.000 |  |  |  |  |  |
| FIUII | в | 11.000  | 0.000 | 20.000  |  |  |  |  |  |
|       | С | 207.000 | 7.000 | 0.000   |  |  |  |  |  |

# **Vehicle Mix**

### **Heavy Vehicle proportion**

|        |   | Т | o  |   |
|--------|---|---|----|---|
|        |   | Α | в  | С |
| From   | Α | 0 | 11 | 5 |
| FIOIII | в | 1 | 0  | 4 |
|        | С | 4 | 0  | 0 |

# **Results**

### **Results Summary for whole modelled period**

| Stream | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |  |
|--------|---------|---------------|-----------------|---------|--|
| B-C    | 0.19    | 7.60          | 0.2             | A       |  |
| B-A    | 0.18    | 12.44         | 0.2             | В       |  |
| C-A    | 0.30    | 3.28          | 0.8             | A       |  |
| С-В    | 0.30    | 3.39          | 0.0             | Α       |  |
| A-BC   | 0.29    | 1.56          | 0.4             | Α       |  |

### Main Results for each time segment

### Main results: (07:30-07:45)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 28.00                 |                            | 150.45            | 0.186 | 27.77               | 0.2             | 7.323     | A   |
| B-A    | 9.00                  |                            | 82.96             | 0.108 | 8.88                | 0.1             | 12.129    | В   |
| C-A    | 189.00                | 0.00                       | 792.38            | 0.239 | 188.38              | 0.6             | 2.920     | A   |
| С-В    | 2.00                  | 0.00                       | 8.24              | 0.243 | 1.99                | 0.0             | 2.906     | A   |
| A-BC   | 236.00                | 0.00                       | 813.77            | 0.290 | 235.59              | 0.4             | 1.556     | A   |



### Main results: (07:45-08:00)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | <b>3-C</b> 27.00      |                            | 145.32            | 0.186 | 27.00               | 0.2             | 7.605     | A   |
| B-A    | 16.00                 |                            | 88.16             | 0.181 | 15.90               | 0.2             | 12.440    | В   |
| C-A    | 213.00                | 0.00                       | 785.31            | 0.271 | 212.89              | 0.7             | 3.080     | A   |
| С-В    | 3.00                  | 0.00                       | 10.83             | 0.277 | 3.00                | 0.0             | 3.082     | A   |
| A-BC   | 216.00                | 0.00                       | 813.45            | 0.266 | 216.04              | 0.4             | 1.507     | A   |

### Main results: (08:00-08:15)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 23.00                 |                            | 152.69            | 0.151 | 23.05               | 0.2             | 6.944     | A   |
| B-A    | 10.00                 |                            | 84.23             | 0.119 | 10.08               | 0.1             | 12.150    | В   |
| C-A    | 235.00                | 0.00                       | 788.32            | 0.298 | 234.90              | 0.8             | 3.181     | A   |
| С-В    | 3.00                  | 0.00                       | 9.91              | 0.303 | 3.00                | 0.0             | 3.182     | A   |
| A-BC   | 211.00                | 0.00                       | 812.94            | 0.260 | 211.01              | 0.4             | 1.496     | A   |

### Main results: (08:15-08:30)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 20.00                 |                            | 147.04            | 0.136 | 20.02               | 0.2             | 7.085     | A   |
| B-A    | 11.00                 |                            | 85.97             | 0.128 | 10.99               | 0.1             | 12.001    | В   |
| C-A    | 207.00                | 0.00                       | 745.09            | 0.278 | 207.08              | 0.8             | 3.283     | A   |
| С-В    | 7.00                  | 0.00                       | 23.93             | 0.293 | 6.98                | 0.0             | 3.391     | A   |
| A-BC   | 223.00                | 0.00                       | 813.04            | 0.274 | 222.97              | 0.4             | 1.524     | A   |



# 2020 With Development, AM

### **Data Errors and Warnings**

| Severity | Area                | ltem                           | Description  |
|----------|---------------------|--------------------------------|--|
| Warning  | Pedestrian Crossing | Arm A - Pedestrian<br>crossing | Pedestrian crossing uses default flow of 0. Is this correct? |
| Warning  | Pedestrian Crossing | Arm C - Pedestrian<br>crossing | Pedestrian crossing uses default flow of 0. Is this correct? |

### **Analysis Set Details**

| ID | Network flow scaling factor (%) |
|----|---------------------------------|
| A1 | 100.000                         |

# **Junction Network**

### Junctions

| Junctio | Name     | Junction Type | Major road direction | Junction Delay (s) | Junction LOS |
|---------|----------|---------------|----------------------|--------------------|--------------|
| 1       | untitled | T-Junction    | Two-way              | 2.99               | A            |

### **Junction Network Options**

[same as above]

# Arms

Arms [same as above]

### **Major Arm Geometry**

[same as above]

### **Minor Arm Geometry**

[same as above]

### **Pedestrian Crossings**

| Arm | Crossing type |
|-----|---------------|
| Α   | Pelican       |
| В   | None          |
| С   | Puffin        |

### **Pelican/Puffin Crossings**

| Arm | Space between crossing and junction entry (Signalised) (PCU) | Amber time<br>preceding red (s) | Amber time<br>regarded as green<br>(s) | Time from traffic red<br>start to green man start<br>(s) | Time period green<br>man shown (s) | Clearance<br>Period (s) | Traffic minimum<br>green (s) |
|-----|--|---------------------------------|--|--|------------------------------------|-------------------------|------------------------------|
| Α   | 6.00   | 3.50                            | 2.90                                   | 1.00   | 8.00                               | 6.00                    | 13.00                        |
| С   | 8.00   | 3.00                            | 3.00                                   | 2.00   | 8.00                               | 6.00                    | 16.00                        |



# Slope / Intercept / Capacity [same as above]

**Traffic Demand** 

### **Demand Set Details**

| ID | Scenario name            | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|----|--------------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| D3 | 2020 With<br>Development | AM                  | DIRECT                  | 07:30                       | 08:30                        | 60                                | 15                           |

| Vehicle mix varies over turn | Vehicle mix varies over entry | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
|------------------------------|-------------------------------|--------------------|---------------------------|---------------------------|
| ✓                            | ✓                             | HV Percentages     | 2.00                      | ✓                         |

### **Demand overview (Traffic)**

| Arm | Linked arm | Use O-D data | Scaling Factor (%) |
|-----|------------|--------------|--------------------|
| Α   |            | ✓            | 100.000            |
| в   |            | ✓            | 100.000            |
| С   |            | ✓            | 100.000            |

# **Origin-Destination Data**

### Demand (Veh/TS)

| (07:30-07:45) |
|---------------|
|---------------|

|        | То |         |       |         |  |
|--------|----|---------|-------|---------|--|
|        |    | Α       | В     | С       |  |
| From   | Α  | 0.000   | 5.000 | 240.000 |  |
| FIOIII | в  | 9.000   | 0.000 | 28.000  |  |
|        | С  | 211.000 | 2.000 | 0.000   |  |

### Demand (Veh/TS)

(07:45-08:00)

|        | То |         |       |         |  |  |
|--------|----|---------|-------|---------|--|--|
|        |    | A B     |       | С       |  |  |
| From   | Α  | 0.000   | 6.000 | 219.000 |  |  |
| FIOIII | в  | 16.000  | 0.000 | 27.000  |  |  |
|        | С  | 235.000 | 3.000 | 0.000   |  |  |

### Demand (Veh/TS)

(08:00-08:15)

|       | То |         |       |         |  |
|-------|----|---------|-------|---------|--|
|       |    | Α       | В     | С       |  |
| From  | Α  | 0.000   | 8.000 | 212.000 |  |
| 11011 | в  | 10.000  | 0.000 | 23.000  |  |
|       | С  | 257.000 | 3.000 | 0.000   |  |



### Demand (Veh/TS)

(08:15-08:30)

|        | То |         |       |         |  |  |
|--------|----|---------|-------|---------|--|--|
|        |    | Α       | В     | С       |  |  |
| From   | Α  | 0.000   | 8.000 | 224.000 |  |  |
| FIOIII | в  | 11.000  | 0.000 | 20.000  |  |  |
|        | С  | 229.000 | 7.000 | 0.000   |  |  |

# **Vehicle Mix**

### **Heavy Vehicle proportion**

|       | То |   |    |   |  |
|-------|----|---|----|---|--|
|       |    | Α | в  | С |  |
| From  | Α  | 0 | 11 | 5 |  |
| 11011 | в  | 1 | 0  | 4 |  |
|       | С  | 4 | 0  | 0 |  |

# **Results**

### **Results Summary for whole modelled period**

| Stream | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|--------|---------|---------------|-----------------|---------|
| B-C    | 0.19    | 7.75          | 0.2             | A       |
| B-A    | 0.19    | 13.38         | 0.2             | В       |
| C-A    | 0.32    | 3.38          | 0.9             | A       |
| С-В    | 0.33    | 3.49          | 0.0             | А       |
| A-BC   | 0.30    | 1.59          | 0.4             | A       |

### Main Results for each time segment

### Main results: (07:30-07:45)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 28.00                 |                            | 148.35            | 0.189 | 27.77               | 0.2             | 7.450     | A   |
| B-A    | 9.00                  |                            | 78.08             | 0.115 | 8.87                | 0.1             | 12.981    | В   |
| C-A    | 211.00                | 0.00                       | 796.79            | 0.265 | 210.29              | 0.7             | 3.007     | A   |
| С-В    | 2.00                  | 0.00                       | 7.44              | 0.269 | 1.99                | 0.0             | 2.997     | A   |
| A-BC   | 245.00                | 0.00                       | 811.56            | 0.302 | 244.57              | 0.4             | 1.587     | A   |



### Main results: (07:45-08:00)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 27.00                 |                            | 143.15            | 0.189 | 27.00               | 0.2             | 7.748     | A   |
| B-A    | 16.00                 |                            | 83.03             | 0.193 | 15.89               | 0.2             | 13.384    | В   |
| C-A    | 235.00                | 0.00                       | 789.92            | 0.298 | 234.88              | 0.8             | 3.179     | A   |
| С-В    | 3.00                  | 0.00                       | 9.91              | 0.303 | 3.00                | 0.0             | 3.184     | A   |
| A-BC   | 225.00                | 0.00                       | 811.26            | 0.277 | 225.05              | 0.4             | 1.536     | A   |

### Main results: (08:00-08:15)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 23.00                 |                            | 150.60            | 0.153 | 23.05               | 0.2             | 7.060     | A   |
| B-A    | 10.00                 |                            | 79.25             | 0.126 | 10.09               | 0.1             | 13.030    | В   |
| C-A    | 257.00                | 0.00                       | 792.51            | 0.324 | 256.89              | 0.9             | 3.290     | A   |
| С-В    | 3.00                  | 0.00                       | 9.13              | 0.328 | 3.00                | 0.0             | 3.296     | A   |
| A-BC   | 220.00                | 0.00                       | 810.82            | 0.271 | 220.01              | 0.4             | 1.524     | A   |

### Main results: (08:15-08:30)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 20.00                 |                            | 144.97            | 0.138 | 20.02               | 0.2             | 7.203     | A   |
| B-A    | 11.00                 |                            | 80.87             | 0.136 | 10.99               | 0.2             | 12.878    | В   |
| C-A    | 229.00                | 0.00                       | 752.07            | 0.304 | 229.09              | 0.9             | 3.378     | A   |
| С-В    | 7.00                  | 0.00                       | 22.02             | 0.318 | 6.98                | 0.0             | 3.488     | A   |
| A-BC   | 232.00                | 0.00                       | 810.90            | 0.286 | 231.97              | 0.4             | 1.554     | A   |



# Junctions 9 PICADY 9 - Priority Intersection Module Version: 9.0.0.4211 [] © Copyright TRL Limited, 2016 For sales and distribution information, program advice and maintenance, contact TRL: Tel: +44 (0)1344 770758 email: software@trl.co.uk Web: http://www.trlsoftware.co.uk The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: The Broadway Brighton Road Junction PM Peak 500 units with updated TRICS.j9 Path: N:\Projects\hdshor 150137\Analysis\PICADY Report generation date: 10/03/2016 11:31:20

»Observed 2015, PM »2020 Without Development, PM »2020 With Development, PM

### Summary of junction performance

|             | РМ                    |            |       |     |  |
|-------------|-----------------------|------------|-------|-----|--|
|             | Queue (Veh)           | Delay (s)  | RFC   | LOS |  |
|             | Observed 2015         |            |       |     |  |
| Stream B-C  | 0.2                   | 6.79       | 0.18  | А   |  |
| Stream B-A  | 0.2                   | 13.00      | 0.14  | В   |  |
| Stream C-A  | 1.2                   | 4.58       | 0.40  | Α   |  |
| Stream C-B  | 0.2                   | 5.49       | 0.45  | Α   |  |
| Stream A-BC | 0.4                   | 1.53       | 0.30  | А   |  |
|             | 2020 With             | out Develo | opmei | nt  |  |
| Stream B-C  | 0.2                   | 6.76       | 0.18  | А   |  |
| Stream B-A  | 0.2                   | 13.31      | 0.15  | В   |  |
| Stream C-A  | 1.2                   | 4.40       | 0.40  | Α   |  |
| Stream C-B  | 0.2                   | 5.27       | 0.44  | Α   |  |
| Stream A-BC | 0.4                   | 1.55       | 0.31  | А   |  |
|             | 2020 With Development |            |       |     |  |
| Stream B-C  | 0.2                   | 6.86       | 0.19  | А   |  |
| Stream B-A  | 0.2                   | 13.56      | 0.15  | В   |  |
| Stream C-A  | 1.3                   | 4.44       | 0.41  | A   |  |
| Stream C-B  | 0.2                   | 5.31       | 0.45  | А   |  |
| Stream A-BC | 0.4                   | 1.55       | 0.31  | А   |  |

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.


# File summary

### **File Description**

| Title       | (untitled)         |
|-------------|--------------------|
| Location    |                    |
| Site number |                    |
| Date        | 31/07/2015         |
| Version     |                    |
| Status      | (new file)         |
| Identifier  |                    |
| Client      |                    |
| Jobnumber   |                    |
| Enumerator  | MOTION"emmastonard |
| Description |                    |
|             |                    |

### Units

| Distance units | Speed units | Traffic units input | Traffic units results | Flow units     | Average delay units | Total delay units | Rate of delay units |
|----------------|-------------|---------------------|-----------------------|----------------|---------------------|-------------------|---------------------|
| m              | kph         | Veh                 | Veh                   | perTimeSegment | S                   | -Min              | perMin              |

# **Analysis Options**

| Calculate Queue Percentiles | Calculate residual capacity | RFC Threshold | Average Delay threshold (s) | Queue threshold (PCU) |
|-----------------------------|-----------------------------|---------------|-----------------------------|-----------------------|
|                             |                             | 0.85          | 36.00                       | 20.00                 |

# **Demand Set Summary**

| Scenario name               | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|-----------------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| Observed 2015               | PM                  | DIRECT                  | 17:00                       | 18:00                        | 60                                | 15                           |
| 2020 Without<br>Development | PM                  | DIRECT                  | 17:00                       | 18:00                        | 60                                | 15                           |
| 2020 With Development       | PM                  | DIRECT                  | 17:00                       | 18:00                        | 60                                | 15                           |



# **Observed 2015, PM**

### **Data Errors and Warnings**

| Severity | Area                | Item                                 | Description  |
|----------|---------------------|--------------------------------------|--|
| Warning  | Signalised Crossing | Arm A -<br>Pelican/Puffin<br>Details | 'Amber time regarded as green' should not be larger than 'Amber time preceding red'. |
| Warning  | Pedestrian Crossing | Arm A - Pedestrian<br>crossing       | Pedestrian crossing uses default flow of 0. Is this correct?                         |

### **Analysis Set Details**

| ID | Network flow scaling factor (%) |
|----|---------------------------------|
| A1 | 100.000                         |

# **Junction Network**

#### Junctions

| Junction | Name     | Junction Type | Major road direction | Junction Delay (s) | Junction LOS |
|----------|----------|---------------|----------------------|--------------------|--------------|
| 1        | untitled | T-Junction    | Two-way              | 3.54               | А            |

### **Junction Network Options**

| Driving side | Lighting       |
|--------------|----------------|
| Left         | Normal/unknown |

# Arms

### Arms

| Arm | Name                 | Description | Arm type |
|-----|----------------------|-------------|----------|
| Α   | Brighton Road (West) |             | Major    |
| В   | The Broadway         |             | Minor    |
| С   | Brighton Road (East) |             | Major    |

### Major Arm Geometry

| Arm | Width of carriageway (m) | Has kerbed central reserve | Has right turn bay | Visibility for right turn (m) | Blocks? | Blocking queue (PCU) |
|-----|--------------------------|----------------------------|--------------------|-------------------------------|---------|----------------------|
| С   | 13.00                    |                            |                    | 250.0                         |         | -                    |

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

### **Minor Arm Geometry**

| Arm | Minor arm              | Width at give- | Width at | Width at | Width at | Width at | Estimate flare | Flare length | Visibility to | Visibility to |
|-----|------------------------|----------------|----------|----------|----------|----------|----------------|--------------|---------------|---------------|
|     | type                   | way (m)        | 5m (m)   | 10m (m)  | 15m (m)  | 20m (m)  | length         | (PCU)        | left (m)      | right (m)     |
| в   | One lane<br>plus flare | 10.00          | 6.00     | 5.00     | 4.50     | 3.50     | $\checkmark$   | 2.00         | 250           | 250           |



### **Pedestrian Crossings**

| Arm | Crossing type |
|-----|---------------|
| Α   | Puffin        |
| В   | None          |
| С   | Puffin        |

#### **Pelican/Puffin Crossings**

| Arm | Space between crossing and junction entry (Signalised) (PCU) | Amber time<br>preceding red (s) | Amber time<br>regarded as green<br>(s) | Amber time<br>urded as green<br>(s)Time from traffic red<br>start to green man startTime period green<br>man shown (s) | Clearance<br>Period (s) | Traffic minimum<br>green (s) |       |
|-----|--|---------------------------------|--|--|-------------------------|------------------------------|-------|
| Α   | 6.00   | 2.00                            | 4.00                                   | 2.00   | 10.00                   | 6.00                         | 18.00 |
| С   | 8.00   | 3.00                            | 3.00                                   | 2.00   | 8.00                    | 6.00                         | 16.00 |

### Slope / Intercept / Capacity

#### **Priority Intersection Slopes and Intercepts**

| Junction | Stream | Intercept<br>(Veh/TS) | Slope<br>for<br>A-B | Slope<br>for<br>A-C | Slope<br>for<br>C-A | Slope<br>for<br>C-B |
|----------|--------|-----------------------|---------------------|---------------------|---------------------|---------------------|
| 1        | B-A    | 169.293               | 0.086               | 0.217               | 0.136               | 0.310               |
| 1        | B-C    | 208.225               | 0.089               | 0.224               | -                   | -                   |
| 1        | C-B    | 179.685               | 0.194               | 0.194               | -                   | -                   |

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

# **Traffic Demand**

#### **Demand Set Details**

| ID | Scenario name    | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|----|------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| D4 | Observed<br>2015 | PM                  | DIRECT                  | 17:00                       | 18:00                        | 60                                | 15                           |

| Vehicle mix varies over turn | Vehicle mix varies over entry | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
|------------------------------|-------------------------------|--------------------|---------------------------|---------------------------|
| ✓                            | ✓                             | HV Percentages     | 2.00                      | ✓                         |

### **Demand overview (Traffic)**

| Arm | Linked arm | Use O-D data | Scaling Factor (%) |
|-----|------------|--------------|--------------------|
| Α   |            | ✓            | 100.000            |
| В   |            | ✓            | 100.000            |
| С   |            | ✓            | 100.000            |

# **Origin-Destination Data**



### Demand (Veh/TS)

(17:00-17:15)

|        |   |         | B         C           26.000         163.000           0.000         10.000 |         |  |
|--------|---|---------|---|---------|--|
|        |   | Α       | В   | С       |  |
| From   | Α | 0.000   | 26.000  | 163.000 |  |
| FIOIII | в | 6.000   | 0.000   | 10.000  |  |
|        | С | 255.000 | 27.000  | 0.000   |  |

#### Demand (Veh/TS)

(17:15-17:30)

|        |   | То      |        |         |  |  |  |
|--------|---|---------|--------|---------|--|--|--|
|        |   | Α       | В      | С       |  |  |  |
| From   | Α | 0.000   | 26.000 | 226.000 |  |  |  |
| FIOIII | в | 5.000   | 0.000  | 17.000  |  |  |  |
|        | С | 220.000 | 17.000 | 0.000   |  |  |  |

#### Demand (Veh/TS)

(17:30-17:45)

|        |   | То      |        |         |  |  |
|--------|---|---------|--------|---------|--|--|
|        |   | Α       | В      | С       |  |  |
| From   | Α | 0.000   | 22.000 | 171.000 |  |  |
| 110111 | в | 9.000   | 0.000  | 31.000  |  |  |
|        | С | 235.000 | 27.000 | 0.000   |  |  |

### Demand (Veh/TS)

(17:45-18:00)

|        |   | A         B         C           0.000         10.000         192.000           14.000         0.000         8.000           205.000         10.000         0.000 |        |         |
|--------|---|--|--------|---------|
|        |   | Α  | В      | С       |
| From   | Α | 0.000  | 10.000 | 192.000 |
| 110111 | в | 14.000   | 0.000  | 8.000   |
|        | С | 205.000  | 19.000 | 0.000   |

# **Vehicle Mix**

Heavy Vehicle proportion

|      |   | То |   |   |  |  |
|------|---|----|---|---|--|--|
|      |   | Α  | в | С |  |  |
| From | Α | 0  | 4 | 1 |  |  |
|      | в | 3  | 0 | 2 |  |  |
|      | С | 2  | 0 | 0 |  |  |



# **Results**

# **Results Summary for whole modelled period**

| Stream | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|--------|---------|---------------|-----------------|---------|
| B-C    | 0.18    | 6.79          | 0.2             | А       |
| B-A    | 0.14    | 13.00         | 0.2             | В       |
| C-A    | 0.40    | 4.58          | 1.2             | Α       |
| С-В    | 0.45    | 5.49          | 0.2             | А       |
| A-BC   | 0.30    | 1.53          | 0.4             | А       |

# Main Results for each time segment

#### Main results: (17:00-17:15)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 10.00                 |                            | 163.34            | 0.061 | 9.94                | 0.1             | 5.864     | A   |
| B-A    | 6.00                  |                            | 84.81             | 0.071 | 5.92                | 0.1             | 11.398    | В   |
| C-A    | 255.00                | 3.00                       | 634.30            | 0.402 | 253.76              | 1.2             | 4.584     | A   |
| С-В    | 27.00                 | 3.00                       | 60.06             | 0.450 | 26.83               | 0.2             | 5.489     | A   |
| A-BC   | 189.00                | 0.00                       | 839.56            | 0.225 | 188.71              | 0.3             | 1.382     | A   |

#### Main results: (17:15-17:30)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 17.00                 |                            | 157.48            | 0.108 | 16.94               | 0.1             | 6.399     | A   |
| B-A    | 5.00                  |                            | 74.22             | 0.067 | 5.00                | 0.1             | 13.001    | В   |
| C-A    | 220.00                | 5.00                       | 651.17            | 0.338 | 220.26              | 1.0             | 4.136     | A   |
| С-В    | 17.00                 | 5.00                       | 45.48             | 0.374 | 17.08               | 0.1             | 4.731     | A   |
| A-BC   | 252.00                | 0.00                       | 840.21            | 0.300 | 251.86              | 0.4             | 1.530     | A   |

### Main results: (17:30-17:45)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 31.00                 |                            | 168.85            | 0.184 | 30.90               | 0.2             | 6.520     | A   |
| B-A    | 9.00                  |                            | 80.70             | 0.112 | 8.95                | 0.1             | 12.534    | В   |
| C-A    | 235.00                | 1.00                       | 638.11            | 0.368 | 234.90              | 1.1             | 4.366     | A   |
| С-В    | 27.00                 | 1.00                       | 63.95             | 0.422 | 26.93               | 0.2             | 5.275     | A   |
| A-BC   | 193.00                | 0.00                       | 840.00            | 0.230 | 193.13              | 0.3             | 1.390     | Α   |

#### Main results: (17:45-18:00)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 8.00                  |                            | 140.79            | 0.057 | 8.16                | 0.1             | 6.793     | A   |
| B-A    | 14.00                 |                            | 98.06             | 0.143 | 13.96               | 0.2             | 10.695    | В   |
| C-A    | 205.00                | 2.00                       | 658.14            | 0.311 | 205.22              | 0.9             | 3.935     | A   |
| С-В    | 19.00                 | 2.00                       | 53.77             | 0.353 | 19.06               | 0.1             | 4.522     | A   |
| A-BC   | 202.00                | 0.00                       | 841.23            | 0.240 | 201.98              | 0.3             | 1.408     | A   |



# 2020 Without Development, PM

### **Data Errors and Warnings**

| Severity | Area  | Item                                 | Description  |
|----------|---|--------------------------------------|--|
| Warning  | Signalised Crossing                                   | Arm A -<br>Pelican/Puffin<br>Details | 'Amber time regarded as green' should not be larger than 'Amber time preceding red'. |
| Warning  | Warning Pedestrian Crossing Arm A - Pecrossing crossi |                                      | Pedestrian crossing uses default flow of 0. Is this correct?                         |
| Warning  | Pedestrian Crossing                                   | Arm C - Pedestrian<br>crossing       | Pedestrian crossing uses default flow of 0. Is this correct?                         |

### **Analysis Set Details**

|   | ID | Network flow scaling factor (%) |
|---|----|---------------------------------|
| ſ | A1 | 100.000                         |

# **Junction Network**

### Junctions

|   | Junction | Name     | Junction Type | Major road direction | Junction Delay (s) | Junction LOS |
|---|----------|----------|---------------|----------------------|--------------------|--------------|
| Γ | 1        | untitled | T-Junction    | Two-way              | 3.43               | A            |

#### **Junction Network Options**

[same as above]

# Arms

Arms [same as above]

# Major Arm Geometry

[same as above]

#### **Minor Arm Geometry**

[same as above]

### **Pedestrian Crossings**

| Arm Crossing ty |        |  |
|-----------------|--------|--|
| Α               | Puffin |  |
| В               | None   |  |
| С               | Puffin |  |



### **Pelican/Puffin Crossings**

| Arm | Space between crossing and junction entry (Signalised) (PCU) | Amber time<br>preceding red (s) | Amber time<br>regarded as green<br>(s) | Time from traffic red<br>start to green man start<br>(s) | Time period green<br>man shown (s) | Clearance<br>Period (s) | Traffic minimum<br>green (s) |
|-----|--|---------------------------------|--|--|------------------------------------|-------------------------|------------------------------|
| Α   | 6.00   | 2.00                            | 4.00                                   | 2.00   | 10.00                              | 6.00                    | 18.00                        |
| С   | 8.00   | 3.00                            | 3.00                                   | 2.00   | 8.00                               | 6.00                    | 16.00                        |

### Slope / Intercept / Capacity

[same as above]

# **Traffic Demand**

#### **Demand Set Details**

| ID | Scenario name               | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|----|-----------------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| D5 | 2020 Without<br>Development | PM                  | DIRECT                  | 17:00                       | 18:00                        | 60                                | 15                           |

| Vehicle mix varies over turn | Vehicle mix varies over entry | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
|------------------------------|-------------------------------|--------------------|---------------------------|---------------------------|
| $\checkmark$                 | ✓                             | HV Percentages     | 2.00                      | ✓                         |

# **Demand overview (Traffic)**

| Arm | Linked arm | Use O-D data | Scaling Factor (%) |
|-----|------------|--------------|--------------------|
| Α   |            | ✓            | 100.000            |
| В   |            | ✓            | 100.000            |
| С   |            | ✓            | 100.000            |

# **Origin-Destination Data**

#### Demand (Veh/TS)

(17:00-17:15)

|        | То |         |        |         |  |  |  |
|--------|----|---------|--------|---------|--|--|--|
|        |    | Α       | В      | С       |  |  |  |
| From   | Α  | 0.000   | 26.000 | 169.000 |  |  |  |
| 110111 | в  | 6.000   | 0.000  | 10.000  |  |  |  |
|        | С  | 259.000 | 27.000 | 0.000   |  |  |  |

#### Demand (Veh/TS)

(17:15-17:30)

|      | То |         |        |         |  |  |  |  |
|------|----|---------|--------|---------|--|--|--|--|
|      |    | Α       | В      | С       |  |  |  |  |
| From | Α  | 0.000   | 26.000 | 232.000 |  |  |  |  |
| From | в  | 5.000   | 0.000  | 17.000  |  |  |  |  |
|      | С  | 224.000 | 17.000 | 0.000   |  |  |  |  |



### Demand (Veh/TS)

(17:30-17:45)

|        | То |         |        |         |  |  |  |  |
|--------|----|---------|--------|---------|--|--|--|--|
|        |    | Α       | В      | С       |  |  |  |  |
| From   | Α  | 0.000   | 22.000 | 177.000 |  |  |  |  |
| FIOIII | в  | 9.000   | 0.000  | 31.000  |  |  |  |  |
|        | С  | 239.000 | 27.000 | 0.000   |  |  |  |  |

#### Demand (Veh/TS)

(17:45-18:00)

|        | То |         |        |         |  |  |  |  |
|--------|----|---------|--------|---------|--|--|--|--|
|        |    | Α       | В      | С       |  |  |  |  |
| From   | Α  | 0.000   | 10.000 | 198.000 |  |  |  |  |
| FIOIII | в  | 14.000  | 0.000  | 8.000   |  |  |  |  |
|        | С  | 209.000 | 19.000 | 0.000   |  |  |  |  |

# **Vehicle Mix**

#### **Heavy Vehicle proportion**

|       |   | То |   |   |  |  |
|-------|---|----|---|---|--|--|
|       |   | Α  | в | С |  |  |
| From  | Α | 0  | 4 | 1 |  |  |
| FIOII | в | 3  | 2 | 0 |  |  |
|       | С | 2  | 0 | 0 |  |  |

# **Results**

# **Results Summary for whole modelled period**

| Stream | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|--------|---------|---------------|-----------------|---------|
| B-C    | 0.18    | 6.76          | 0.2             | А       |
| B-A    | 0.15    | 13.31         | 0.2             | В       |
| C-A    | 0.40    | 4.40          | 1.2             | А       |
| С-В    | 0.44    | 5.27          | 0.2             | А       |
| A-BC   | 0.31    | 1.55          | 0.4             | А       |



### Main Results for each time segment

### Main results: (17:00-17:15)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 10.00                 |                            | 164.18            | 0.061 | 9.94                | 0.1             | 5.832     | A   |
| B-A    | 6.00                  |                            | 83.11             | 0.072 | 5.92                | 0.1             | 11.647    | В   |
| C-A    | 259.00                | 0.00                       | 654.36            | 0.396 | 257.79              | 1.2             | 4.396     | A   |
| С-В    | 27.00                 | 0.00                       | 61.08             | 0.442 | 26.84               | 0.2             | 5.270     | A   |
| A-BC   | 195.00                | 0.00                       | 839.63            | 0.232 | 194.70              | 0.3             | 1.395     | A   |

### Main results: (17:15-17:30)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 17.00                 |                            | 158.22            | 0.107 | 16.94               | 0.1             | 6.371     | A   |
| B-A    | 5.00                  |                            | 72.59             | 0.069 | 5.00                | 0.1             | 13.314    | В   |
| C-A    | 224.00                | 0.00                       | 683.35            | 0.328 | 224.28              | 0.9             | 3.887     | A   |
| С-В    | 17.00                 | 0.00                       | 46.76             | 0.364 | 17.07               | 0.1             | 4.461     | A   |
| A-BC   | 258.00                | 0.00                       | 840.25            | 0.307 | 257.86              | 0.4             | 1.545     | A   |

#### Main results: (17:30-17:45)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 31.00                 |                            | 169.72            | 0.183 | 30.90               | 0.2             | 6.479     | A   |
| B-A    | 9.00                  |                            | 79.09             | 0.114 | 8.95                | 0.1             | 12.823    | В   |
| C-A    | 239.00                | 0.00                       | 645.31            | 0.370 | 238.85              | 1.1             | 4.331     | A   |
| С-В    | 27.00                 | 0.00                       | 63.76             | 0.423 | 26.93               | 0.2             | 5.242     | A   |
| A-BC   | 199.00                | 0.00                       | 840.07            | 0.237 | 199.13              | 0.3             | 1.403     | A   |

#### Main results: (17:45-18:00)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 8.00                  |                            | 141.40            | 0.057 | 8.16                | 0.1             | 6.761     | Α   |
| B-A    | 14.00                 |                            | 96.17             | 0.146 | 13.96               | 0.2             | 10.941    | В   |
| C-A    | 209.00                | 0.00                       | 672.43            | 0.311 | 209.23              | 0.9             | 3.848     | Α   |
| С-В    | 19.00                 | 0.00                       | 53.97             | 0.352 | 19.06               | 0.1             | 4.430     | Α   |
| A-BC   | 208.00                | 0.00                       | 841.25            | 0.247 | 207.98              | 0.3             | 1.421     | Α   |



# 2020 With Development, PM

## **Data Errors and Warnings**

| Severity | Area  | Item                                 | Description  |
|----------|---|--------------------------------------|--|
| Warning  | Signalised Crossing                                     | Arm A -<br>Pelican/Puffin<br>Details | 'Amber time regarded as green' should not be larger than 'Amber time preceding red'. |
| Warning  | Varning Pedestrian Crossing Arm A - Pedestrian crossing |                                      | Pedestrian crossing uses default flow of 0. Is this correct?                         |
| Warning  | Warning Pedestrian Crossing Arm C - Pede crossing       |                                      | Pedestrian crossing uses default flow of 0. Is this correct?                         |

### **Analysis Set Details**

| ID | Network flow scaling factor (%) |
|----|---------------------------------|
| A1 | 100.000                         |

# **Junction Network**

### Junctions

| Junction | Name     | Junction Type | Major road direction | Junction Delay (s) | Junction LOS |
|----------|----------|---------------|----------------------|--------------------|--------------|
| 1        | untitled | T-Junction    | Two-way              | 3.48               | А            |

#### **Junction Network Options**

[same as above]

# Arms

Arms [same as above]

# Major Arm Geometry

[same as above]

#### **Minor Arm Geometry**

[same as above]

### **Pedestrian Crossings**

| Arm | Crossing type |  |  |  |  |
|-----|---------------|--|--|--|--|
| Α   | Puffin        |  |  |  |  |
| В   | None          |  |  |  |  |
| С   | Puffin        |  |  |  |  |



### **Pelican/Puffin Crossings**

| Arm | Space between crossing and junction entry (Signalised) (PCU) | Amber time<br>preceding red (s) | Amber time<br>regarded as green<br>(s) | Time from traffic red<br>start to green man start<br>(s) | Time period green<br>man shown (s) | Clearance<br>Period (s) | Traffic minimum<br>green (s) |
|-----|--|---------------------------------|--|--|------------------------------------|-------------------------|------------------------------|
| Α   | 6.00   | 2.00                            | 4.00                                   | 2.00   | 10.00                              | 6.00                    | 18.00                        |
| С   | 8.00   | 3.00                            | 3.00                                   | 2.00   | 8.00                               | 6.00                    | 16.00                        |

### Slope / Intercept / Capacity

[same as above]

# **Traffic Demand**

#### **Demand Set Details**

| ID | Scenario name            | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|----|--------------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| D6 | 2020 With<br>Development | PM                  | DIRECT                  | 17:00                       | 18:00                        | 60                                | 15                           |

| Vehicle mix varies over turn | Vehicle mix varies over entry | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
|------------------------------|-------------------------------|--------------------|---------------------------|---------------------------|
| $\checkmark$                 | ✓                             | HV Percentages     | 2.00                      | ✓                         |

# **Demand overview (Traffic)**

| Arm | Linked arm | Use O-D data | Scaling Factor (%) |
|-----|------------|--------------|--------------------|
| Α   |            | ✓            | 100.000            |
| В   |            | ✓            | 100.000            |
| С   |            | ✓            | 100.000            |

# **Origin-Destination Data**

#### Demand (Veh/TS)

(17:00-17:15)

|        |   | То      |        |         |  |  |  |
|--------|---|---------|--------|---------|--|--|--|
|        |   | Α       | В      | С       |  |  |  |
| From   | Α | 0.000   | 26.000 | 169.000 |  |  |  |
| 110111 | в | 6.000   | 0.000  | 10.000  |  |  |  |
|        | С | 268.000 | 27.000 | 0.000   |  |  |  |

#### Demand (Veh/TS)

(17:15-17:30)

|      |   | То      |        |         |  |  |  |
|------|---|---------|--------|---------|--|--|--|
|      |   | Α       | В      | С       |  |  |  |
| From | Α | 0.000   | 26.000 | 232.000 |  |  |  |
|      | в | 5.000   | 0.000  | 17.000  |  |  |  |
|      | С | 233.000 | 17.000 | 0.000   |  |  |  |



### Demand (Veh/TS)

(17:30-17:45)

|      |   | То      |        |         |  |  |  |
|------|---|---------|--------|---------|--|--|--|
|      |   | AE      |        | С       |  |  |  |
| From | Α | 0.000   | 22.000 | 177.000 |  |  |  |
| From | в | 9.000   | 0.000  | 31.000  |  |  |  |
|      | С | 248.000 | 27.000 | 0.000   |  |  |  |

#### Demand (Veh/TS)

(17:45-18:00)

|      |   | То      |        |         |  |  |  |  |
|------|---|---------|--------|---------|--|--|--|--|
| From |   | Α       | В      | С       |  |  |  |  |
|      | Α | 0.000   | 10.000 | 198.000 |  |  |  |  |
|      | в | 14.000  | 0.000  | 8.000   |  |  |  |  |
|      | С | 218.000 | 19.000 | 0.000   |  |  |  |  |

# **Vehicle Mix**

#### **Heavy Vehicle proportion**

|       | То |   |   |   |  |
|-------|----|---|---|---|--|
|       |    | Α | в | С |  |
| From  | Α  | 0 | 4 | 1 |  |
| FIOII | в  | 3 | 0 | 2 |  |
|       | С  | 2 | 0 | 0 |  |

# **Results**

# **Results Summary for whole modelled period**

| Stream | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|--------|---------|---------------|-----------------|---------|
| B-C    | 0.19    | 6.86          | 0.2             | А       |
| B-A    | 0.15    | 13.56         | 0.2             | В       |
| C-A    | 0.41    | 4.44          | 1.3             | А       |
| С-В    | 0.45    | 5.31          | 0.2             | А       |
| A-BC   | 0.31    | 1.55          | 0.4             | А       |



### Main Results for each time segment

### Main results: (17:00-17:15)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 10.00                 |                            | 161.91            | 0.062 | 9.93                | 0.1             | 5.919     | A   |
| B-A    | 6.00                  |                            | 81.77             | 0.073 | 5.92                | 0.1             | 11.853    | В   |
| C-A    | 268.00                | 0.00                       | 657.85            | 0.407 | 266.73              | 1.3             | 4.443     | A   |
| С-В    | 27.00                 | 0.00                       | 59.90             | 0.451 | 26.84               | 0.2             | 5.310     | A   |
| A-BC   | 195.00                | 0.00                       | 839.63            | 0.232 | 194.70              | 0.3             | 1.395     | A   |

### Main results: (17:15-17:30)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 17.00                 |                            | 155.97            | 0.109 | 16.94               | 0.1             | 6.470     | A   |
| B-A    | 5.00                  |                            | 71.36             | 0.070 | 5.00                | 0.1             | 13.563    | В   |
| C-A    | 233.00                | 0.00                       | 687.12            | 0.339 | 233.29              | 1.0             | 3.925     | A   |
| С-В    | 17.00                 | 0.00                       | 45.59             | 0.373 | 17.08               | 0.1             | 4.492     | A   |
| A-BC   | 258.00                | 0.00                       | 840.25            | 0.307 | 257.86              | 0.4             | 1.545     | Α   |

#### Main results: (17:30-17:45)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 31.00                 |                            | 167.28            | 0.185 | 30.90               | 0.2             | 6.595     | A   |
| B-A    | 9.00                  |                            | 77.84             | 0.116 | 8.95                | 0.1             | 13.055    | В   |
| C-A    | 248.00                | 0.00                       | 649.13            | 0.382 | 247.84              | 1.1             | 4.373     | A   |
| С-В    | 27.00                 | 0.00                       | 62.47             | 0.432 | 26.93               | 0.2             | 5.274     | A   |
| A-BC   | 199.00                | 0.00                       | 840.07            | 0.237 | 199.13              | 0.3             | 1.403     | A   |

#### Main results: (17:45-18:00)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 8.00                  |                            | 139.42            | 0.057 | 8.16                | 0.1             | 6.864     | Α   |
| B-A    | 14.00                 |                            | 94.69             | 0.148 | 13.96               | 0.2             | 11.141    | В   |
| C-A    | 218.00                | 0.00                       | 676.59            | 0.322 | 218.24              | 0.9             | 3.878     | A   |
| С-В    | 19.00                 | 0.00                       | 52.59             | 0.361 | 19.06               | 0.1             | 4.455     | A   |
| A-BC   | 208.00                | 0.00                       | 841.25            | 0.247 | 207.98              | 0.3             | 1.421     | Α   |





# **Junctions 9**

## **PICADY 9 - Priority Intersection Module**

Version: 9.0.0.4211 []

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The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Site Access Junction 500 units with Updated TRICS.j9 Path: N:\Projects\hdshor 150137\Analysis\PICADY Report generation date: 10/03/2016 11:23:39

»2020 With Development, AM »2020 With Development, PM

#### Summary of junction performance

|            | AM          |           |       |        | PM          |           |      |     |  |
|------------|-------------|-----------|-------|--------|-------------|-----------|------|-----|--|
|            | Queue (Veh) | Delay (s) | RFC   | LOS    | Queue (Veh) | Delay (s) | RFC  | LOS |  |
|            |             | 20        | 020 M | /ith D | Development |           |      |     |  |
| Stream B-C | 0.1         | 7.62      | 0.13  | А      | 0.1         | 6.58      | 0.05 | А   |  |
| Stream B-A | 0.4         | 16.11     | 0.28  | С      | 0.1         | 14.04     | 0.12 | В   |  |
| Stream C-A | 1.3         | 4.82      | 0.39  | А      | 1.4         | 4.99      | 0.43 | А   |  |
| Stream C-B | 0.0         | 4.87      | 0.40  | А      | 0.0         | 5.09      | 0.43 | А   |  |
| Stream A-B |             |           |       |        |             |           |      |     |  |
| Stream A-C |             |           |       |        |             |           |      |     |  |

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

#### File summary

#### **File Description**

| Title       | (untitled)         |
|-------------|--------------------|
| Location    |                    |
| Site number |                    |
| Date        | 31/07/2015         |
| Version     |                    |
| Status      | (new file)         |
| Identifier  |                    |
| Client      |                    |
| Jobnumber   |                    |
| Enumerator  | MOTION"emmastonard |
| Description |                    |

### Units

| Distance units | Speed units | Traffic units input | Traffic units results | Flow units     | Average delay units | Total delay units | Rate of delay units |
|----------------|-------------|---------------------|-----------------------|----------------|---------------------|-------------------|---------------------|
| m              | kph         | Veh                 | Veh                   | perTimeSegment | s                   | -Min              | perMin              |



# **Analysis Options**

| Calculate Queue Percentiles | Calculate residual capacity | RFC Threshold | Average Delay threshold (s) | Queue threshold (PCU) |
|-----------------------------|-----------------------------|---------------|-----------------------------|-----------------------|
|                             |                             | 0.85          | 36.00                       | 20.00                 |

# **Demand Set Summary**

| Scenario name            | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|--------------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| 2020 With<br>Development | AM                  | DIRECT                  | 07:30                       | 08:30                        | 60                                | 15                           |
| 2020 With<br>Development | PM                  | DIRECT                  | 17:00                       | 18:00                        | 60                                | 15                           |



# 2020 With Development, AM

### **Data Errors and Warnings**

| Severity | Area                | ltem                           | Description  |
|----------|---------------------|--------------------------------|--|
| Warning  | Pedestrian Crossing | Arm C - Pedestrian<br>crossing | Pedestrian crossing uses default flow of 0. Is this correct? |

### **Analysis Set Details**

| ID | Network flow scaling factor (%) |
|----|---------------------------------|
| A1 | 100.000                         |

# **Junction Network**

#### Junctions

| Junction | Name     | Junction Type | Major road direction | Junction Delay (s) | Junction LOS |
|----------|----------|---------------|----------------------|--------------------|--------------|
| 1        | untitled | T-Junction    | Two-way              | 3.16               | А            |

## **Junction Network Options**

| Driving side | Lighting       |
|--------------|----------------|
| Left         | Normal/unknown |

# Arms

#### Arms

| Arm | Name                 | Description | Arm type |
|-----|----------------------|-------------|----------|
| Α   | Brighton Road (West) |             | Major    |
| В   | Site Access          |             | Minor    |
| С   | Brighton Road (East) |             | Major    |

#### **Major Arm Geometry**

| Arm | Width of carriageway<br>(m) | Has kerbed central<br>reserve | Has right turn<br>bay | Width for right turn<br>(m) | Visibility for right turn<br>(m) | Blocks? | Blocking queue<br>(PCU) |
|-----|-----------------------------|-------------------------------|-----------------------|-----------------------------|----------------------------------|---------|-------------------------|
| С   | 10.00                       |                               | ✓                     | 3.00                        | 250.0                            |         | -                       |

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

#### **Minor Arm Geometry**

| Arm | Minor arm              | Width at give- | Width at | Width at | Width at | Width at | Estimate flare | Flare length | Visibility to | Visibility to |
|-----|------------------------|----------------|----------|----------|----------|----------|----------------|--------------|---------------|---------------|
|     | type                   | way (m)        | 5m (m)   | 10m (m)  | 15m (m)  | 20m (m)  | length         | (PCU)        | left (m)      | right (m)     |
| в   | One lane<br>plus flare | 10.00          | 7.00     | 3.00     | 3.00     | 3.00     | ~              | 1.00         | 250           | 250           |



### **Pedestrian Crossings**

| Arm | Crossing type |  |  |  |  |  |
|-----|---------------|--|--|--|--|--|
| Α   | None          |  |  |  |  |  |
| В   | None          |  |  |  |  |  |
| С   | Pelican       |  |  |  |  |  |

### **Pelican/Puffin Crossings**

| Arm | Space between crossing and junction entry (Signalised) (PCU) | Amber time preceding red (s) | Amber time<br>regarded as green<br>(s) | Time from traffic red<br>start to green man start<br>(s) | Time period green<br>man shown (s) | Clearance<br>Period (s) | Traffic minimum<br>green (s) |
|-----|--|------------------------------|--|--|------------------------------------|-------------------------|------------------------------|
| С   | 1.00   | 3.00                         | 2.90                                   | 1.00   | 6.00                               | 6.00                    | 7.00                         |

## Slope / Intercept / Capacity

#### **Priority Intersection Slopes and Intercepts**

| Junction | Stream | Intercept<br>(Veh/TS) | Slope<br>for<br>A-B | Slope<br>for<br>A-C | Slope<br>for<br>C-A | Slope<br>for<br>C-B |
|----------|--------|-----------------------|---------------------|---------------------|---------------------|---------------------|
| 1        | B-A    | 184.544               | 0.111               | 0.281               | 0.177               | 0.401               |
| 1        | B-C    | 215.387               | 0.109               | 0.276               | -                   | -                   |
| 1        | C-B    | 195.330               | 0.250               | 0.250               | -                   | -                   |

The slopes and intercepts shown above do NOT include any corrections or adjustments. Streams may be combined, in which case capacity will be adjusted. Values are shown for the first time segment only; they may differ for subsequent time segments.

# **Traffic Demand**

### **Demand Set Details**

| ID | Scenario name            | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|----|--------------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| D3 | 2020 With<br>Development | AM                  | DIRECT                  | 07:30                       | 08:30                        | 60                                | 15                           |

| Vehicle mix varies over turn | Vehicle mix varies over entry | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
|------------------------------|-------------------------------|--------------------|---------------------------|---------------------------|
| ✓                            | ✓                             | HV Percentages     | 2.00                      | ✓                         |

### **Demand overview (Traffic)**

| Arm | Linked arm | Use O-D data | Scaling Factor (%) |
|-----|------------|--------------|--------------------|
| Α   |            | ✓            | 100.000            |
| В   |            | ✓            | 100.000            |
| С   |            | ✓            | 100.000            |

# **Origin-Destination Data**



## Demand (Veh/TS)

(07:30-07:45)

|      | То |         |       |         |  |  |
|------|----|---------|-------|---------|--|--|
|      |    | Α       | В     | С       |  |  |
| From | Α  | 0.000   | 8.000 | 231.000 |  |  |
| From | в  | 22.000  | 0.000 | 17.000  |  |  |
|      | С  | 189.000 | 6.000 | 0.000   |  |  |

#### Demand (Veh/TS)

(07:45-08:00)

|      | То |         |       |         |  |  |  |
|------|----|---------|-------|---------|--|--|--|
|      |    | Α       | В     | С       |  |  |  |
| From | Α  | 0.000   | 8.000 | 210.000 |  |  |  |
| From | в  | 22.000  | 0.000 | 17.000  |  |  |  |
|      | С  | 213.000 | 6.000 | 0.000   |  |  |  |

#### Demand (Veh/TS)

(08:00-08:15)

|      | То |         |       |         |  |  |  |
|------|----|---------|-------|---------|--|--|--|
|      |    | Α       | В     | С       |  |  |  |
| From | Α  | 0.000   | 8.000 | 203.000 |  |  |  |
| From | В  | 22.000  | 0.000 | 17.000  |  |  |  |
|      | С  | 235.000 | 6.000 | 0.000   |  |  |  |

### Demand (Veh/TS)

(08:15-08:30)

|        | То |         |       |         |  |  |  |  |
|--------|----|---------|-------|---------|--|--|--|--|
|        |    | Α       | В     | С       |  |  |  |  |
| From   | Α  | 0.000   | 8.000 | 215.000 |  |  |  |  |
| 110111 | в  | 22.000  | 0.000 | 17.000  |  |  |  |  |
|        | С  | 207.000 | 6.000 | 0.000   |  |  |  |  |

# **Vehicle Mix**

Heavy Vehicle proportion

|      | То |   |   |   |  |  |
|------|----|---|---|---|--|--|
|      |    | Α | в | С |  |  |
| From | Α  | 0 | 0 | 5 |  |  |
|      | в  | 0 | 0 | 0 |  |  |
|      | С  | 4 | 0 | 0 |  |  |



# **Results**

# **Results Summary for whole modelled period**

| Stream | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|--------|---------|---------------|-----------------|---------|
| B-C    | 0.13    | 7.62          | 0.1             | А       |
| B-A    | 0.28    | 16.11         | 0.4             | С       |
| C-A    | 0.39    | 4.82          | 1.3             | A       |
| С-В    | 0.40    | 4.87          | 0.0             | А       |
| A-B    |         |               |                 |         |
| A-C    |         |               |                 |         |

# Main Results for each time segment

#### Main results: (07:30-07:45)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 17.00                 |                            | 134.78            | 0.126 | 16.86               | 0.1             | 7.622     | A   |
| B-A    | <b>3-A</b> 22.00      |                            | 78.25             | 0.281 | 21.62               | 0.4             | 15.792    | С   |
| C-A    | 189.00                | 0.00                       | 586.40            | 0.322 | 188.08              | 0.9             | 4.377     | A   |
| С-В    | 6.00                  | 0.00                       | 18.07             | 0.332 | 5.97                | 0.0             | 4.446     | A   |
| A-B    | 8.00                  |                            |                   |       | 8.00                |                 |           |     |
| A-C    | 231.00                |                            |                   |       | 231.00              |                 |           |     |

#### Main results: (07:45-08:00)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 17.00                 |                            | 140.27            | 0.121 | 17.00               | 0.1             | 7.300     | A   |
| B-A    | 22.00                 |                            | 79.86             | 0.275 | 22.00               | 0.4             | 15.557    | С   |
| C-A    | 213.00                | 0.00                       | 592.01            | 0.360 | 212.83              | 1.1             | 4.594     | A   |
| С-В    | 6.00                  | 0.00                       | 16.35             | 0.367 | 6.00                | 0.0             | 4.649     | A   |
| A-B    | 8.00                  |                            |                   |       | 8.00                |                 |           |     |
| A-C    | 210.00                |                            |                   |       | 210.00              |                 |           |     |

#### Main results: (08:00-08:15)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 17.00                 |                            | 141.62            | 0.120 | 17.00               | 0.1             | 7.221     | A   |
| B-A    | B-A 22.00             |                            | 77.84             | 0.283 | 21.99               | 0.4             | 16.111    | С   |
| C-A    | 235.00                | 0.00                       | 595.53            | 0.395 | 234.82              | 1.3             | 4.822     | A   |
| С-В    | 6.00                  | 0.00                       | 15.00             | 0.400 | 6.00                | 0.0             | 4.869     | A   |
| A-B    | 8.00                  |                            |                   |       | 8.00                |                 |           |     |
| A-C    | 203.00                |                            |                   |       | 203.00              |                 |           |     |



#### Main results: (08:15-08:30)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 17.00                 |                            | 138.84            | 0.122 | 17.00               | 0.1             | 7.385     | A   |
| B-A    | <b>-A</b> 22.00       |                            | 79.42             | 0.277 | 22.00               | 0.4             | 15.676    | С   |
| C-A    | 207.00                | 0.00                       | 590.77            | 0.350 | 207.20              | 1.1             | 4.549     | A   |
| С-В    | 6.00                  | 0.00                       | 16.74             | 0.358 | 6.00                | 0.0             | 4.604     | A   |
| A-B    | 8.00                  |                            |                   |       | 8.00                |                 |           |     |
| A-C    | 215.00                |                            |                   |       | 215.00              |                 |           |     |



# 2020 With Development, PM

### **Data Errors and Warnings**

| Severity | Area                | ltem                           | Description  |
|----------|---------------------|--------------------------------|--|
| Warning  | Pedestrian Crossing | Arm C - Pedestrian<br>crossing | Pedestrian crossing uses default flow of 0. Is this correct? |

### **Analysis Set Details**

| ID | Network flow scaling factor (%) |
|----|---------------------------------|
| A1 | 100.000                         |

# **Junction Network**

#### Junctions

| Junction | Name     | Junction Type | Major road direction | Junction Delay (s) | Junction LOS |
|----------|----------|---------------|----------------------|--------------------|--------------|
| 1        | untitled | T-Junction    | Two-way              | 2.94               | А            |

### **Junction Network Options**

[same as above]

# Arms

Arms [same as above]

#### **Major Arm Geometry**

[same as above]

#### **Minor Arm Geometry**

[same as above]

### **Pedestrian Crossings**

| Arm | Crossing type |
|-----|---------------|
| Α   | None          |
| в   | None          |
| С   | Pelican       |

### **Pelican/Puffin Crossings**

| Arm | Space between crossing and junction entry (Signalised) (PCU) | Amber time<br>preceding red (s) | Amber time<br>regarded as green<br>(s) | Time from traffic red<br>start to green man start<br>(s) | Time period green man shown (s) Clearance Period (s) |      | Traffic minimum<br>green (s) |
|-----|--|---------------------------------|--|--|--|------|------------------------------|
| С   | 1.00   | 3.00                            | 2.90                                   | 1.00   | 6.00   | 6.00 | 7.00                         |



# Slope / Intercept / Capacity [same as above]

**Traffic Demand** 

#### **Demand Set Details**

| ID | Scenario name            | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|----|--------------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| D6 | 2020 With<br>Development | PM                  | DIRECT                  | 17:00                       | 18:00                        | 60                                | 15                           |

| Vehicle mix varies over turn | Vehicle mix varies over entry | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
|------------------------------|-------------------------------|--------------------|---------------------------|---------------------------|
| ✓                            | ✓                             | HV Percentages     | 2.00                      | ✓                         |

### **Demand overview (Traffic)**

| Arm | Linked arm | Use O-D data | Scaling Factor (%) |
|-----|------------|--------------|--------------------|
| Α   |            | ✓            | 100.000            |
| в   |            | ✓            | 100.000            |
| С   |            | ✓            | 100.000            |

# **Origin-Destination Data**

#### Demand (Veh/TS)

| (17: | 00- | 17:1 | 15) |
|------|-----|------|-----|
|------|-----|------|-----|

|        | То |         |        |         |  |  |  |
|--------|----|---------|--------|---------|--|--|--|
|        |    | Α       | В      | С       |  |  |  |
| From   | Α  | 0.000   | 18.000 | 169.000 |  |  |  |
| FIOIII | в  | 9.000   | 0.000  | 7.000   |  |  |  |
|        | С  | 259.000 | 7.000  | 0.000   |  |  |  |

#### Demand (Veh/TS)

(17:15-17:30)

|        |   | То      |        |         |  |  |  |  |
|--------|---|---------|--------|---------|--|--|--|--|
|        |   | Α       | В      | С       |  |  |  |  |
| From   | Α | 0.000   | 18.000 | 232.000 |  |  |  |  |
| 110111 | в | 9.000   | 0.000  | 7.000   |  |  |  |  |
|        | С | 224.000 | 7.000  | 0.000   |  |  |  |  |

#### Demand (Veh/TS)

(17:30-17:45)

|       |   | То      |        |         |  |  |  |
|-------|---|---------|--------|---------|--|--|--|
|       |   | Α       | В      | С       |  |  |  |
| From  | Α | 0.000   | 18.000 | 177.000 |  |  |  |
| 11011 | в | 9.000   | 0.000  | 7.000   |  |  |  |
|       | С | 239.000 | 7.000  | 0.000   |  |  |  |



### Demand (Veh/TS)

(17:45-18:00)

|      | То |         |        |         |  |  |  |
|------|----|---------|--------|---------|--|--|--|
|      |    | Α       | В      | С       |  |  |  |
| From | Α  | 0.000   | 18.000 | 198.000 |  |  |  |
| From | в  | 9.000   | 0.000  | 7.000   |  |  |  |
|      | С  | 209.000 | 7.000  | 0.000   |  |  |  |

# **Vehicle Mix**

#### **Heavy Vehicle proportion**

|       |   | То |   |   |  |  |
|-------|---|----|---|---|--|--|
|       |   | Α  | в | С |  |  |
| From  | Α | 0  | 0 | 1 |  |  |
| 11011 | в | 0  | 0 | 0 |  |  |
|       | С | 2  | 0 | 0 |  |  |

# **Results**

## **Results Summary for whole modelled period**

| Stream | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|--------|---------|---------------|-----------------|---------|
| B-C    | 0.05    | 6.58          | 0.1             | A       |
| B-A    | 0.12    | 14.04         | 0.1             | В       |
| C-A    | 0.43    | 4.99          | 1.4             | A       |
| С-В    | 0.43    | 5.09          | 0.0             | А       |
| A-B    |         |               |                 |         |
| A-C    |         |               |                 |         |

### Main Results for each time segment

#### Main results: (17:00-17:15)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 7.00                  |                            | 161.73            | 0.043 | 6.96                | 0.0             | 5.813     | A   |
| B-A    | 9.00                  |                            | 84.91             | 0.106 | 8.88                | 0.1             | 11.821    | В   |
| C-A    | 259.00                | 0.00                       | 606.94            | 0.427 | 257.56              | 1.4             | 4.991     | A   |
| С-В    | 7.00                  | 0.00                       | 16.22             | 0.432 | 6.96                | 0.0             | 5.091     | A   |
| A-B    | 18.00                 |                            |                   |       | 18.00               |                 |           |     |
| A-C    | 169.00                |                            |                   |       | 169.00              |                 |           |     |



#### Main results: (17:15-17:30)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 7.00                  |                            | 143.74            | 0.049 | 6.99                | 0.1             | 6.580     | A   |
| B-A    | 9.00                  |                            | 73.05             | 0.123 | 8.98                | 0.1             | 14.042    | В   |
| C-A    | 224.00                | 0.00                       | 597.74            | 0.375 | 224.26              | 1.2             | 4.711     | A   |
| С-В    | 7.00                  | 0.00                       | 18.25             | 0.383 | 7.00                | 0.0             | 4.853     | A   |
| A-B    | 18.00                 |                            |                   |       | 18.00               |                 |           |     |
| A-C    | 232.00                |                            |                   |       | 232.00              |                 |           |     |

#### Main results: (17:30-17:45)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 7.00                  |                            | 159.44            | 0.044 | 7.00                | 0.0             | 5.903     | A   |
| B-A    | 9.00                  |                            | 86.04             | 0.105 | 9.02                | 0.1             | 11.688    | В   |
| C-A    | 239.00                | 0.00                       | 603.83            | 0.396 | 238.91              | 1.3             | 4.802     | A   |
| С-В    | 7.00                  | 0.00                       | 17.41             | 0.402 | 7.00                | 0.0             | 4.913     | A   |
| A-B    | 18.00                 |                            |                   |       | 18.00               |                 |           |     |
| A-C    | 177.00                |                            |                   |       | 177.00              |                 |           |     |

#### Main results: (17:45-18:00)

| Stream | Total Demand (Veh/TS) | Pedestrian demand (Ped/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|--------|-----------------------|----------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| B-C    | 7.00                  |                            | 153.74            | 0.046 | 7.00                | 0.0             | 6.132     | A   |
| B-A    | 9.00                  |                            | 85.46             | 0.105 | 9.00                | 0.1             | 11.773    | В   |
| C-A    | 209.00                | 0.00                       | 597.64            | 0.350 | 209.21              | 1.1             | 4.527     | A   |
| С-В    | 7.00                  | 0.00                       | 19.49             | 0.359 | 7.00                | 0.0             | 4.649     | A   |
| A-B    | 18.00                 |                            |                   |       | 18.00               |                 |           |     |
| A-C    | 198.00                |                            |                   |       | 198.00              |                 |           |     |



# **Junctions 9**

#### **ARCADY 9 - Roundabout Module**

Version: 9.0.0.4211 []

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The users of this computer program for the solution of an engineering problem are in no way relieved of their responsibility for the correctness of the solution

Filename: Ropetackle Roundabout 500 units with Arm 4 improvements.j9 Path: N:\Projects\hdshor 150137\Analysis\ARCADY Report generation date: 11/03/2016 12:52:53

»2015 Observed, AM
»2020 Without Development, AM
»2020 With Development, AM
»2015 Observed, PM
»2020 Without Development, PM
»2020 With Development, PM

#### Summary of junction performance

|       |             | AM        |       |        |             | PM        |      |     |
|-------|-------------|-----------|-------|--------|-------------|-----------|------|-----|
|       | Queue (Veh) | Delay (s) | RFC   | LOS    | Queue (Veh) | Delay (s) | RFC  | LOS |
|       |             |           | 20    | 15 OI  | oserved     |           |      |     |
| Arm 1 | 0.6         | 4.67      | 0.37  | A      | 0.8         | 4.32      | 0.45 | А   |
| Arm 2 | 0.6         | 4.04      | 0.38  | А      | 2.1         | 7.74      | 0.68 | А   |
| Arm 3 | 0.0         | 3.39      | 0.01  | А      | 0.0         | 5.25      | 0.01 | А   |
| Arm 4 | 3.6         | 9.79      | 0.79  | А      | 1.5         | 5.06      | 0.60 | А   |
|       |             | 202       | 20 Wi | thout  | Development |           |      |     |
| Arm 1 | 0.6         | 4.84      | 0.39  | А      | 0.9         | 4.71      | 0.48 | Α   |
| Arm 2 | 0.7         | 4.18      | 0.40  | А      | 2.7         | 9.17      | 0.74 | А   |
| Arm 3 | 0.0         | 3.47      | 0.01  | А      | 0.0         | 5.46      | 0.01 | А   |
| Arm 4 | 4.1         | 10.86     | 0.81  | В      | 1.6         | 5.40      | 0.62 | Α   |
|       |             | 20        | 020 V | /ith D | evelopment  |           | -    |     |
| Arm 1 | 0.7         | 5.12      | 0.42  | A      | 1.0         | 4.80      | 0.49 | A   |
| Arm 2 | 0.7         | 4.30      | 0.41  | A      | 3.0         | 9.97      | 0.76 | А   |
| Arm 3 | 0.0         | 3.54      | 0.01  | A      | 0.0         | 5.83      | 0.01 | А   |
| Arm 4 | 5.0         | 12.81     | 0.84  | В      | 1.8         | 5.81      | 0.65 | А   |

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.



# File summary

### **File Description**

| Title       | (untitled)         |
|-------------|--------------------|
| Location    |                    |
| Site number |                    |
| Date        | 05/08/2015         |
| Version     |                    |
| Status      | (new file)         |
| Identifier  |                    |
| Client      |                    |
| Jobnumber   |                    |
| Enumerator  | MOTION"emmastonard |
| Description |                    |
|             |                    |

### Units

| Distance units | Speed units | Traffic units input | Traffic units results | Flow units     | Average delay units | Total delay units | Rate of delay units |
|----------------|-------------|---------------------|-----------------------|----------------|---------------------|-------------------|---------------------|
| m              | kph         | Veh                 | Veh                   | perTimeSegment | S                   | -Min              | perMin              |

# **Analysis Options**

| Calculate Queue Percentiles | Calculate residual capacity | RFC Threshold | Average Delay threshold (s) | Queue threshold (PCU) |
|-----------------------------|-----------------------------|---------------|-----------------------------|-----------------------|
|                             |                             | 0.85          | 36.00                       | 20.00                 |

# **Demand Set Summary**

| Scenario name               | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|-----------------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| 2015 Observed               | AM                  | DIRECT                  | 07:30                       | 08:30                        | 60                                | 15                           |
| 2020 Without<br>Development | AM                  | DIRECT                  | 07:30                       | 08:30                        | 60                                | 15                           |
| 2020 With Development       | AM                  | DIRECT                  | 07:30                       | 08:30                        | 60                                | 15                           |
| 2015 Observed               | PM                  | DIRECT                  | 17:00                       | 18:00                        | 60                                | 15                           |
| 2020 Without<br>Development | ΡM                  | DIRECT                  | 17:00                       | 18:00                        | 60                                | 15                           |
| 2020 With Development       | FM                  | DIRECT                  | 17:00                       | 18:00                        | 60                                | 15                           |



# 2015 Observed, AM

#### **Data Errors and Warnings**

No errors or warnings

### **Analysis Set Details**

| ID | Network flow scaling factor (%) |
|----|---------------------------------|
| A1 | 100.000                         |

# **Junction Network**

#### **Junctions**

| J | unction | Name     | Junction Type       | Junction Delay (s) | Junction LOS |
|---|---------|----------|---------------------|--------------------|--------------|
|   | 1       | untitled | Standard Roundabout | 7.49               | А            |

### **Junction Network Options**

| Driving side | Lighting       |  |
|--------------|----------------|--|
| Left         | Normal/unknown |  |

# Arms

#### Arms

| Arm | Name              | Description |
|-----|-------------------|-------------|
| 1   | Old Shoreham Road |             |
| 2   | High Street       |             |
| 3   | Pub               |             |
| 4   | A259              |             |

### **Capacity Options**

| Arm | Minimum capacity (PCU/TS) | Maximum capacity (PCU/TS) |
|-----|---------------------------|---------------------------|
| 1   | 0.00                      | 24999.75                  |
| 2   | 0.00                      | 24999.75                  |
| 3   | 0.00                      | 24999.75                  |
| 4   | 0.00                      | 24999.75                  |

### **Roundabout Geometry**

| Arm | V - Approach road half-<br>width (m) | E - Entry width<br>(m) | l' - Effective flare<br>length (m) | R - Entry radius<br>(m) | D - Inscribed circle<br>diameter (m) | PHI - Conflict (entry) angle<br>(deg) | Exit<br>only |
|-----|--------------------------------------|------------------------|------------------------------------|-------------------------|--------------------------------------|---------------------------------------|--------------|
| 1   | 5.50                                 | 8.50                   | 4.0                                | 20.0                    | 26.0                                 | 25.0                                  |              |
| 2   | 4.50                                 | 8.00                   | 6.0                                | 30.0                    | 26.0                                 | 17.5                                  |              |
| 3   | 6.00                                 | 6.00                   | 0.0                                | 10.0                    | 26.0                                 | 52.5                                  |              |
| 4   | 3.50                                 | 7.40                   | 25.0                               | 20.0                    | 26.0                                 | 25.0                                  |              |



### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

| Arm | Final slope | Final intercept (PCU/TS) |
|-----|-------------|--------------------------|
| 1   | 0.722       | 491.851                  |
| 2   | 0.708       | 459.221                  |
| 3   | 0.598       | 396.790                  |
| 4   | 0.704       | 470.199                  |

The slope and intercept shown above include any corrections and adjustments.

# **Traffic Demand**

#### **Demand Set Details**

| ID | Scenario name    | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|----|------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| D1 | 2015<br>Observed | AM                  | DIRECT                  | 07:30                       | 08:30                        | 60                                | 15                           |

| Vehicle mix varies over turn | Vehicle mix varies over entry | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
|------------------------------|-------------------------------|--------------------|---------------------------|---------------------------|
| ✓                            | ✓                             | HV Percentages     | 2.00                      | ✓                         |

### **Demand overview (Traffic)**

| Arm | Linked arm | Use O-D data | Scaling Factor (%) |
|-----|------------|--------------|--------------------|
| 1   |            | ✓            | 100.000            |
| 2   |            | ✓            | 100.000            |
| 3   |            | ✓            | 100.000            |
| 4   |            | ✓            | 100.000            |

# **Origin-Destination Data**

#### Demand (Veh/TS)

(07:30-07:45)

|      |   |         | То      |       |        |
|------|---|---------|---------|-------|--------|
|      |   | 1       | 2       | 3     | 4      |
|      | 1 | 0.000   | 13.000  | 0.000 | 51.000 |
| From | 2 | 19.000  | 1.000   | 0.000 | 81.000 |
|      | 3 | 0.000   | 0.000   | 0.000 | 0.000  |
|      | 4 | 141.000 | 193.000 | 0.000 | 0.000  |

#### Demand (Veh/TS)

(07:45-08:00)

|      |   |         | То      |       |         |
|------|---|---------|---------|-------|---------|
|      |   | 1       | 2       | 3     | 4       |
|      | 1 | 0.000   | 33.000  | 0.000 | 60.000  |
| From | 2 | 16.000  | 0.000   | 0.000 | 123.000 |
|      | 3 | 0.000   | 2.000   | 0.000 | 0.000   |
|      | 4 | 126.000 | 190.000 | 0.000 | 1.000   |



### Demand (Veh/TS)

(08:00-08:15)

|      |   |         | То      |       |         |
|------|---|---------|---------|-------|---------|
|      |   | 1       | 2       | 3     | 4       |
|      | 1 | 0.000   | 37.000  | 0.000 | 78.000  |
| From | 2 | 26.000  | 0.000   | 0.000 | 113.000 |
|      | 3 | 0.000   | 0.000   | 0.000 | 0.000   |
|      | 4 | 129.000 | 202.000 | 0.000 | 0.000   |

#### Demand (Veh/TS)

(08:15-08:30)

|      |   |         | То      |       |         |
|------|---|---------|---------|-------|---------|
|      |   | 1       | 2       | 3     | 4       |
|      | 1 | 1.000   | 45.000  | 0.000 | 67.000  |
| From | 2 | 22.000  | 1.000   | 0.000 | 118.000 |
|      | 3 | 0.000   | 0.000   | 0.000 | 0.000   |
|      | 4 | 127.000 | 216.000 | 0.000 | 0.000   |

# **Vehicle Mix**

### Heavy Vehicle proportion

|      | То |    |    |   |   |  |  |
|------|----|----|----|---|---|--|--|
|      |    | 1  | 2  | 3 | 4 |  |  |
|      | 1  | 0  | 10 | 0 | 6 |  |  |
| From | 2  | 30 | 50 | 0 | 6 |  |  |
|      | 3  | 0  | 0  | 0 | 0 |  |  |
|      | 4  | 3  | 4  | 0 | 0 |  |  |

# **Results**

# **Results Summary for whole modelled period**

| Arm | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|-----|---------|---------------|-----------------|---------|
| 1   | 0.37    | 4.67          | 0.6             | А       |
| 2   | 0.38    | 4.04          | 0.6             | A       |
| 3   | 0.01    | 3.39          | 0.0             | А       |
| 4   | 0.79    | 9.79          | 3.6             | А       |



# Main Results for each time segment

### Main results: (07:30-07:45)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 64.00                 | 192.20                    | 324.78            | 0.197 | 63.76               | 0.2             | 3.444     | A   |
| 2   | 101.00                | 50.81                     | 378.28            | 0.267 | 100.64              | 0.4             | 3.237     | A   |
| 3   | 0.00                  | 151.44                    | 297.44            | 0.000 | 0.00                | 0.0             | 0.000     | A   |
| 4   | 334.00                | 19.93                     | 437.36            | 0.764 | 330.89              | 3.1             | 8.231     | Α   |

#### Main results: (07:45-08:00)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 93.00                 | 193.19                    | 322.69            | 0.288 | 92.84               | 0.4             | 3.913     | A   |
| 2   | 139.00                | 60.93                     | 378.81            | 0.367 | 138.79              | 0.6             | 3.746     | A   |
| 3   | 2.00                  | 199.71                    | 267.42            | 0.007 | 1.99                | 0.0             | 3.390     | A   |
| 4   | 317.00                | 18.00                     | 439.59            | 0.721 | 317.46              | 2.7             | 7.403     | Α   |

#### Main results: (08:00-08:15)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 115.00                | 201.67                    | 317.11            | 0.363 | 114.84              | 0.6             | 4.445     | A   |
| 2   | 139.00                | 77.89                     | 361.47            | 0.385 | 138.96              | 0.6             | 4.043     | A   |
| 3   | 0.00                  | 216.84                    | 255.07            | 0.000 | 0.01                | 0.0             | 0.000     | A   |
| 4   | 331.00                | 25.96                     | 432.06            | 0.766 | 330.49              | 3.2             | 8.806     | A   |

#### Main results: (08:15-08:30)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 113.00                | 216.64                    | 305.71            | 0.370 | 112.98              | 0.6             | 4.669     | Α   |
| 2   | 141.00                | 68.03                     | 369.59            | 0.382 | 141.00              | 0.6             | 3.938     | A   |
| 3   | 0.00                  | 209.03                    | 260.37            | 0.000 | 0.00                | 0.0             | 0.000     | Α   |
| 4   | 343.00                | 24.01                     | 433.79            | 0.791 | 342.53              | 3.6             | 9.792     | A   |



# 2020 Without Development, AM

### **Data Errors and Warnings**

No errors or warnings

#### **Analysis Set Details**

| ID | Network flow scaling factor (%) |
|----|---------------------------------|
| A1 | 100.000                         |

# **Junction Network**

#### **Junctions**

| Junction Name Junction Type    |  | Junction Delay (s) | Junction LOS |
|--------------------------------|--|--------------------|--------------|
| 1 untitled Standard Roundabout |  | 8.13               | А            |

### **Junction Network Options**

[same as above]

# Arms

Arms [same as above]

# **Capacity Options**

[same as above]

### **Roundabout Geometry**

[same as above]

# Slope / Intercept / Capacity

[same as above]

# **Traffic Demand**

### **Demand Set Details**

| ID | Scenario name               | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|----|-----------------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| D2 | 2020 Without<br>Development | AM                  | DIRECT                  | 07:30                       | 08:30                        | 60                                | 15                           |

| Vehicle mix varies over turn | Vehicle mix varies over entry | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
|------------------------------|-------------------------------|--------------------|---------------------------|---------------------------|
| ✓                            | ✓                             | HV Percentages     | 2.00                      | ✓                         |



### **Demand overview (Traffic)**

| Arm | Linked arm | Use O-D data | Scaling Factor (%) |
|-----|------------|--------------|--------------------|
| 1   |            | ✓            | 100.000            |
| 2   |            | ✓            | 100.000            |
| 3   |            | ✓            | 100.000            |
| 4   |            | √            | 100.000            |

# **Origin-Destination Data**

#### Demand (Veh/TS)

(07:30-07:45)

|      | То |         |         |       |        |  |  |
|------|----|---------|---------|-------|--------|--|--|
|      |    | 1       | 2       | 3     | 4      |  |  |
|      | 1  | 0.000   | 16.000  | 0.000 | 55.000 |  |  |
| From | 2  | 21.000  | 1.000   | 0.000 | 85.000 |  |  |
|      | 3  | 0.000   | 0.000   | 0.000 | 0.000  |  |  |
|      | 4  | 147.000 | 195.000 | 0.000 | 0.000  |  |  |

#### Demand (Veh/TS)

(07:45-08:00)

|      |   | То      |         |       |         |  |  |
|------|---|---------|---------|-------|---------|--|--|
|      |   | 1       | 2       | 3     | 4       |  |  |
|      | 1 | 0.000   | 36.000  | 0.000 | 64.000  |  |  |
| From | 2 | 18.000  | 0.000   | 0.000 | 127.000 |  |  |
|      | 3 | 0.000   | 2.000   | 0.000 | 0.000   |  |  |
|      | 4 | 132.000 | 192.000 | 0.000 | 1.000   |  |  |

#### Demand (Veh/TS)

(08:00-08:15)

|      | То |         |         |       |         |  |  |  |
|------|----|---------|---------|-------|---------|--|--|--|
|      |    | 1       | 2       | 3     | 4       |  |  |  |
|      | 1  | 0.000   | 40.000  | 0.000 | 82.000  |  |  |  |
| From | 2  | 28.000  | 0.000   | 0.000 | 117.000 |  |  |  |
|      | 3  | 0.000   | 0.000   | 0.000 | 0.000   |  |  |  |
|      | 4  | 135.000 | 204.000 | 0.000 | 0.000   |  |  |  |

#### Demand (Veh/TS)

(08:15-08:30)

|      |   | То      |         |       |         |  |  |  |
|------|---|---------|---------|-------|---------|--|--|--|
|      |   | 1       | 2       | 3     | 4       |  |  |  |
|      | 1 | 1.000   | 48.000  | 0.000 | 71.000  |  |  |  |
| From | 2 | 24.000  | 1.000   | 0.000 | 122.000 |  |  |  |
|      | 3 | 0.000   | 0.000   | 0.000 | 0.000   |  |  |  |
|      | 4 | 133.000 | 218.000 | 0.000 | 0.000   |  |  |  |

# **Vehicle Mix**



#### Heavy Vehicle proportion

|      | То |    |    |   |   |
|------|----|----|----|---|---|
|      |    | 1  | 2  | 3 | 4 |
|      | 1  | 0  | 9  | 0 | 6 |
| From | 2  | 28 | 50 | 0 | 6 |
|      | 3  | 0  | 0  | 0 | 0 |
|      | 4  | 3  | 4  | 0 | 0 |

# **Results**

# **Results Summary for whole modelled period**

| Arm                | Max RFC            | Max delay (s) | Max Queue (Veh) | Max LOS |
|--------------------|--------------------|---------------|-----------------|---------|
| <b>1</b> 0.39 4.84 |                    | 0.6           | А               |         |
| 2                  | 2 0.40 4.18        |               | 0.7             | А       |
| 3                  | <b>3</b> 0.01 3.47 |               | 0.0             | А       |
| 4                  | 0.81               | 10.86         | 4.1             | В       |

# Main Results for each time segment

### Main results: (07:30-07:45)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 71.00                 | 194.02                    | 324.74            | 0.219 | 70.72               | 0.3             | 3.540     | A   |
| 2   | 107.00                | 54.78                     | 376.95            | 0.284 | 106.61              | 0.4             | 3.325     | A   |
| 3   | 0.00                  | 161.39                    | 291.29            | 0.000 | 0.00                | 0.0             | 0.000     | A   |
| 4   | 342.00                | 21.92                     | 436.07            | 0.784 | 338.53              | 3.5             | 8.935     | Α   |

#### Main results: (07:45-08:00)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 100.00                | 195.22                    | 322.86            | 0.310 | 99.83               | 0.4             | 4.033     | A   |
| 2   | 145.00                | 64.92                     | 376.90            | 0.385 | 144.77              | 0.6             | 3.873     | A   |
| 3   | 2.00                  | 209.69                    | 261.29            | 0.008 | 1.99                | 0.0             | 3.470     | Α   |
| 4   | 325.00                | 20.00                     | 438.25            | 0.742 | 325.52              | 3.0             | 8.026     | Α   |

#### Main results: (08:00-08:15)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 122.00                | 203.63                    | 317.25            | 0.385 | 121.83              | 0.6             | 4.601     | А   |
| 2   | 145.00                | 81.88                     | 360.22            | 0.403 | 144.95              | 0.7             | 4.179     | A   |
| 3   | 0.00                  | 226.83                    | 249.09            | 0.000 | 0.01                | 0.0             | 0.000     | А   |
| 4   | 339.00                | 27.96                     | 430.84            | 0.787 | 338.41              | 3.5             | 9.659     | A   |



#### Main results: (08:15-08:30)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 120.00                | 218.58                    | 305.92            | 0.392 | 119.98              | 0.6             | 4.840     | A   |
| 2   | 147.00                | 72.03                     | 368.11            | 0.399 | 147.00              | 0.7             | 4.070     | A   |
| 3   | 0.00                  | 219.03                    | 254.31            | 0.000 | 0.00                | 0.0             | 0.000     | A   |
| 4   | 351.00                | 26.01                     | 432.51            | 0.812 | 350.44              | 4.1             | 10.861    | В   |



# 2020 With Development, AM

#### **Data Errors and Warnings**

No errors or warnings

#### **Analysis Set Details**

| ID | Network flow scaling factor (%) |
|----|---------------------------------|
| A1 | 100.000                         |

# **Junction Network**

#### Junctions

| Junction Name Junction Type |   | Junction Type | Junction Delay (s)  | Junction LOS |   |
|-----------------------------|---|---------------|---------------------|--------------|---|
|                             | 1 | untitled      | Standard Roundabout | 9.34         | А |

### **Junction Network Options**

[same as above]

# Arms

Arms [same as above]

Capacity Options

[same as above]

### **Roundabout Geometry**

[same as above]

# Slope / Intercept / Capacity

[same as above]

# **Traffic Demand**

### **Demand Set Details**

| ID | Scenario name            | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|----|--------------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| D3 | 2020 With<br>Development | AM                  | DIRECT                  | 07:30                       | 08:30                        | 60                                | 15                           |

| Vehicle mix varies over turn | Vehicle mix varies over entry | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
|------------------------------|-------------------------------|--------------------|---------------------------|---------------------------|
| ✓                            | ✓                             | HV Percentages     | 2.00                      | ✓                         |



### **Demand overview (Traffic)**

| Arm | Linked arm | Use O-D data | Scaling Factor (%) |
|-----|------------|--------------|--------------------|
| 1   |            | ✓            | 100.000            |
| 2   |            | ✓            | 100.000            |
| 3   |            | ✓            | 100.000            |
| 4   |            | ✓            | 100.000            |

# **Origin-Destination Data**

#### Demand (Veh/TS)

(07:30-07:45)

|      | То |         |         |       |        |  |
|------|----|---------|---------|-------|--------|--|
|      |    | 1       | 2       | 3     | 4      |  |
|      | 1  | 0.000   | 16.000  | 0.000 | 61.000 |  |
| From | 2  | 21.000  | 1.000   | 0.000 | 88.000 |  |
|      | 3  | 0.000   | 0.000   | 0.000 | 0.000  |  |
|      | 4  | 153.000 | 204.000 | 0.000 | 0.000  |  |

#### Demand (Veh/TS)

(07:45-08:00)

|      | То |         |         |       |         |  |  |
|------|----|---------|---------|-------|---------|--|--|
| From |    | 1       | 2       | 3     | 4       |  |  |
|      | 1  | 0.000   | 36.000  | 0.000 | 70.000  |  |  |
|      | 2  | 18.000  | 0.000   | 0.000 | 130.000 |  |  |
|      | 3  | 0.000   | 2.000   | 0.000 | 0.000   |  |  |
|      | 4  | 138.000 | 201.000 | 0.000 | 1.000   |  |  |

#### Demand (Veh/TS)

(08:00-08:15)

|      | То |         |         |       |         |  |
|------|----|---------|---------|-------|---------|--|
|      |    | 1       | 2       | 3     | 4       |  |
| From | 1  | 0.000   | 40.000  | 0.000 | 88.000  |  |
|      | 2  | 28.000  | 0.000   | 0.000 | 120.000 |  |
|      | 3  | 0.000   | 0.000   | 0.000 | 0.000   |  |
|      | 4  | 141.000 | 213.000 | 0.000 | 0.000   |  |

#### Demand (Veh/TS)

(08:15-08:30)

|      | То |         |         |       |         |  |
|------|----|---------|---------|-------|---------|--|
| From |    | 1       | 2       | 3     | 4       |  |
|      | 1  | 1.000   | 48.000  | 0.000 | 77.000  |  |
|      | 2  | 24.000  | 1.000   | 0.000 | 125.000 |  |
|      | 3  | 0.000   | 0.000   | 0.000 | 0.000   |  |
|      | 4  | 139.000 | 227.000 | 0.000 | 0.000   |  |

# **Vehicle Mix**


## Heavy Vehicle proportion

|      | То |    |    |   |   |
|------|----|----|----|---|---|
|      |    | 1  | 2  | 3 | 4 |
|      | 1  | 0  | 9  | 0 | 5 |
| From | 2  | 28 | 50 | 0 | 6 |
|      | 3  | 0  | 0  | 0 | 0 |
|      | 4  | 3  | 3  | 0 | 0 |

# **Results**

# **Results Summary for whole modelled period**

| Arm | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|-----|---------|---------------|-----------------|---------|
| 1   | 0.42    | 5.12          | 0.7             | А       |
| 2   | 0.41    | 4.30          | 0.7             | А       |
| 3   | 0.01    | 3.54          | 0.0             | А       |
| 4   | 0.84    | 12.81         | 5.0             | В       |

# Main Results for each time segment

# Main results: (07:30-07:45)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 77.00                 | 202.63                    | 321.14            | 0.240 | 76.69               | 0.3             | 3.676     | A   |
| 2   | 110.00                | 60.75                     | 374.13            | 0.294 | 109.59              | 0.4             | 3.402     | Α   |
| 3   | 0.00                  | 170.34                    | 285.94            | 0.000 | 0.00                | 0.0             | 0.000     | A   |
| 4   | 357.00                | 21.92                     | 437.88            | 0.815 | 352.85              | 4.1             | 10.142    | В   |

#### Main results: (07:45-08:00)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 106.00                | 204.28                    | 318.74            | 0.333 | 105.82              | 0.5             | 4.223     | A   |
| 2   | 148.00                | 70.91                     | 373.85            | 0.396 | 147.76              | 0.7             | 3.976     | A   |
| 3   | 2.00                  | 218.68                    | 256.00            | 0.008 | 1.99                | 0.0             | 3.542     | A   |
| 4   | 340.00                | 20.00                     | 440.10            | 0.773 | 340.63              | 3.5             | 9.118     | Α   |

#### Main results: (08:00-08:15)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 128.00                | 212.53                    | 313.25            | 0.409 | 127.81              | 0.7             | 4.848     | Α   |
| 2   | 148.00                | 87.87                     | 357.29            | 0.414 | 147.95              | 0.7             | 4.298     | A   |
| 3   | 0.00                  | 235.81                    | 243.84            | 0.000 | 0.01                | 0.0             | 0.000     | A   |
| 4   | 354.00                | 27.95                     | 432.68            | 0.818 | 353.26              | 4.3             | 11.193    | В   |



## Main results: (08:15-08:30)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 126.00                | 227.45                    | 301.86            | 0.417 | 125.97              | 0.7             | 5.117     | A   |
| 2   | 150.00                | 78.03                     | 365.13            | 0.411 | 150.00              | 0.7             | 4.185     | A   |
| 3   | 0.00                  | 228.03                    | 249.03            | 0.000 | 0.00                | 0.0             | 0.000     | A   |
| 4   | 366.00                | 26.01                     | 434.40            | 0.843 | 365.25              | 5.0             | 12.812    | В   |



# 2015 Observed, PM

## **Data Errors and Warnings**

No errors or warnings

## **Analysis Set Details**

| ID | Network flow scaling factor (%) |
|----|---------------------------------|
| A1 | 100.000                         |

# **Junction Network**

### **Junctions**

| Junction Name Junction Type |          | Junction Delay (s)  | Junction LOS |   |
|-----------------------------|----------|---------------------|--------------|---|
| 1                           | untitled | Standard Roundabout | 5.83         | А |

# **Junction Network Options**

[same as above]

# Arms

Arms [same as above]

# **Capacity Options**

[same as above]

# **Roundabout Geometry**

[same as above]

# Slope / Intercept / Capacity

[same as above]

# **Traffic Demand**

## **Demand Set Details**

| ID | Scenario name    | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|----|------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| D4 | 2015<br>Observed | PM                  | DIRECT                  | 17:00                       | 18:00                        | 60                                | 15                           |

| Vehicle mix varies over turn | Vehicle mix varies over entry | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
|------------------------------|-------------------------------|--------------------|---------------------------|---------------------------|
| ✓                            | ✓                             | HV Percentages     | 2.00                      | ✓                         |



# **Demand overview (Traffic)**

| Arm | Linked arm | Use O-D data | Scaling Factor (%) |
|-----|------------|--------------|--------------------|
| 1   |            | ✓            | 100.000            |
| 2   |            | ✓            | 100.000            |
| 3   |            | ✓            | 100.000            |
| 4   |            | ✓            | 100.000            |

# **Origin-Destination Data**

#### Demand (Veh/TS)

(17:00-17:15)

|      | 10 |         |         |       |         |  |
|------|----|---------|---------|-------|---------|--|
|      |    | 1       | 2       | 3     | 4       |  |
|      | 1  | 1.000   | 15.000  | 0.000 | 134.000 |  |
| From | 2  | 22.000  | 1.000   | 0.000 | 214.000 |  |
|      | 3  | 0.000   | 0.000   | 0.000 | 0.000   |  |
|      | 4  | 105.000 | 149.000 | 0.000 | 3.000   |  |

## Demand (Veh/TS)

(17:15-17:30)

|      | То |        |         |       |         |  |  |  |
|------|----|--------|---------|-------|---------|--|--|--|
|      |    | 1      | 2       | 3     | 4       |  |  |  |
|      | 1  | 1.000  | 16.000  | 0.000 | 157.000 |  |  |  |
| From | 2  | 12.000 | 1.000   | 0.000 | 183.000 |  |  |  |
|      | 3  | 0.000  | 1.000   | 0.000 | 0.000   |  |  |  |
|      | 4  | 78.000 | 132.000 | 0.000 | 4.000   |  |  |  |

#### Demand (Veh/TS)

(17:30-17:45)

|      | То |        |         |       |         |  |  |  |
|------|----|--------|---------|-------|---------|--|--|--|
|      |    | 1      | 2       | 3     | 4       |  |  |  |
|      | 1  | 0.000  | 11.000  | 0.000 | 141.000 |  |  |  |
| From | 2  | 26.000 | 1.000   | 0.000 | 197.000 |  |  |  |
|      | 3  | 0.000  | 0.000   | 0.000 | 1.000   |  |  |  |
|      | 4  | 92.000 | 170.000 | 0.000 | 1.000   |  |  |  |

#### Demand (Veh/TS)

(17:45-18:00)

|      | То |        |         |       |         |  |  |  |  |
|------|----|--------|---------|-------|---------|--|--|--|--|
|      |    | 1      | 2       | 3     | 4       |  |  |  |  |
|      | 1  | 1.000  | 11.000  | 0.000 | 138.000 |  |  |  |  |
| From | 2  | 11.000 | 0.000   | 0.000 | 200.000 |  |  |  |  |
|      | 3  | 0.000  | 0.000   | 0.000 | 0.000   |  |  |  |  |
|      | 4  | 76.000 | 163.000 | 0.000 | 3.000   |  |  |  |  |

# **Vehicle Mix**



## Heavy Vehicle proportion

|      | То |   |    |   |   |  |  |
|------|----|---|----|---|---|--|--|
|      |    | 1 | 2  | 3 | 4 |  |  |
|      | 1  | 0 | 2  | 0 | 1 |  |  |
| From | 2  | 6 | 33 | 0 | 3 |  |  |
|      | 3  | 0 | 0  | 0 | 0 |  |  |
|      | 4  | 1 | 3  | 0 | 0 |  |  |

# **Results**

# **Results Summary for whole modelled period**

| Arm           | Max RFC           | Max delay (s) | Max Queue (Veh) | Max LOS |
|---------------|-------------------|---------------|-----------------|---------|
| <b>1</b> 0.45 |                   | 4.32          | 0.8             | А       |
| 2             | 0.68              | 7.74          | 2.1             | А       |
| 3             | <b>3</b> 0.01 5.2 |               | 0.0             | А       |
| 4             | 0.60              | 5.06          | 1.5             | А       |

# Main Results for each time segment

# Main results: (17:00-17:15)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 150.00                | 152.18                    | 374.96            | 0.400 | 149.34              | 0.7             | 3.978     | Α   |
| 2   | 237.00                | 137.39                    | 349.33            | 0.678 | 234.95              | 2.1             | 7.736     | A   |
| 3   | 0.00                  | 372.34                    | 168.50            | 0.000 | 0.00                | 0.0             | 0.000     | A   |
| 4   | 257.00                | 23.80                     | 442.39            | 0.581 | 255.63              | 1.4             | 4.785     | A   |

## Main results: (17:15-17:30)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 174.00                | 138.22                    | 385.29            | 0.452 | 173.84              | 0.8             | 4.254     | A   |
| 2   | 196.00                | 161.85                    | 332.60            | 0.589 | 196.60              | 1.5             | 6.645     | A   |
| 3   | 1.00                  | 358.45                    | 177.52            | 0.006 | 0.99                | 0.0             | 5.098     | A   |
| 4   | 214.00                | 15.10                     | 448.55            | 0.477 | 214.45              | 0.9             | 3.853     | A   |

#### Main results: (17:30-17:45)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 152.00                | 171.63                    | 360.69            | 0.421 | 152.08              | 0.7             | 4.317     | А   |
| 2   | 224.00                | 142.07                    | 345.85            | 0.648 | 223.66              | 1.8             | 7.342     | Α   |
| 3   | 1.00                  | 365.73                    | 172.54            | 0.006 | 1.00                | 0.0             | 5.245     | А   |
| 4   | 263.00                | 26.89                     | 439.62            | 0.598 | 262.45              | 1.5             | 5.065     | Α   |



## Main results: (17:45-18:00)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 150.00                | 166.16                    | 364.99            | 0.411 | 150.03              | 0.7             | 4.187     | A   |
| 2   | 211.00                | 142.02                    | 346.90            | 0.608 | 211.22              | 1.6             | 6.644     | A   |
| 3   | 0.00                  | 353.24                    | 180.67            | 0.000 | 0.01                | 0.0             | 0.000     | A   |
| 4   | 242.00                | 12.13                     | 450.44            | 0.537 | 242.30              | 1.2             | 4.329     | Α   |



# 2020 Without Development, PM

## **Data Errors and Warnings**

No errors or warnings

## **Analysis Set Details**

| ID | Network flow scaling factor (%) |
|----|---------------------------------|
| A1 | 100.000                         |

# **Junction Network**

### **Junctions**

| Junction Name Junction Type |   | Junction Delay (s)             | Junction LOS |      |   |
|-----------------------------|---|--------------------------------|--------------|------|---|
|                             | 1 | 1 untitled Standard Roundabout |              | 6.60 | А |

# **Junction Network Options**

[same as above]

# Arms

Arms [same as above]

# **Capacity Options**

[same as above]

# **Roundabout Geometry**

[same as above]

# Slope / Intercept / Capacity

[same as above]

# **Traffic Demand**

# **Demand Set Details**

| ID | Scenario name               | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|----|-----------------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| D5 | 2020 Without<br>Development | ΡM                  | DIRECT                  | 17:00                       | 18:00                        | 60                                | 15                           |

| Vehicle mix varies over turn | Vehicle mix varies over entry | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
|------------------------------|-------------------------------|--------------------|---------------------------|---------------------------|
| ✓                            | ✓                             | HV Percentages     | 2.00                      | ✓                         |



# **Demand overview (Traffic)**

| Arm | Linked arm | Use O-D data | Scaling Factor (%) |
|-----|------------|--------------|--------------------|
| 1   |            | ✓            | 100.000            |
| 2   |            | ✓            | 100.000            |
| 3   |            | ✓            | 100.000            |
| 4   |            | √            | 100.000            |

# **Origin-Destination Data**

#### Demand (Veh/TS)

(17:00-17:15)

|      | То |         |         |       |         |  |  |  |  |
|------|----|---------|---------|-------|---------|--|--|--|--|
|      |    | 1       | 2       | 3     | 4       |  |  |  |  |
|      | 1  | 1.000   | 26.000  | 0.000 | 131.000 |  |  |  |  |
| From | 2  | 32.000  | 1.000   | 0.000 | 226.000 |  |  |  |  |
|      | 3  | 0.000   | 0.000   | 0.000 | 0.000   |  |  |  |  |
|      | 4  | 103.000 | 162.000 | 0.000 | 3.000   |  |  |  |  |

## Demand (Veh/TS)

(17:15-17:30)

|      |   | То     |         |       |         |  |  |  |  |  |
|------|---|--------|---------|-------|---------|--|--|--|--|--|
|      |   | 1      | 2       | 3     | 4       |  |  |  |  |  |
|      | 1 | 1.000  | 27.000  | 0.000 | 154.000 |  |  |  |  |  |
| From | 2 | 22.000 | 1.000   | 0.000 | 195.000 |  |  |  |  |  |
|      | 3 | 0.000  | 1.000   | 0.000 | 0.000   |  |  |  |  |  |
|      | 4 | 76.000 | 145.000 | 0.000 | 4.000   |  |  |  |  |  |

#### Demand (Veh/TS)

(17:30-17:45)

|      | То |        |         |       |         |  |  |  |
|------|----|--------|---------|-------|---------|--|--|--|
|      |    | 1      | 2       | 3     | 4       |  |  |  |
|      | 1  | 0.000  | 22.000  | 0.000 | 138.000 |  |  |  |
| From | 2  | 26.000 | 1.000   | 0.000 | 209.000 |  |  |  |
|      | 3  | 0.000  | 0.000   | 0.000 | 1.000   |  |  |  |
|      | 4  | 90.000 | 183.000 | 0.000 | 1.000   |  |  |  |

#### Demand (Veh/TS)

(17:45-18:00)

|      | То |        |            |       |         |  |  |  |  |
|------|----|--------|------------|-------|---------|--|--|--|--|
|      |    | 1      | 2          | 4     |         |  |  |  |  |
|      | 1  | 1.000  | 000 22.000 |       | 135.000 |  |  |  |  |
| From | 2  | 21.000 | 0.000      | 0.000 | 212.000 |  |  |  |  |
|      | 3  | 0.000  | 0.000      | 0.000 | 0.000   |  |  |  |  |
|      | 4  | 74.000 | 176.000    | 0.000 | 3.000   |  |  |  |  |

# **Vehicle Mix**



## Heavy Vehicle proportion

| То   |   |   |    |   |   |
|------|---|---|----|---|---|
|      |   | 1 | 2  | 3 | 4 |
|      | 1 | 0 | 1  | 0 | 1 |
| From | 2 | 4 | 33 | 0 | 3 |
|      | 3 | 0 | 0  | 0 | 0 |
|      | 4 | 2 | 3  | 0 | 0 |

# **Results**

# **Results Summary for whole modelled period**

| Arm | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|-----|---------|---------------|-----------------|---------|
| 1   | 0.48    | 4.71          | 0.9             | А       |
| 2   | 0.74    | 9.17          | 2.7             | А       |
| 3   | 0.01    | 5.46          | 0.0             | А       |
| 4   | 0.62    | 5.40          | 1.6             | А       |

# Main Results for each time segment

# Main results: (17:00-17:15)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 158.00                | 165.02                    | 365.76            | 0.432 | 157.25              | 0.8             | 4.301     | A   |
| 2   | 259.00                | 134.35                    | 351.99            | 0.736 | 256.32              | 2.7             | 9.169     | A   |
| 3   | 0.00                  | 390.67                    | 157.36            | 0.000 | 0.00                | 0.0             | 0.000     | A   |
| 4   | 268.00                | 33.65                     | 435.32            | 0.616 | 266.42              | 1.6             | 5.281     | A   |

## Main results: (17:15-17:30)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 182.00                | 151.27                    | 375.92            | 0.484 | 181.82              | 0.9             | 4.633     | A   |
| 2   | 218.00                | 158.84                    | 335.03            | 0.651 | 218.77              | 1.9             | 7.793     | A   |
| 3   | 1.00                  | 377.61                    | 165.76            | 0.006 | 0.99                | 0.0             | 5.461     | A   |
| 4   | 225.00                | 25.13                     | 441.22            | 0.510 | 225.53              | 1.1             | 4.182     | Α   |

#### Main results: (17:30-17:45)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 160.00                | 184.61                    | 351.31            | 0.455 | 160.09              | 0.8             | 4.708     | А   |
| 2   | 236.00                | 139.08                    | 348.69            | 0.677 | 235.85              | 2.1             | 7.960     | A   |
| 3   | 1.00                  | 374.93                    | 167.13            | 0.006 | 1.00                | 0.0             | 5.419     | А   |
| 4   | 274.00                | 26.98                     | 439.62            | 0.623 | 273.42              | 1.6             | 5.397     | A   |



## Main results: (17:45-18:00)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 158.00                | 179.15                    | 355.59            | 0.444 | 158.04              | 0.8             | 4.556     | A   |
| 2   | 233.00                | 139.02                    | 349.23            | 0.667 | 233.02              | 2.0             | 7.750     | A   |
| 3   | 0.00                  | 372.05                    | 169.12            | 0.000 | 0.01                | 0.0             | 0.000     | A   |
| 4   | 253.00                | 22.05                     | 443.25            | 0.571 | 253.28              | 1.3             | 4.744     | A   |





# 2020 With Development, PM

## **Data Errors and Warnings**

No errors or warnings

## **Analysis Set Details**

| ID | Network flow scaling factor (%) |
|----|---------------------------------|
| A1 | 100.000                         |

# **Junction Network**

### Junctions

| Junction Name Junction Typ |          | Junction Type       | Junction Delay (s) | Junction LOS |
|----------------------------|----------|---------------------|--------------------|--------------|
| 1                          | untitled | Standard Roundabout | 7.10               | А            |

# **Junction Network Options**

[same as above]

# Arms

Arms [same as above]

**Capacity Options** 

[same as above]

# **Roundabout Geometry**

[same as above]

# Slope / Intercept / Capacity

[same as above]

# **Traffic Demand**

# **Demand Set Details**

| ID | Scenario name            | Time Period<br>name | Traffic profile<br>type | Model start time<br>(HH:mm) | Model finish time<br>(HH:mm) | Model time period length<br>(min) | Time segment length<br>(min) |
|----|--------------------------|---------------------|-------------------------|-----------------------------|------------------------------|-----------------------------------|------------------------------|
| D6 | 2020 With<br>Development | PM                  | DIRECT                  | 17:00                       | 18:00                        | 60                                | 15                           |

| Vehicle mix varies over turn | Vehicle mix varies over entry | Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
|------------------------------|-------------------------------|--------------------|---------------------------|---------------------------|
| ✓                            | ✓                             | HV Percentages     | 2.00                      | ✓                         |



# **Demand overview (Traffic)**

| Arm | Linked arm | Use O-D data | Scaling Factor (%) |
|-----|------------|--------------|--------------------|
| 1   |            | ✓            | 100.000            |
| 2   |            | ✓            | 100.000            |
| 3   |            | ✓            | 100.000            |
| 4   |            | ✓            | 100.000            |

# **Origin-Destination Data**

#### Demand (Veh/TS)

(17:00-17:15)

|      |   |         | То      |       |         |
|------|---|---------|---------|-------|---------|
|      |   | 1       | 2       | 3     | 4       |
|      | 1 | 1.000   | 26.000  | 0.000 | 133.000 |
| From | 2 | 32.000  | 1.000   | 0.000 | 234.000 |
|      | 3 | 0.000   | 0.000   | 0.000 | 0.000   |
|      | 4 | 106.000 | 165.000 | 0.000 | 3.000   |

## Demand (Veh/TS)

(17:15-17:30)

|      |   | То     |         |       |         |  |  |  |  |
|------|---|--------|---------|-------|---------|--|--|--|--|
|      |   | 1      | 2       | 3     | 4       |  |  |  |  |
|      | 1 | 1.000  | 27.000  | 0.000 | 156.000 |  |  |  |  |
| From | 2 | 22.000 | 1.000   | 0.000 | 203.000 |  |  |  |  |
|      | 3 | 0.000  | 1.000   | 0.000 | 0.000   |  |  |  |  |
|      | 4 | 79.000 | 148.000 | 0.000 | 4.000   |  |  |  |  |

### Demand (Veh/TS)

(17:30-17:45)

|      |   |        | То      |       |         |
|------|---|--------|---------|-------|---------|
|      |   | 1      | 2       | 3     | 4       |
|      | 1 | 0.000  | 22.000  | 0.000 | 140.000 |
| From | 2 | 36.000 | 1.000   | 0.000 | 217.000 |
|      | 3 | 0.000  | 0.000   | 0.000 | 1.000   |
|      | 4 | 93.000 | 186.000 | 0.000 | 1.000   |

#### Demand (Veh/TS)

(17:45-18:00)

|      |   |        | То      |       |         |
|------|---|--------|---------|-------|---------|
|      |   | 1      | 3       | 4     |         |
|      | 1 | 1.000  | 22.000  | 0.000 | 137.000 |
| From | 2 | 21.000 | 0.000   | 0.000 | 220.000 |
|      | 3 | 0.000  | 0.000   | 0.000 | 0.000   |
|      | 4 | 77.000 | 179.000 | 0.000 | 3.000   |

# **Vehicle Mix**



## Heavy Vehicle proportion

|      | То |   |    |   |   |  |
|------|----|---|----|---|---|--|
|      |    | 1 | 2  | 3 | 4 |  |
|      | 1  | 0 | 1  | 0 | 1 |  |
| From | 2  | 4 | 33 | 0 | 3 |  |
|      | 3  | 0 | 0  | 0 | 0 |  |
|      | 4  | 1 | 3  | 0 | 0 |  |

# **Results**

# **Results Summary for whole modelled period**

| Arm | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|-----|---------|---------------|-----------------|---------|
| 1   | 0.49    | 4.80          | 1.0             | А       |
| 2   | 0.76    | 9.97          | 3.0             | А       |
| 3   | 0.01    | 5.83          | 0.0             | А       |
| 4   | 0.65    | 5.81          | 1.8             | А       |

# Main Results for each time segment

# Main results: (17:00-17:15)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 160.00                | 167.97                    | 363.94            | 0.440 | 159.22              | 0.8             | 4.379     | A   |
| 2   | 267.00                | 136.33                    | 351.54            | 0.760 | 263.99              | 3.0             | 9.965     | A   |
| 3   | 0.00                  | 400.31                    | 151.86            | 0.000 | 0.00                | 0.0             | 0.000     | A   |
| 4   | 274.00                | 33.62                     | 436.29            | 0.628 | 272.34              | 1.7             | 5.436     | A   |

## Main results: (17:15-17:30)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 184.00                | 154.29                    | 374.03            | 0.492 | 183.82              | 1.0             | 4.726     | A   |
| 2   | 226.00                | 160.83                    | 334.54            | 0.676 | 226.88              | 2.1             | 8.428     | A   |
| 3   | 1.00                  | 387.71                    | 159.93            | 0.006 | 0.99                | 0.0             | 5.662     | A   |
| 4   | 231.00                | 25.15                     | 442.21            | 0.522 | 231.56              | 1.1             | 4.285     | A   |

#### Main results: (17:30-17:45)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 162.00                | 187.54                    | 349.55            | 0.463 | 162.09              | 0.9             | 4.803     | Α   |
| 2   | 254.00                | 141.08                    | 348.13            | 0.730 | 253.53              | 2.6             | 9.449     | A   |
| 3   | 1.00                  | 394.61                    | 155.37            | 0.006 | 1.00                | 0.0             | 5.829     | Α   |
| 4   | 280.00                | 36.85                     | 433.59            | 0.646 | 279.31              | 1.8             | 5.808     | A   |



## Main results: (17:45-18:00)

| Arm | Total Demand (Veh/TS) | Circulating flow (Veh/TS) | Capacity (Veh/TS) | RFC   | Throughput (Veh/TS) | End queue (Veh) | Delay (s) | LOS |
|-----|-----------------------|---------------------------|-------------------|-------|---------------------|-----------------|-----------|-----|
| 1   | 160.00                | 182.21                    | 353.73            | 0.452 | 160.04              | 0.8             | 4.649     | A   |
| 2   | 241.00                | 141.02                    | 348.77            | 0.691 | 241.32              | 2.3             | 8.405     | A   |
| 3   | 0.00                  | 382.34                    | 163.20            | 0.000 | 0.01                | 0.0             | 0.000     | A   |
| 4   | 259.00                | 22.18                     | 444.21            | 0.583 | 259.38              | 1.4             | 4.879     | Α   |



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Dinny Shaw Boyer Planning 82, Heath Road Twickenham

TW1 4BW

2<sup>nd</sup> March 2016

Dear Dinny,

## RE: Technical Findings of Ecological Survey Work - Land at New Salts Farm

Please find the details of the ecological technical findings from surveys undertaken in 2015 on land at New Salts Farm, Shoreham on Sea.

### **Previous Surveys:**

A review of previous survey work in and around the site has been undertaken to support the initial PEA of the site by The Ecology Partnership. A review of desk top data and previous reports identified:

- Slow worms, grass snakes, common lizards and adders were translocated from the airport in 2001
- A total of 10 species of bat have been recorded within 2km of the site including more common species such as noctule, common and soprano pipistrelle and serotines.
- Invertebrates have been recorded which were of note including the stag beetle, rare sand shrimp (inland coastal saline lagoon specialist), with several butterflies of note also recorded.

- Numerous birds have been recorded within 2km radius including red data species and species of conservation concern, some within the site itself, including Cett's warbler, barn owl, fire crest and kingfisher.
- Previous reports from the Ecology Consultancy were also reviewed. These surveys covered the
  site and wider landscape. These surveys identified that the on site ditches and network of
  ditches within this area (and wider site) were important hydrological support for the Adur
  Estuary SSSI, the floodplains ere considered to be grazing marsh which was identified as BAP
  habitat.
- Red star thistle, a nationally rare plant, red data plant and UK BAP plant was present on site
- The site was also considered to support opportunities for wading birds.
- These reports also recommended further surveys for badgers, bats, reptiles, badgers inverts, water voles, GCNs, as well as bird surveys.

### **Ecology Partnership Surveys:**

A PEA (preliminary Ecological Appraisal) was undertaken in June 2015 of the whole of the red line boundary. This survey identified the following aspects:

- The site was dominated by semi improved grassland which was classed as floodplain grazing marsh which is a UK BAP habitat. Although BAP has been replaced, this habitat is considered to be a 'habitat of principle importance' under the NERC Act. This habitat is not afforded legal protection, however, 'due regard' must be made to this type of habitat. The interpretation of this is difficult, but it would be recommended to maintain features of this habitat due to its biodiversity value.
- The site also supported drainage ditches which again are BAP habitats and NERC habitats as above.
- One of the ditches supported the invasive New Zealand pigmy weed (*Crassula*) and as such this should be removed where possible.
- Further surveys for reptiles, GCNs, water voles and invertebrates were recommended. Bat, badger and bird surveys would be recommended for the larger red line. It is considered that the phase 1 scheme would be small scale and not significant in terms of bat and bird habitat.

Protected Species Surveys

- Reptile surveys were undertaken across the whole of the red line boundary, including phase 1 site. No reptiles were located within the phase 1 section of the site. However, slow worms, common lizards and grass snakes were found in the wider landscape. With a 'good' population of slow worms and common lizards and a 'low' population of grass snakes present in the remaining fields. The technical report identifies the areas which are considered to be most significant in terms of reptile habitat.
- The ditches were surveyed for water voles in September on two occasions. No evidence of burrows, latrines, feeding stations lawns etc were identified. It must be noted that off site ditches, adjacent to the railway line could not be surveyed (off site, big fence) and therefore evidence of water vole in these locations could not be assessed. It is considered that no water voles are present within the ditches at this time, however, if the ditches network was to be affected or closed by the development of the site then update surveys would be recommended. Phase 1 of the site does not involve any alterations to ditch networks.
- The ditch which is located to the north of phase 1 does support some nationally scarce invertebrates. As such it is recommended that this area is given a more comprehensive buffer to ensure that the habitat is protected.
- The remaining ditches did not support invertebrates of great diversity. However, some notable species were located within the grassland habitat, as well as on the ruderal habitats.
- The ditches were assessed for their potential to support GCNs. During the water vole and invert surveys, the ditch network was found to support a population of stickleback. These are known to predate on GCN eggs and as such it is considered that no GCNs would be on site or using these ditch networks for breeding. No further survey work was recommended.
- Specialist invert surveys were undertaken.
- During the water vole and invert surveys Cettis warbler and kingfisher were recorded using the ditch network. These are red list birds and schedule 1 listed birds and must be considered as part of the design of the site.
- During the update surveys red star thistle was identified in several pockets around the barn to the east of the site. This area will not be affected by the phase 1 of the development. However, this does need to be considered within the wider phase of the site.

#### Recommendations

- It is recommended that the ditch network is maintained within the scheme.
- It is also recommended that any invasive plant species, such as Cressula sp is removed to restore the ditch network and to ensure that this does not spread within the network off site.
- A buffer should be adhered to along each side of the ditches. The EA require buffer zones to be in place however, the extent of these buffers may alter depending on the site. From an ecological perspective the greater the buffer the better in terms of maintaining the water features undisturbed and supporting habitats which support both kingfishers and Cettis warbler, both important local bird species. In this sense due regard is shown for both ditch networks, which are priority habitats, and the species that inhabit these. It is recommended that at least 8m on either side of the ditch is maintained undisturbed and for wildlife.
- A larger buffer is recommended for the ditch on the southern aspect of the site just above Phase 1. This ditch supported notable invertebrate species and supported sea club rush, again a notable habitat. As much of this habitat should be retained within the scheme. This will have to be culverted at the very eastern section of the ditch. This would require a method statement of works to ensure that the ditch habitat is not adversely affected by the culvert in terms of potential pollution. Works should be undertaken outside nesting bird season.
- It is understood that development of phase 1 will not involve works to ditch networks.
- Whilst phase 1 will not involve any translocation of reptiles, the design of the remaining site should consider these species. Open space provided within the scheme should be left as unmanaged as possible (or follow current management regimes) to maintain some of the grazing floodplain habitat. This would also ensure that reptiles can be retained within the development. Open spaces for LEAPS/LAPs of course will have to be managed, but it is recommended that other areas of open space should not be over managed or over planted, in order to maintain as much of the original grassland as possible. These areas of open space can support some features, for example mown networks through the longer grassland, in order to provide recreational opportunities in a wildlife area.
- One outlier badger sett was identified. It is recommended that an update badger survey is undertaken. This hole was not present in the phase 1 area of the site.
- No further surveys for GCNs are recommended.

- Update water vole surveys would be recommended prior to works which involve crossing the ditch networks. This would be for phases beyond phase 1 of the development. Currently the site is not considered to be constrained by water voles.
- Whilst the development of phase 1 is not considered to be significant in terms of habitat loss or scale or extent of development, the wider site is large and as such further surveys for bats and birds should be undertaken. Surveys for bats would likely identify the use of ditch networks and trees as good foraging habitat for bats, and as such these should be retained as dark corridors and maintained within the scheme. Lighting therefore should be a consideration. With regards to birds ground nesting birds should be surveyed for and considered as wintering birds too. Maintaining areas which are associated with the ditch networks go some way to maintaining habitat within the site, however, depending on further bird surveys further provision for birds maybe required.

## Conclusions

It is considered that the site is deliverable in terms of development. Whilst there are some areas of higher ecological interest, these can be accommodated within the scheme, and maintained and enhanced within the red line boundary. The ditch networks need to be provided a decent buffer which will ensure their ecological integrity, as such the greater the buffer the better in terms of these being considered to be an effective green corridor network used by species such as bats, birds, reptiles, and invertebrates. Certainly the use of these features as such would be consistent with legislation of the NERC act as well as historic requirements of BAP.

Reptiles will need to be provided for in terms of the wider development. Further bat and bird surveys would be recommended. An update badger survey also would be required.

In terms of Phase 1 – this is considered to be of least interest. No badgers on site, no reptiles present within this boundary, no red star thistle and no species of note. However, the ditch at the top of this section of the site does support notable species and as such needs to be considered in terms of CEMP and the design of the phase 1 itself, making sure that this feature is maintained and protected as part of the scheme.

Whilst further surveys for the wider scheme are considered to be a likely requirement and following best practise – it is considered that the results of these further surveys would not result in a reason for refusal in terms of a development on the site, but may mean that the outline of the site may need to be tweaked. With regards to bats, as not roosting sites or opportunities for roosting have been identified within the site it is unlikely that the development would result in a significant impact in terms of disturbance to commuting or foraging habitats – especially as the green corridors (the maintained ditch networks) will be maintained. In terms of bird surveys – as the site is considered to be reasonably disturbed (dog walking etc) it is unlikely that there would be a significant number of ground nesting birds or birds of conservation interest within the grassland features themselves. Enhancement for birds can be accommodated within the scheme.

If you require any further information from us at this time then please do not hesitate to contact us.

Kind regards

lexin An

Alexia Tamblyn MA (Oxon) MSc CEnv MCIEEM FRGS Managing Director



**Preliminary Ecology Appraisal** 

New Salts Farm Shoreham-by-Sea

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#### LIABILITIES:

Whilst every effort has been made to guarantee the accuracy of this report, it should be noted that living creatures are capable of migration and whilst protected species may not have been located during the survey duration, their presence may be found on a site at a later date.

The views and opinions contained within this document are based on a reasonable timeframe between the completion of the survey and the commencement of any works. If there is any delay between the commencement of works that may conflict with timeframes laid out within this document, or have the potential to allow the ingress of protected species, a suitably qualified ecologist should be consulted.

It is the duty of care of the landowner/developer to act responsibly and comply with current environmental legislation if protected species are suspected or found prior to or during works.

## 1.0 Introduction

### Background

- 1.1 The Ecology Partnership Ltd was commissioned by The Hyde Group to undertake a preliminary ecological appraisal on a site adjacent to New Salts Farm Road in Shorehamby-Sea, West Sussex.
- 1.2 This report presents the results of the surveys in and around the site, which aims specifically to assess the sites potential to support protected species and protected habitats that may be affected by the proposed development.
- 1.3 Section 2 of this report sets out the methodologies of The Ecology Partnership's surveys. In section 3 the results of the surveys are presented. Discussions and implications for development and enhancements are found in section 4. Conclusions drawn from the report in section 5.

### Site Context and Status

1.4 The site is situated to the west of Shoreham-by-Sea, between Shoreham and Lancing in West Sussex. The immediate surrounding landscape comprises predominantly residential properties and gardens, grazing marsh, tree-lines and drains. The River Adur extends 0.7km to the east of the site and the coast is lies approximately 0.2km south. Shoreham airport is located immediately to the north of the site. The aerial photograph (Figure 1) below shows the site and its immediate surrounds. The red line boundary depicts the approximate site boundary.



Figure 1: Approximate red line boundary of the site

## **Description of Proposed Development**

1.5 The exact details are presently unknown; however, it is understood that the current development proposal includes for the construction of a residential development of up to 500 homes.

# **Planning Policies**

- 1.6 National and local planning policies may have an effect on the proposed development. The following paragraphs identify relevant planning policies and discuss these in the context of the site.
- 1.7 Under the NERC Act (2006) "Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of

*conserving biodiversity*". In order to comply with this 'Biodiversity Duty', planning decisions must ensure that they adequately consider the potential ecological impacts of a proposed development.

- 1.8 In compliance with Section 41 of the NERC Act, the Secretary of State has published a list of species and habitats considered to be of principle importance for conserving biodiversity. These were known as BAP habitats and species. The UK BAP lists of priority species and habitats remain an important and valuable reference certainly at county levels. However, the UK Post 2010 Biodiversity Framework (published 2012) has succeeded BAP. It was produced by JNCC and Defra, on behalf of the Four Countries' Biodiversity Group (4CBG), through which the environment departments of all four governments in the UK work together to achieve the 'Aichi Biodiversity Targets' and the aims of the EU biodiversity strategy.
- 1.9 National policy guidance is provided by National Planning Policy Framework (NPPF), which sets out the Government's planning policies for England and how they should be applied. Section 11 of the document is entitled 'Conserving and Enhancing the Natural Environment'. This section highlights the following:

'The planning system should contribute to and enhance the natural and local environment by:

- Protecting and enhancing valued landscapes, geological conservation interests and soils;
- Recognising the wider benefits of ecosystem services;
- Minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;
- Preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability; and
- Remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate'

1.10 In addition to this the following paragraphs are also considered to be relevant:

'In preparing plans to meet development needs, the aim should be to minimise pollution and other adverse effects on the local and natural environment. Plans should allocate land with the least environmental or amenity value, where consistent with other policies in this Framework.'

- 1.11 The site is situated within the jurisdiction of Adur District Council. The Adur District Council Local Plan (1996) presently forms the basis of planning application decisions until the emerging Local Plan (2014) is formally adopted (proposed for summer 2015); however, none of the saved Local Plan (1996) policies relate specifically to biodiversity. These are instead dealt with under the national (NPPF) planning policy.
- 1.12 This report addresses the site in relation to nature conservation and wildlife and indeed to the local planning requirements as well as national planning and nature conservation legislation. The report has been produced with reference to current guidelines for preliminary ecological appraisal (CIEEM 2013) and in accordance with BS 42020:2013 Biodiversity Code of Practise for Planning and Development.

### 2.0 Methodology

### Site Inspection

2.1 Vicky Hale BSc (Hons) CEnv MCIEEM undertook a preliminary ecological appraisal on 23<sup>rd</sup> June 2015. The surveyor identified the habitats present, following the standard 'Phase 1 habitat survey' auditing method developed by the Joint Nature Conservancy Council (JNCC 2010). The site was surveyed on foot and the existing habitats and land uses were recorded on an appropriately scaled map (JNCC 2010). In addition, the dominant plant species in each habitat were recorded, as was any evidence of protected species. The potential for the site to support protected species was also assessed.

#### Tree Assessment for Bats

- 2.2 As well as roosting in buildings, bats can use trees to rest, give birth, raise young and/or hibernate. Roosts may be found in the following features:
  - Woodpecker holes, natural cracks and rot holes in trunks and branches
  - Frost cracks.
  - Trunk and branch splits.
  - Hollow sections of trunk and branches.
  - Loose bark.
  - Cavities beneath old root buttresses and coppice stools.
  - Dense epicormic growth.
  - Dense ivy cover.
- 2.3 Veteran trees typically exhibit many of these features and should usually be regarded as sites with clear potential, but any tree possessing one or more such feature, may host bats. Any tree species can be suitable but oak and beech often seems to be the preferred option. However, bats rarely restrict themselves to one tree. They change their roost sites frequently, sometimes every two to three days, looking for small differences in temperature and humidity.
- 2.4 Roosts of bats in trees may be identified from the following field signs:
  - Black stains beneath cracks, splits and other features where bat dropping have fallen;
  - Dark marks at entrance points where bats have rubbed against the wood and left natural body oils;
  - Feeding remains beneath roosts, such as insect wings;
  - Chattering of bats;
  - Bat droppings under access points;
  - Scratch marks around a feature (cavity or split) caused by bat claws;
  - Urine stains below the entrance or end of split;
  - Large roosts or regularly used sites may produce an odour;
  - Flies around the entrance, attracted by the smell of guano.

2.5 Trees on site with potential for roosting bats will be classified according to the table below, taken from *Bat Surveys: Good Practice Guidelines, Bat Conservation Trust,* 2012.

| Table 1: Protocol for   | visual  | inspection | of | trees | due | to | be | affected | by | arboricultural | work, | to |
|-------------------------|---------|------------|----|-------|-----|----|----|----------|----|----------------|-------|----|
| assess the value of the | trees t | o bats     |    |       |     |    |    |          |    |                |       |    |

|  | Stage 1   | Stage 2   | Stage 3  |  |  |
|--|---|---|--|--|--|
| Tree category and description  | Tree category and Initial survey<br>lescription requirements  |   | Likely mitigation  |  |  |
| Known or confirmed<br>roost  | Follow SNCO guidance and<br>possible, to establish the extr<br>site. This is particularly imp<br>risk species and/or roosts of<br>importance and above  | these guidelines wherever<br>ent to which bats use the<br>ortant for roosts of high<br>district or higher   | The tree can be felled<br>only under EPS license<br>following the<br>installation of equivalent<br>habitats as a<br>replacement.   |  |  |
| <b>Category 1*</b><br>Trees with multiple,<br>highly suitable<br>features capable of<br>supporting larger<br>roosts  | Tree identified on a map<br>and on the ground.<br>Further assessment to<br>provide a best expert<br>judgment on the likely use<br>of the roost, numbers and<br>species of bat, by analysis<br>of droppings or other field<br>evidence.<br><i>A consultant ecologist is</i><br><i>required</i> | Avoid disturbance to<br>trees, where possible.<br>Further dusk and pre-<br>dawn survey to establish<br>more accurately the<br>presence, species,<br>numbers of bats present<br>and the type of roost, and<br>to inform the<br>requirements for<br>mitigation if felling is<br>required.   | Felling would be<br>undertaken taking<br>reasonable avoidance<br>measures <sup>3</sup> such as 'soft<br>felling' to minimise the<br>risk of harm to<br>individual bats.  |  |  |
| <b>Category 1</b><br>Trees with definite<br>bat potential,<br>supporting fewer<br>suitable features that<br>category 1* trees or<br>with potential for use<br>by single bats | Tree identified on a map<br>and on the ground.<br>Further assessed to<br>provide a best expert<br>judgment on the potential<br>use of suitable cavities,<br>based on the habitat<br>preferences of bats.<br><i>A consultant ecologist</i><br><i>required</i>                                  | Avoid disturbance to<br>trees, where possible.<br>More detailed, off the<br>ground visual<br>assessment.<br>Further dusk and pre-<br>dawn survey to establish<br>the presence of bats, and<br>if present, the species and<br>numbers of bats and type<br>of roost, to inform the<br>requirements for<br>mitigation if felling is<br>required. | Trees with confirmed<br>roosts following further<br>survey are upgraded to<br>Category 1* and felled<br>under license as above.<br>Trees with no confirmed<br>roosts may be<br>downgraded to<br>Category 2 dependent<br>on survey findings |  |  |

| None.<br>A consultant ecologist is<br>unlikely to be required                      | Avoid disturbance to<br>trees, where possible. No<br>further surveys.  | Trees may be felled<br>taking reasonable<br>avoidance measures.<br>Stop works and seek<br>advice in the event bats<br>are found, in order to<br>comply with relevant<br>legislation.  |
|--|--|---|
|  |  |   |
| None.<br>A consultant ecologist is<br>not required unless new<br>evidence is found | None.  | No mitigation for bats required.  |
| N<br>A<br>UN<br>A<br>no<br>et  | one.<br>consultant ecologist is<br>nlikely to be required<br>one.<br>consultant ecologist is<br>ot required unless new<br>vidence is found | ione.       Avoid disturbance to trees, where possible. No further surveys.         nlikely to be required       Avoid disturbance to trees, where possible. No further surveys.         one.       None.         consultant ecologist is of required unless new bidence is found       None. |

# Habitat Suitability for Reptiles

- 2.6 Habitat surveys were carried out to assess the potential of the site to hold populations of reptile species. This involved looking for the presence of factors that would increase the suitability of the site for reptiles such as:
  - Scrub and grassland (long sward) mosaic across the site;
  - Features that can be potential hibernation sites for common reptiles such as log piles;
  - Grass tussocks within the grassland that can act as shelter and burrowing sites;
  - Water bodies or damp places on site (grass snakes);
  - Compost heaps or decaying vegetation (slow worms);
  - Features that can act as refugia on the ground such as disused roofing felt.

## Habitat Suitability for Great Crested Newts

2.7 Habitat surveys were carried out to assess the potential of the site to hold great crested newts (*Triturus cristatus*). This involved looking at the wider landscape using Google Maps and Nature on the Map to types of habitat in the wider landscape. This also involved looking for the presence of factors that would increase the suitability of the site for great crested newts such as:

- The presence of suitable breeding places (water bodies) on site and within 500m of the site in the wider landscape;
- Habitat connectivity between ponds (if present) in the wider landscape and on site;
- The condition of the ponds and whether there were factors that would render them unsuitable for great crested newts (GCN's) such as fish;
- Land uses surrounding the site that may effect the potential of the site to hold GCN's such as agriculture;
- Type of suitable habitat on site such as scrub/grassland mosaic;
- Patches of woodland in the wider landscape that can provide terrestrial habitat;
- Any barriers between known populations of GCN's such as motorways and roads;
- Hibernation features on site for great crested newts such as log and rubble piles.

## Limitations

- 2.8 It should be noted that whilst every effort has been made to provide a comprehensive description of the site, no single investigation could ensure the complete characterisation and prediction of the natural environment.
- 2.9 The protected species assessment provides a preliminary view of the likelihood of protected species occurring on site, based on the suitability of the habitat and any direct evidence on site. It should not be taken as providing a full and definitive survey of any protected species group. The assessment is only valid for the time when the survey was carried out. Additional surveys may be recommended if, on the basis of this assessment it is considered reasonably likely that protected species may be present.

### 3.0 Results

### **Desktop Study**

3.1 A 2km data search was requested from Sussex Biodiversity Records Centre. Information on local Sites of Nature Conservation Interest (SNCIs), as well as records of protected and notable species can be found in the tables below. Records have been included from the last ten years, with the closest record and the most recent records included. Further information from the data request is included in appendix 3.

## Designated Sites

3.2 No designated sites are present within the site boundary; however, several designated sites are located within 2km of the site. See Table 2 below.

| Name of Site       | Designation           | Approximate Distance from |  |
|--------------------|-----------------------|---------------------------|--|
|                    |                       | Site                      |  |
| Widewater Lagoon   | SNCI                  | 0.12km South              |  |
| Lancing Ring       | SNCI & LNR            | 1.3km North-West          |  |
| Adur Estuary       | SSSI 0.3km North-East |                           |  |
| Shoreham Beach     | SNCI & LNR            | 0.3km South-East          |  |
| Mill Hill          | SNCI 1.7km North      |                           |  |
| River Adur Meadows | SNCI                  | 1.9 km North-East         |  |

Table 2: Designated Sites within 2km of the site

SSSI: Site of Special Scientific Interest; SNCI: Site of Nature Conservation Importance; LNR: Local Nature Reserve

- 3.3 No internationally designated sites, such as Special Areas of Conservation (SACs), Special Protection Areas (SPAs) or Ramsar sites are located within 10km of the site.
- 3.4 No units of ancient semi-natural or ancient re-planted woodland are present within 2km of the site.

#### **Protected Species**

3.5 The following are records of protected species identified within a 2km radius of the site within the last 10 years.

## Reptiles

3.6 No records of reptiles are present within the site; however, slow worms (*Anguis fragilis*) have been recorded at Shoreham airport, some 0.2km to the north of the site. The desk study also makes reference to a number of slow worms, common lizards, grass snakes and adders having been translocated from the airport site in 2001.

#### Mammals

3.7 A total of 10 bat species have been recorded within a 2km radius of the site. Five species including noctule (*Nyctalus noctula*), serotine (*Eptesicus serotinus*), common pipistrelle (*Pipistrellus pipistrellus*) and soprano pipistrelle (*Pipistrellus pygmaeus*), as well as an unidentified bat were recorded at Lancing College in 2014 some 1.7km to the north of the site. A brown long-eared bat (*Plecotus auritus*) was also recorded here in 2011. Daubenton's bats (*Myotis daubentonii*) were recorded adjacent to the River Adur, approximately 1.7km to the north-east of the site in 2009.

### Invertebrates

- 3.8 A widespread but rare sand shrimp (lagoon sand shrimp *Gammarus insensibilis*) which inhabits coastal saline lagoons was recorded in 2013 at Widewater Lagoon LNR located approximately 0.4km to the south of the site.
- 3.9 In addition to this, stag beetle (*Lucanus cervus*) has been recorded 1.3km to the north-east of the site (Shoreham Community Centre) in 2007. Brown hairstreak (*Thecla betulae*) was recorded within 2km of the site (north Shoreham) in 2010 and large tortoiseshell (*Nymphalis polychloros*) was recorded 1km to the south-west of the site.

Birds

- 3.10 A total of 294 birds species have been recorded within a 2km radius of the site. Of these, 71 are protected under the Wildlife and Countryside Act (W&CA), 1981 and 48 are on the Birds of Conservation Concern (BoCC) red list. Wildlife and Countryside Act, 1981 species recorded within 2km of the site within the last 10 years are detailed below (see Appendix 3 for full desk study data).
  - Little ringed plover (*Charadrius dubius*) Widewater Lagoon LNR 0.4km south 2008;
  - Mediterranean gull (Larus melanocephalus) Lancing beach 0.4km south;
  - Avocet (*Recurvirostra avosetta*) Adur Rail tollbridge 1.1km north-east 2012;
  - Black-tailed godwit (Limosa limosa) Shoreham airport (within 2km of site) 2008;
  - Bittern (Botaurus stellaris) Coombes Cuckoos Corner (within 2km of site) 2010;
  - Kingfisher (*Alcedo atthis*) On site (New Salts Farm) 2006;
  - Red kite (*Milvus milvus*) Adur Rail Tollbridge 1.1km north-east 2010;
  - Osprey (Pandion haliaetus) Sompting near Worthing (within 2km of site) 2010;
  - Peregrine (Falco peregrinus) Shoreham airport (within 2km) 2007;
  - Hobby (Falco Subbuteo) Widewater lagoon 0.4km south 2008;
  - Quail (*Coturnix coturnix*) Within 2km of site 2011;
  - Cetti's warbler (*Cettia cetti*) On site (New Salts Farm) 2013;
  - Common crossbill (Loxia curvirostra) Within 2km of site 2011;
  - Black redstart (Phoenicurus ochruros) Shoreham beach (within 2km of site) 2013;
  - Firecrest (*Regulus ignicapilla*) On site (New Slats Farm) 2013; and
  - Barn owl (*Tyto alba*) On site (New Salts Farm) 2009.

### Invasive species

- 3.11 The following invasive species listed under the Wildlife and Countryside Act, 1981 have been recorded within 2km of the site within the last 10 years.
  - Three-cornered garlic Widewater, Shoreham 0.2km south 2005;
  - Montbretia (*Crocosmia pottsii x aurea* = *C. x crocosmiiflora*) Within 2km 2006;
  - False acacia (Robinia pseudoacacia) Lancing College 1.7km north 2009;

- Japanese knotweed (Fallopia japonica) Within 2km of site 2006;
- Yellow archangel (*Lamium galeobdolon subsp. Argentatum*) South of Coombes (within 2km) 2006;
- Wall cotoneaster (*Cotoneaster horizontalis*) Lancing Ring 2km north-west 2006; and
- Japanese rose (*Rosa rugose*) Local nature reserve Shoreham Beach (within 2km) 2009.

### Previous reports

Land North-East of the Hassler Estate, Lancing, West Sussex - The Ecology Consultancy 2012

- 3.12 The Ecology Consultancy was commissioned to undertake a Preliminary Ecological Assessment on land to the north-east of the Hassler Estate in Lancing, West Sussex as part of the landscape and ecological survey of potential strategic allocations within Adur District for the Council's emerging Local Plan. A survey of the site was undertaken on 7th August 2012.
- 3.13 The survey identified a moderately diverse range of habitats including; buildings, hardstanding, bare ground, amenity, improved and poor semi-improved grassland, ephemeral/short perennial and tall ruderal vegetation, running water, marginal vegetation, swamp (reed bed), introduced shrub, non-native and mixed hedgerows, continuous and scattered scrub and scattered trees. The site was considered to be of ecological value at district level. Features of highest ecological value were considered to include the following;
  - Network of on-site ditches/streams that perform an important hydrological role in maintaining the wider network of off-site water bodies present across Lancing Strategic Gap, including Adur estuary SSSI;
  - Extensive areas of floodplain grazing marsh (a UK BAP priority habitat) that buffer the on-site network of ditches/streams and Adur Estuary SSSI;
  - Population of red-star thistle, a nationally rare plant listed as 'critical' in the Red Data Book of Vascular Plants and a UK BAP priority species; and,

- Extended foraging and roosting habitat for wading bird species associated with the SSSI, during periods of high-tide and through winter.
- 3.14 The survey identified a range of UK BAP habitats/species as present or potentially present within the site; however, none of the BAP habitats or populations or BAP species present on-site were considered as notable or exceptional examples of their type.
- 3.15 No badger setts were identified within the site; however, a potential badger latrine and snuffle holes were observed (see target note 7 of The Ecology Consultancy's report). Habitats were considered to have potential to support a range of protected, rare/notable and BAP species and further surveys were recommended for winter and breeding birds, roosting and foraging bats, widespread species of reptile, badgers, aquatic invertebrates, native and non-native (invasive) aquatic plants, water vole and great crested newts.
- 3.16 The report recommended that areas of grazing marsh and ditch networks are retained and protected during works on site and gave further recommendations on potential compensation and enhancement measures for the site.

### Land North-West of the Hassler Estate, Lancing, West Sussex - The Ecology Consultancy 2012

- 3.17 The Ecology Consultancy was commissioned to undertake a Preliminary Ecological Assessment on land to the north-west of the Hassler Estate in Lancing, West Sussex as part of the landscape and ecological survey of potential strategic allocations within Adur District for the Council's emerging Local Plan. A survey of the site was undertaken on 31<sup>st</sup> July 2012.
- 3.18 The survey identified a moderately diverse range of habitats including; buildings, hardstanding, bare ground, improved and poor semi-improved grassland, ephemeral/short perennial and tall ruderal vegetation, standing and running water, marginal vegetation, swamp (reed bed), introduced shrub, continuous and scattered scrub, scattered trees, roughland, non-native hedgerows and two woodland types. The report concluded that parts of the site were considered to be of ecological value up to a
district level, associated with the network of ditches/streams and associated riparian habitats including adjacent fields, tree/scrub lines and wet woodland.

- 3.19 The survey identified a range of UK BAP habitats/species as present or potentially present within the site; however, none of the BAP habitats or populations or BAP species present on-site were considered as notable or exceptional examples of their type.
- 3.20 The report recommended further surveys for winter and breeding birds, roosting and foraging bats, widespread species of reptile, badgers, terrestrial and aquatic invertebrates, native and non-native (invasive) aquatic plants, water vole and great crested newts.
- 3.21 The report recommended that ditch networks and associated marginal habitats are retained and protected during works on site and gave further recommendations on potential compensation and enhancement measures for the site.

# Preliminary Ecological Appraisal 2015

3.22 The site predominantly comprises several fields of rank and tussocky semi-improved grassland (two fields to the south–east of the site had recently been cut at the time of survey) with marginal tall ruderal vegetation and scrub, wet and dry drainage ditches with reedbeds, tree-lines, scattered trees and species-poor hedgerows.

#### Semi-improved grassland

3.23 The majority of the site comprises several fields of rank and tussocky semi-improved grassland; however, two fields to the south-east of the site had recently been cut at the time of survey. Species composition varied across the site with some fields dominated by grasses and others with a greater abundance of herbs. All areas of semi-improved grassland within the site are classed as floodplain grazing marsh (UK BAP Priority habitat).

3.24 Typical species present included cocks-foot (*Dactylis glomerata*), common couch (*Elymus repens*), false oat-grass (*Arrhenatherum elatius*), Yorkshire-fog (*Holcus lanatus*). Timothy (*Phleum pratense*), perennial rye-grass (*Lolium perenne*), creeping bent (*Agrostis stolonifera*), red fescue (*Festuca rubra*), wall barley (*Hordeum murinum*), soft brome (*Bromus hordeaceus*), barren brome (*Bromus sterilis*), common poppy (*Papaver rhoeas*), bird's-foot trefoil (*Lotus corniculatus*), silverweed (*Potentilla anserina*), cut-leaved crane's-bill (*Geranium dissectum*), common mallow (*Malva sylvestris*), ribwort plantain (*Plantago lanceolata*), chives (*Allium schoenoprasum*), common vetch (*Vicia sativa*), meadow vetchling (*Lathrus pratensis*), scarlet pimpernel (*Anagallis arvensis*), red clover (*Trifolium pratense*), white clover (*Trifolium repens*), creeping buttercup (*Ranunculus repens*), hop trefoil (*Trifolium campestre*) and mouse-ear (*Cerastium* sp).

#### Tree-lines, scattered trees and species-poor hedgerows

- 3.25 Tree-lines are present on the north and north-west boundaries of the site, predominantly associated with drainage ditches. A line of young poplar (*Populus* sp) and young crack willow (*Salix cracca*) extends part-way along the site's northern boundary with a further tree-line comprising mature and semi-mature poplar, willow (*Salix* sp), field maple (*Acer campestre*), hawthorn (*Crataegus monogyna*) and alder (*Alnus* sp) extends along the length of a dry drainage ditch on the north-western boundary of the site. Additional shrub and ground flora is this area comprised elder (*Sambucus nigra*), rose (*Rosa* sp), bramble (*Rubus fruiticosus* agg), wood avens (*Geum urbanum*), wood millet (*Millium effusum*), hogweed (*Heracleum sphondylium*), common nettle (*Urtica dioica*) and cleavers (*Galium aparine*). Some scattered yellow iris (*Iris pseudacorus*) and common reed (*Phragmites australis*) were also present within the dry ditch channel.
- 3.26 Several trees along this boundary were noted to be covered in ivy (*Hedera helix*) with some trees possessing broken limbs. In addition to this, a woodpecker hole was noted within a partially felled tree immediately to the south of the tree-line.

- 3.27 Areas of standing and fallen deadwood were noted within the dry ditch channel and mammal digging, likely to be that of rabbits was also observed in this area. A fox was seen in the dry ditch during the survey.
- 3.28 Few scattered mature, semi-mature and young trees are present on the boundaries of the site, where typical species comprise willow and hawthorn.
- 3.29 Few lengths of defunct species-poor hedgerows are present on the boundaries of the site, where they tend to be dominated by cypress (*Chamaecyparis* sp).

#### Scrub, tall ruderal vegetation and ephemeral/short perennial vegetation

3.30 Areas of scattered bramble, hawthorn and elder scrub, along with areas of tall ruderals dominated by common nettle, willowherb (*Epilobium* sp) and umbellifers are present throughout the site, predominantly located on the site boundaries and ditch margins.

#### Drainage ditches

- 3.31 Several wet and dry drainage ditches intersect the site. An overgrown ditch with very little water extends between two fields in the south-east corner of the site. This ditch comprises shallow earth embankments on either side, vegetated with rank semi-improved grassland and scattered tall ruderals. The ditch channel itself comprises dense common club-rush (*Schoenoplectus lacustris*), sea club-rush (*Scirpus maritimus*), spiked sedge (*Carex spicata*), floating sweet-grass (*Glyceria fluitans*), yellow iris and celery-leaved buttercup (*Ranunculus sceleratus*) forming reed swamp which follows the line of the ditch. Some common reed is also present at the southernmost section of the ditch. No open water was visible at the time of survey.
- 3.32 A further wet drainage ditch partially extends along the boundary to the west of the ditch in the south-east corner of the site. This ditch is bounded by semi-improved grassland and scrub on the site side to the east and an amenity grassland recreation ground outside of the site to the west. The ditch was observed to comprise steep earth

embankments with dense scrub, tall ruderals and scattered common reed present within the channel.

3.33 An extensive section of wet drainage ditch is present in the westernmost part of the site. The ditch comprises steep earth embankments vegetated with rank semi-improved grasses, tall ruderals and scattered scrub. The majority of the ditch channel (particularly in the western section of the ditch) is dominated by dense common reed with very little open water visible from the banksides. The most westerly section of this ditch, adjacent to the site boundary was dry at the time of survey with dense mats of New Zealand pigmyweed (*Crassula helmsii*) present. Small areas of open water are present to the east and north of the ditch, where water plantain (*Alisma plantago-aquatica*), celery-leaved buttercup, water crowfoot (*Ranunculus* sp) and water starwort (*Callitriche* sp) were noted within the channel.

#### **Tree Assessment for Bats**

- 3.34 Several trees are located within the boundaries of the site; however, the majority of these trees possessed no obvious features suitable for roosting bats and therefore, these trees have been classed as category 3 under table 1. Notwithstanding this, several trees that extend part-way along the site's northern boundary were noted to be covered in ivy with some trees possessing broken limbs. In addition to this, a woodpecker hole was noted within a partially felled tree immediately to the south of this tree-line on the western boundary of the site. These features are considered to have varying levels of bat potential. Ivy covered trees have been classed as category 2 under table 1, whereas trees identified with broken limbs and the felled tree with the woodpecker hole have been classed as category 1.
- 3.35 The habitats on site are likely to provide foraging opportunities for bats in the local area. It is likely that a variety of bats use the local landscape and forage around the trees, hedgerows and ditches on site and immediately adjacent to the site. Furthermore, tree lines, hedgerows and ditches provide linkages across the site and into the wider landscape providing commuting features for bats.

#### **Great Crested Newts**

3.36 No ponds were identified on site during the survey and no ponds were identified within 500m of the site using online maps and through aerial photograph interpretation. Notwithstanding this, several wet ditches are present within this site, which form a network linking ditches on site with those outside of the site boundary. Ditches within the site were generally still or with a slow current and possessed submerged, emergent and marginal aquatic vegetation suitable for egg laying great crested newts. Furthermore, fringe habitats such as tall ruderal vegetation and rank semi-improved grassland, as well as tree-lines, scrub and dry ditches are not only considered to provide suitable habitat for newts in their terrestrial phase, but also provide habitat corridors enabling movement of newts throughout the site and across the wider landscape.

#### **Other Species**

- 3.37 Hedgerows, scattered trees and scrub predominantly on the boundaries of the site, marginal vegetation and reedbeds associated with ditches and extensive areas of rank semi-improved grassland have the potential to be used by birds as nesting habitat during the breeding season. Skylark (*Alauda arvensis*) were heard singing over the site during the survey and bird's nests were observed within trees on the north-western site boundary.
- 3.38 A badger sett comprising one entrance is present within a field of rank semi-improved grassland to the north-east of the site. A spoil heap and badger guard hairs were noted at the entrance to the sett, along with several small flies which can be an indication of the sett's activity. In addition to this, anecdotal evidence suggests that an additional sett is located within dense scrub immediately to the north of the site entrance/access track on the north-eastern site boundary; however, due to the density of the vegetation, this was not able to be confirmed on the day of survey.
- 3.39 Fringe habitats associated with on-site ditches, as well as areas of rank and tussocky semi-improved grassland and tall ruderal vegetation within the site are considered to have potential to support common reptile species. These habitats provide suitable basking and hibernation sites, as well as opportunities for foraging and cover from

predators. As such, the possibility of reptiles being present needs to be considered as part of the application.

- 3.40 Water-filled ditches towards the western part of the site and to a lesser degree ditches to the east are considered to have potential to support water voles both is terms of suitable bank profiles, adequate vegetation cover and potential food resources. These ditches are also connected to ditches located outside of the site, enabling movement of water voles across the ditch network.
- 3.41 The site provides a mosaic of habitats beneficial to a range of terrestrial and aquatic invertebrates. Tree-lines, particularly along the site's north and north-western boundaries have potential to support stag beetles, particularly where significant amounts of standing and fallen deadwood is present.
- 3.42 Water-filled ditches within the site may have potential to support fish species, such as the European eel (*Anguilla Anguilla*), particularly as ditches within the site are connected to suitable off-site ditches which in turn flow into the River Adur approximately 1km to the east of the site. The mouth of the River Adur, where it meets the English Channel is approximately 3km to the east of the site.
- 3.43 Owing to a lack of suitable habitat and connectivity, the site is not considered to have potential to support species, such as dormice.

# 4.0 Discussion – Ecological Value and Implications for Development

#### **Designated sites**

4.1 The site does not fall within the boundary of any designated sites; however, several designated sites are present within 2km of the site, the closest of which (Widewater Lagoon SNCI) is located approximately 0.12km to the south of the site.

- 4.2 No internationally designated sites, such as SACs, SPAs or Ramsar sites are located within 10km of the site and no units of ancient semi-natural or ancient re-planted woodland are present within 2km of the site.
- 4.3 It is understood that the current development proposal includes for a large residential development on the site. Given the location of the site and its proximity to the designated sites, along with the nature and extent of the proposed works it is not considered likely that the development will have a significant impact on the designated sites identified within this report.

#### Habitats

#### Ecological Value of the Site

4.4 The site predominantly comprises several fields of rank and tussocky semi-improved grassland (two fields to the south-east of the site had recently been cut at the time of survey) with marginal tall ruderal vegetation and scrub, wet and dry drainage ditches with reedbeds, tree-lines, scattered trees and species-poor hedgerows. The majority of the site, some 28ha is classed as floodplain grazing marsh, which the Joint Nature Conservation Committee (JNCC) defines as being "periodically inundated pasture, or meadow with ditches which maintain the water levels, containing standing brackish or fresh water". Coastal and floodplain grazing marsh is a UK BAP priority habitat. Reedbeds, which are also present within the ditch network on site are also a UK BAP priority habitat. UK BAP priority habitats and species are those which are identified as being the most threatened and requiring conservation under the UK BAP. These habitats are of ecological value in terms of the range of species, including protected and notable species associated with them; however, these habitats are also of hydrological importance, regulating water levels across the site and wider landscape. It is therefore recommended that areas of floodplain grazing marsh and reedbed, particularly through the on-site ditch network corridor are retained and protected, where possible. It is considered likely that the hydrological impacts of development on the site will require investigation as part of the scheme.

- 4.5 The remaining habitats present on site, such as species-poor hedgerows and scrub were considered to be common and widespread throughout the UK. As such these features are of limited ecological interest.
- 4.6 Tree-lines and scattered trees predominantly on the boundaries of the site are considered to be of greater ecological value and as such should be incorporated within the developed and retained post development.

#### Bats

- 4.7 Several trees are located within the boundaries of the site; however, the majority of these trees possessed no obvious features suitable for roosting bats and therefore, these trees have been classed as category 3 under table 1. Notwithstanding this, several trees that extend part-way along the site's northern boundary were noted to be covered in ivy with some trees possessing broken limbs. In addition to this, a woodpecker hole was noted within a partially felled tree immediately to the south of this tree-line on the western boundary of the site. These features are considered to have varying levels of bat potential. Ivy covered trees have been classed as category 2 under table 1, whereas trees identified with broken limbs and the felled tree with the woodpecker hole have been classed as category 1.
- 4.8 It is considered likely that the majority of trees within the site (particularly those on site boundaries) will be retained; however, should it be necessary to remove trees identified as having potential to support roosting bats, it is recommended that these trees be surveyed for evidence of bats by an ecologist prior to felling. These should be surveyed either by endoscopic survey or dusk emergence / dawn return to roost surveys. This will show whether bats are using these trees and whether a licence for felling would be required by Natural England.
- 4.9 Tree-lines, hedgerows and ditches were considered to provide good opportunities for foraging bats. These habitats are also connected to the wider landscape ensuring that bats

can move with ease across this area using the tree-lines for shelter and protection and opportunistic foraging. Boundary features, such as species-poor hedgerows, tree-lines and ditches should therefore be maintained or enhanced, where possible. It is also considered that a bat transect survey is carried out to establish the most important areas of the site, that are used by bats for commuting.

- 4.10 Using The Bat Conservation Trusts document *Bat Surveys Good Practice Guidelines* 2<sup>nd</sup> *Edition,* Table 7.2 'Minimum recommended visit frequency and timing for activity surveys' the recommended survey effort is as follows. The site was considered to be classed as a 'large sized site' (Approximate site area is 28 ha). The habitat quality for bats on site and adjacent to site was considered to be 'low - medium' therefore it is recommended that transect surveys are carried outwith one transect per season. It is also recommended that automated surveys are carried out. This will require two locations per transect.
- 4.11 A sensitive lighting scheme should be used on site. Lighting may affect bats in several different ways. As all bats are nocturnal and tend to light sample prior to emerging from their roost, directing lighting onto a roost may disturb bats and cause them to desert the roost. Direct lighting onto the roost may also disrupt bat emergence times and therefore shorten the time available to them for foraging. Artificial lighting may also disrupt the feeding behaviour of bats. There are two aspects to this. One is the attraction that light from certain types of lamps has to a range of insects; the other is the presence of lit conditions. Furthermore, artificial lighting is thought to increase the chances of bats being preyed upon.
- 4.12 It is therefore considered that light should be directed away from features, which may be used by bats, such as trees, hedgerows and ditches around the site, maintaining these and 'dark corridors'. Indeed The Bat Conservation Trust advises the following which should be considered as part of the proposals:
  - The impact on bats can be minimised by the use of low-pressure sodium lamps or high-pressure sodium instead of mercury or metal halide lamps where glass glazing

is preferred due to its uv filtration characteristics. Lighting should be directed to where it is needed and light spillage avoided.

• This can be achieved by the design of the luminaire and by using accessories such as hoods, cowls, louvres and shields to direct the light to the intended area only. Planting can also be used as a barrier or manmade features that are required within the build can be positioned so as to form a barrier.

#### Great crested newts

- 4.13 No ponds were identified on site during the survey and no ponds were identified within 500m of the site using online maps and through aerial photograph interpretation. Notwithstanding this, several wet ditches are present within this site, which form a network linking ditches on site with those outside of the site boundary. Ditches within the site were generally still or with a slow current and possessed submerged, emergent and marginal aquatic vegetation suitable for egg laying. Furthermore, fringe habitats such as tall ruderal vegetation and rank semi-improved grassland, as well as tree-lines, scrub and dry ditches are not only considered to provide suitable habitat for newts in their terrestrial phase, but also provide habitat corridors enabling movement of newts throughout the site and across the wider landscape. It is therefore recommended that presence/likely absence surveys for great crested newts are carried out at all suitable ditches within the site.
- 4.14 It is recommended that either eDNA surveys or presence / likely absence surveys for great crested newts are undertaken. EDNA analysis involves taking water samples from the ditch networks from April June. Presence/likely absence surveys involve surveying the ditches using three different survey techniques (torching, egg searching, bottle trapping and/or netting) over four separate visits. Survey visits must be undertaken at an appropriate time of year (mid March to mid June with at least two visits between mid April and mid May) and during suitable weather conditions (night-time air temperature above 5°C with no/little wind and no rain). If great crested newts or their eggs are identified during the surveys, a further two survey visits will then be required in order to estimate population size. It should be noted that one of these further visits must also be

undertaken between mid April and mid May. Either method can be used to identify if the site is being used by GCNs. If GCNs are found to be present then any proposals will have to include a detailed mitigation strategy which must ensure that the 'favourable conservation status' of GCNs in the local area is retained.

#### **Other Species**

- 4.15 Hedgerows, scattered trees and scrub predominantly on the boundaries of the site, marginal vegetation and reedbeds associated with ditches and extensive areas of rank semi-improved grassland have the potential to be used by birds as nesting habitat during the breeding season. Skylark (UKBAP species) were heard singing over the site during the survey and bird's nests were observed within trees on the north-western site boundary.
- 4.16 As the site comprises a good mosaic of habitats, providing potential habitat for a range of bird species and several legally protected have previously been recorded on and in close proximity to the site, it is recommended that a breeding bird survey be completed on the site prior to works. Furthermore, it is recommended that any works likely to affect suitable breeding bird habitat be undertaken outside of the bird breeding season (the bird breeding season extends from end February until September). If unavoidable, it is recommended that any works affecting suitable nesting habitat on site should be carried out under ecological watching brief.
- 4.17 A badger sett comprising one entrance is present within a field of rank semi-improved grassland to the north-east of the site. In its present form, the proposed draft layout for the site includes for an area of open ground to the north and west of the site, which is in the location of the identified badger sett; however, houses are proposed for the location of the anecdotal sett to the east of the site, adjacent to the present site access. If the proposals for the site do not alter significantly, it is not considered necessary to close the identified sett to the north-east of the site; however, it is imperative that the sett does not become isolated from suitable habitat on site and within the wider landscape and therefore suitable and appropriate habitat corridors linking the site to its surrounds is to

be included within the proposed scheme. It is further recommended that at least a 30m 'no dig' area be enforced surrounding the sett with protective fencing installed in order to protect the sett during construction works. Should it become necessary to close the sett, further monitoring surveys and mitigation will be required prior to closure and a sett closure licence will need to be obtained from Natural England prior works.

- 4.18 As it is likely that badgers are using the site (particularly the margins) for foraging and commuting, it is recommended that all excavations and trenches associated with the construction phase are either covered at night or supplemented with a means of escape for any badgers that may fall into the excavation whilst foraging. It is recommended that an update badger survey be undertaken prior to works on site in order to further assess the status of the identified sett and check for any additional evidence of badgers across the remainder of the site.
- 4.19 Fringe habitats associated with on-site ditches, as well as areas of rank and tussocky semi-improved grassland and tall ruderal vegetation within the site are considered to have potential to support common reptile species. These habitats provide suitable basking and hibernation sites, as well as opportunities for foraging and cover from predators. Furthermore, the desk top study showed that reptiles have been previously recorded in close proximity to the site and that slow worms, common lizards, grass snakes and adders were translocated from Shoreham airport (approximately 0.2km to the north of the site) in 2001. It is therefore recommended that a further reptile presence/likely absence survey be undertaken within all areas of suitable vegetation.
- 4.20 This survey involves the placement of artificial refugia (roofing felt tiles) within all areas of suitable reptile habitat. These tiles are then checked at an appropriate time of year (March-October) and during suitable weather conditions (11°C-20°C hazy, intermittent sunshine with no high winds or heavy rain) over a period of seven visits, during which time the species, sex and number of any identified reptiles are recorded.
- 4.21 Water-filled ditches towards the western part of the site and to a lesser degree ditches to the east are considered to have potential to support water voles both is terms of suitable bank profiles, adequate vegetation cover and potential food resources. These ditches are

also connected to ditches located outside of the site, enabling movement of water voles across the ditch network. Although the current draft layout for the site appears to include for the retention of ditches on site, impacts such as ditch drainage, potential changes in hydrology and vegetation removal need to be considered along with indirect impacts, such as the potential for increased cat predation. It is therefore recommended that a water vole presence/likely absence survey be undertaken at all suitable ditches within the site. Surveys will take place in late spring and late summer when the water voles are active and will involve surveying the ditch edges for burrows, latrine posts and piles of cut vegetation with a 45 degree angle.

- 4.22 The site provides a mosaic of habitats beneficial to a range of terrestrial and aquatic invertebrates with tree-lines, particularly along the site's north and north-western boundaries having potential to support stag beetles, particularly where significant amounts of standing and fallen deadwood is present. It is therefore recommended that a survey of terrestrial and aquatic invertebrates be undertaken within suitable habitats across the site. It is further recommended that ditches and adjacent fringe habitats, as well as larger areas of grassland and scrub be retained and protected during development of the site and areas of standing and fallen deadwood are left in situ with the soil around these areas left undisturbed, where possible.
- 4.23 A survey undertaken in 2012 by The Ecology Consultancy identified a population of redstar thistle adjacent to farm buildings in the south-east of the site. The Ecology Partnership's survey was undertaken outside of the main recognised flowering period for this species and this plant was not identified on the site at the time of survey. This species of plant is listed as 'critical' in the Red Data Book of Vascular Plants as well as a UK BAP priority species. It is therefore recommended that a further survey for this species be undertaken at the site during the recognised flowering season in order to confirm its presence, which can be undertaken in parallel with the further protected species surveys recommended within this report.
- 4.24 An area of New Zealand pigmyweed was identified within a section of dry ditch to the south-west of the site. This plant is listed as an invasive non-native species under Schedule 9 of the Wildlife and Countryside Act, 1981 where it is an offence to spread this

species or otherwise cause it to grow in the wild. If left uncontrolled, this plant forms dense mats which may out compete other aquatic plant species and is thought to cause oxygen depletion of the underlying water leading to a decline in invertebrates, amphibians and fish. It is therefore recommended that a treatment strategy be devised and implemented throughout the ditch network in order to eradicate this species from the site.

4.25 Owing to a lack of suitable habitat and connectivity, the site is not considered to have potential to support species, such as dormice.

#### **General Site Enhancements**

- 4.26 A number of enhancements can be made to the final development to help reduce potential ecological impacts. It is important to utilise native species of local provenance in landscaping schemes to enhance the ecological value of a development.
- 4.27 Bird boxes may be hung on retained mature trees to increase the number of breeding opportunities throughout the site. Recommended boxes include:
  - Schwegler 1N Deep Nest Box give added nest protection from predators
  - Schwegler 1B Bird Box general purpose bird box, suitable for many species
- 4.28 Installation of bat boxes will also enhance the number of roosting opportunities for bats in the local area. Boxes should be hung on mature trees and have clear flight paths. Recommended boxes include:
  - Schwegler 2F This box simulates crevices inside to allow suitable habitats for crevice-dwellers
  - Schwegler 1FD This box is a larger version of the 2F
  - Schwegler 1FW This box is suitable for maternity or hibernation roosts

- 4.29 Any trees that are removed should be replaced elsewhere on the site or with native species such as: oak (*Quercus* sp), ash (*Fraxinus excelsior*), hazel (*Corylus avellana*), beech (*Fagus sylvatica*) and cherry (*Prunus* sp), this will mitigate against the loss of habitat that could be considered important under planning local policies. Native tree and shrub planting can be used to link gaps within the boundary features onsite.
- 4.30 The use of wildflower mixes to increase the biodiversity of existing grassland and any proposed lawn areas or public open spaces, will enhance the ecological value of the site for a range of important invertebrates.
- 4.31 Log and rubble piles can be built to provide hibernacula for species such as common amphibian species and reptile species.
- 4.32 Creation of swales and/or SUDs as part of the development can further enhance the site. These waterbodies should be linked to the wider landscape through the protection and enhancement of tree lines and associated grassland strips. Wetlands and ponds, swales or ditches can be planted to enhance invertebrate species on the site and provide breeding opportunities for great crested newts and other amphibian species. These habitats can also be an important water source for mammals, including badgers and birds. These should be planted with species of ecological value:
  - Water mint (*Mentha aquatica*);
  - Common reed (*Phragmites australis*);
  - Soft rush (Juncus effuses);
  - Water plantain (*Alisma plantago-aquatica*);
  - Meadowsweet (*Filipendula ulmaria*);
  - Yellow flag iris (*Iris pseudacorus*).
- 4.33 Edge of the wetland habitats can also be planted. These areas, where it may be a little more damp and muddy can be planted with the following:
  - Fools water cress (Apium nodiflorum),

- Marsh marigold (Caltha palustris),
- Meadowsweet (Filipendula ulmaria),
- Brooklime (Veronica beccabunga),
- Water forget-me-not (Mysotis scorpioides),
- Water figwort (Scrophularia auriculata),
- Watercress (Nasturtium officinale),
- Water crowfoot (*Ranunculus sp*),
- Starwort (*Callitriche sp*).
- 4.34 The incorporation of these in the design of the site will greatly enhance the site for local wildlife. Log piles can be incorporated into the design to encourage invertebrates, as well as hedgehogs and amphibian and reptile species.
- 4.35 A community orchard could be included within an area of open space within the site. Species that could be planted include apples, pears, plums, gages and damsons. The site margins should be planted with additional species such as blackberry and hawthorn. Spring bulbs and wild flower seeds can also be sown in the area around the orchard. Log piles too can be incorporated in this area. A community orchard provides opportunities for the local community to become involved in the natural surroundings of their new homes and engages people, providing a new community focus. Orchards are also BAP habitats and are important for invertebrates and bird, lichens and fungi species alike. Fallen fruit provides good opportunities for badgers, hedgehogs (BAP species) and bats forage in areas of high insect diversity.

## 5.0 Conclusions

5.1 The site does not fall within the boundary of any designated sites; however, several designated sites are present within 2km of the site, the closest of which (Widewater Lagoon SNCI) is located approximately 0.12km to the south of the site.

- 5.2 No internationally designated sites, such as SACs, SPAs or Ramsar sites are located within 10km of the site and no units of ancient semi-natural or ancient re-planted woodland are present within 2km of the site.
- 5.3 It is understood that the current development proposal includes for a large residential development on the site. Given the location of the site and its proximity to the designated sites, along with the nature and extent of the proposed works it is not considered likely that the development will have a significant impact on the designated sites identified within this report.
- 5.4 The site predominantly comprises several fields of rank and tussocky semi-improved grassland (two fields to the south–east of the site had recently been cut at the time of survey) with marginal tall ruderal vegetation and scrub, wet and dry drainage ditches with reedbeds, tree-lines, scattered trees and species-poor hedgerows. The majority of the site, some 28ha is classed as floodplain grazing marsh is a UK BAP priority habitat. Reedbeds, which are also present within the ditch network on site are also a UK BAP priority habitat. These habitats are of ecological value in terms of the range of species, including protected and notable species associated with them; however, these habitats are also of hydrological importance, regulating water levels across the site and wider landscape. It is therefore recommended that areas of floodplain grazing marsh and reedbed, particularly through the on-site ditch network corridor are retained and protected, where possible. It is considered likely that the hydrological impacts of development on the site will require investigation as part of the scheme.
- 5.5 The remaining habitats present in site, such as species-poor hedgerows and scrub were considered to be common and widespread throughout the UK. As such these features are of limited ecological interest.
- 5.6 Tree-lines and scattered trees predominantly on the boundaries of the site are considered to be of greater ecological value and as such should be incorporated within the developed and retained post development.

- 5.7 Several trees are located within the boundaries of the site; however, the majority of these trees possessed no obvious features suitable for roosting bats and therefore, these trees have been classed as category 3 under table 1. Notwithstanding this, several trees that extend part-way along the site's northern boundary were noted to be covered in ivy with some trees possessing broken limbs. In addition to this, a woodpecker hole was noted within a partially felled tree immediately to the south of this tree-line on the western boundary of the site. These features are considered to have varying levels of bat potential. Ivy covered trees have been classed as category 2 under table 1, whereas trees identified with broken limbs and the felled tree with the woodpecker hole have been classed as category 1.
- 5.8 It is considered likely that the majority of trees within the site (particularly those on site boundaries) will be retained; however, should it be necessary to remove trees identified as having potential to support roosting bats, it is recommended that these trees be surveyed for evidence of bats by an ecologist prior to felling.
- 5.9 Tree-lines, hedgerows and ditches were considered to provide good opportunities for foraging bats. These habitats are also connected to the wider landscape ensuring that bats can move with ease across this area using the tree-lines for shelter and protection and opportunistic foraging. Boundary features, such as species-poor hedgerows, tree-lines and ditches should therefore be maintained or enhanced, where possible. It is also considered that a bat transect survey is carried out to establish the most important areas of the site, that are used by bats for commuting.
- 5.10 No ponds were identified on site during the survey and no ponds were identified within 500m of the site using online maps and through aerial photograph interpretation. Notwithstanding this, several wet ditches are present within this site, which form a network linking ditches on site with those outside of the site boundary. Ditches within the site were generally still or with a slow current and possessed submerged, emergent and marginal aquatic vegetation suitable for egg laying. Furthermore, fringe habitats such as tall ruderal vegetation and rank semi-improved grassland, as well as tree-lines, scrub and dry ditches are not only considered to provide suitable habitat for newts in their

terrestrial phase, but also provide habitat corridors enabling movement of newts throughout the site and across the wider landscape. It is therefore recommended that surveys for great crested newts are carried out at all suitable ditches within the site.

- 5.11 Hedgerows, scattered trees and scrub predominantly on the boundaries of the site, marginal vegetation and reedbeds associated with ditches and extensive areas of rank semi-improved grassland have the potential to be used by birds as nesting habitat during the breeding season. As the site comprises a good mosaic of habitats, providing potential habitat for a range of bird species and several legally protected have previously been recorded on and in close proximity to the site, it is recommended that a breeding bird survey be completed on the site prior to works. Furthermore, it is recommended that any works likely to affect suitable breeding bird habitat be undertaken outside of the bird breeding season or under ecological watching brief.
- 5.12 A badger sett comprising one entrance is present within a field of rank semi-improved grassland to the north-east of the site. A spoil heap and badger guard hairs were noted at the entrance to the sett, along with several small flies which can be an indication of the sett's activity. In addition to this, anecdotal evidence suggests that an additional sett is located within dense scrub immediately to the north of the site entrance/access track on the north-eastern site boundary; however, due to the density of the vegetation, this was not able to be confirmed on the day of survey.
- 5.13 In its present form, the proposed draft layout for the site includes for an area of open ground to the north and west of the site, which is in the location of the identified badger sett; however, houses are proposed for the location of the anecdotal sett to the east of the site, adjacent to the present site access. If the proposals for the site do not alter significantly, it is not considered necessary to close the identified sett to the north-east of the site; however, it is imperative that the sett does not become isolated from suitable habitat on site and within the wider landscape and therefore suitable and appropriate habitat corridors linking the site to its surrounds is to be included within the proposed scheme. It is further recommended that at least a 30m 'no dig' area be enforced surrounding the sett with protective fencing installed in order to protect the sett during construction works.

- 5.14 As it is likely that badgers are using the site (particularly the margins) for foraging and commuting, it is recommended that all excavations and trenches associated with the construction phase are either covered at night or supplemented with a means of escape for any badgers that may fall into the excavation whilst foraging. It is recommended that an update badger survey be undertaken prior to works on site in order to further assess the status of the identified sett and check for any additional evidence of badgers across the remainder of the site.
- 5.15 Fringe habitats associated with on-site ditches, as well as areas of rank and tussocky semi-improved grassland and tall ruderal vegetation within the site are considered to have potential to support common reptile species. These habitats provide suitable basking and hibernation sites, as well as opportunities for foraging and cover from predators. Furthermore, the desk top study showed that reptiles have been previously recorded in close proximity to the site and that slow worms, common lizards, grass snakes and adders were translocated from Shoreham airport (approximately 0.2km to the north of the site) in 2001. It is therefore recommended that a further reptile presence/likely absence survey be undertaken within all areas of suitable vegetation.
- 5.16 Water-filled ditches towards the western part of the site and to a lesser degree ditches to the east are considered to have potential to support water voles both is terms of suitable bank profiles, adequate vegetation cover and potential food resources. These ditches are also connected to ditches located outside of the site, enabling movement of water voles across the ditch network. Although the current draft layout for the site appears to include for the retention of ditches on site, impacts such as ditch drainage, changes in hydrology and vegetation removal need to be considered along with indirect impacts, such as the potential for increased cat predation. It is therefore recommended that a water vole presence/likely absence survey be undertaken at all suitable ditches within the site.
- 5.17 The site provides a mosaic of habitats beneficial to a range of terrestrial and aquatic invertebrates with tree-lines, particularly along the site's north and north-western boundaries having potential to support stag beetles, particularly where significant

amounts of standing and fallen deadwood is present. It is therefore recommended that a survey of terrestrial and aquatic invertebrates be undertaken within suitable habitats across the site. It is further recommended that ditches and adjacent fringe habitats, as well as larger areas of grassland and scrub be retained and protected during development of the site and areas of standing and fallen deadwood are left in situ with the soil around these areas left undisturbed, where possible.

- 5.18 A survey undertaken in 2012 by The Ecology Consultancy identified a population of redstar thistle adjacent to farm buildings in the south-east of the site. The Ecology Partnership's survey was undertaken outside of the main recognised flowering period for this species and this plant was not identified on the site at the time of survey. It is therefore recommended that a further survey for this species be undertaken at the site during the recognised flowering season in order to confirm its presence, which can be undertaken in parallel with the further protected species surveys recommended within this report.
- 5.19 An area of invasive non-native New Zealand pigmyweed was identified within a section of dry ditch to the south-west of the site. It is therefore recommended that a treatment strategy be devised and implemented throughout the ditch network in order to eradicate this species from the site.
- 5.20 Owing to a lack of suitable habitat and connectivity, the site is not considered to have potential to support species, such as dormice.
- 5.21 Recommendations for enhancements have been made within this report, aimed at improving the ecological value of the site post development. Other general enhancements have been given as part of this report.

# 6.0 References

Mitchell-Jones, A.J. (2004) Bat Mitigation Guidelines. English Nature, Peterborough.

Bat Conservation Trust (2012). *Bat Surveys – Good Practice Guidelines*. Bat Conservation Trust, London.

Bat Conservation Trust (2008). *Bats and Lighting in the UK – Bats and the built environment series, (Version 2).* Bat Conservation Trust, London.

Francis Rose (1981) The Wildflower Key – British Isles-N.W Europe. Penguin Group, London.

Great Crested Newt Mitigation Guidelines. English Nature 2001. http://www.naturalengland.org.uk

Langton, T.E.S., Beckett, C.L., and Foster, J.P. (2001), *Great Crested Newt Conservation Handbook*, Froglife, Halesworth.

Natural England (2011) *Badgers and Development: A guide to best practice and licensing*. Natural England, Bristol

Neal, E. and Cheeseman, C. (1996) *Badgers*. T & A D Poyser Ltd. London. The Ecology Consultancy (2012) *Land North-East of the Hassler Estate, Lancing, West Sussex*.

The Ecology Consultancy (2012) Land North-West of the Hassler Estate, Lancing, West Sussex.

GB Non Native Species Secretariat: www.nonnativespecies.org

Magic Interactive Map: www.magic.gov.uk

Google Maps: www.google.com/maps

Appendix 1: Habitat Map





| S                           | emi-improved grassland |  |
|-----------------------------|------------------------|--|
| H                           | lardstanding           |  |
| В                           | roadleaved woodland    |  |
| s 🐹                         | crub                   |  |
| Т                           | all ruderal vegetation |  |
| V                           | Vet ditch              |  |
| D                           | ry ditch               |  |
| <del>+++++</del> s          | pecies-poor hedgerow   |  |
| Т                           | ree                    |  |
| В                           | adger sett entrance    |  |
| <b></b> s                   | urvey boundary         |  |
|                             |                        |  |
|                             |                        |  |
| Site: New Salts Farm        |                        |  |
|                             |                        |  |
| Survevor: VH                |                        |  |
| Survey Date: 23rd June 2015 |                        |  |
| Drawing Title: Habitat Man  |                        |  |
|                             |                        |  |
|                             |                        |  |
|                             |                        |  |
|                             |                        |  |
|                             |                        |  |
|                             |                        |  |

Appendix 2: Photographs











Appendix 3: Desk Study Data



# Desktop Biodiversity Report

# Land at New Salts Farm, Shoreham + 2km buffer

ESD/15/443

Prepared for Vicky Hale (PJC Ecology)

23rd June 2015



Sussex Biodiversity Record Centre report regarding land at New Salts Farm, Shoreham + 2km buffer 23/06/2015

> Prepared for Vicky Hale PJC Ecology Ltd ESD/15/443

## The following information was requested:

| Maps                              | ✓ |
|-----------------------------------|---|
| Sussex Protected Species Register | ✓ |
| Sussex Bat Inventory              | ✓ |
| Sussex Bird Inventory             | ✓ |
| UK BAP Species Inventory          | ✓ |
| Sussex Rare Species Inventory     | ✓ |
| Sussex Invasive Alien Species     | ✓ |
| Full Species List                 | ✓ |
| Environmental Survey Directory    | ✓ |

#### SNCI

Ad01 - Mill Hill; Ad02 - Lancing Ring; Ad03 - Shoreham Beach; Ad06 - River Adur Meadows.

# SSSI

Adur Estuary.

## **Other Designations/Ownership**

Environmental Stewardship Agreement; Local Geological Site; Local Nature Reserve; National Park; Notable Road Verge; RSPB Reserve.

#### Habitats

Ancient tree; Chalk stream; Coastal and floodplain grazing marsh; Coastal saltmarsh; Coastal vegetated shingle; Intertidal mudflat; Lowland calcareous grassland; Saline lagoon; Traditional orchard; Wood-pasture and parkland.

# Important information regarding this report

#### It must not be assumed that this report contains the definitive species information for the site concerned.

The species data held by the Sussex Biodiversity Record Centre (SxBRC) is collated from the biological recording community in Sussex. However, there are many areas of Sussex where the records held are limited, either spatially or taxonomically.

A desktop biodiversity report from SxBRC will give the user a clear indication of what biological recording has taken place within the area of their enquiry. The information provided is a useful tool for making an assessment of the site, but should be used in conjunction with site visits and appropriate surveys before further judgements on the presence or absence of key species or habitats can be made. It may be that the content of this report guides the reader as to which surveys should be carried out on the site.

This report was compiled using data held at SxBRC at the time of production. SxBRC takes data validation very seriously, but cannot be held responsible for the accuracy of data included in this report.

# Copyright

The Sussex Biodiversity Record Centre must be acknowledged in all documents containing any part of the information contained in this report. You can also use the whole of a SxBRC report (unedited) as an appendix in your own report.

The SxBRC operates as agent to the individuals and groups who provide their records free of charge. The data suppliers retain copyright on their data, while SxBRC retains copyright on its desktop biodiversity reports.

#### Data usage

The data contained within this report is for use in the project for which the data was requested. It is not to be shared with third parties for use in other projects, unless permission is granted from SxBRC.

The data may be used for 12 months, after which a replacement SxBRC report must be requested. This ensures the most up-to-date information is being used.

#### **Ordnance Survey maps**

Members of the public wishing to reproduce maps made by SxBRC under East and West Sussex County Council or Brighton and Hove City Council licences must use copying facilities that have been authorised by Ordnance Survey (OS). Further information can be found on the <u>OS website</u>.

# Impartiality

SxBRC functions as custodian of biological data. Our role is to collect, manage and disseminate wildlife and habitat data. As such, we have to remain impartial and cannot offer opinions on the biodiversity value of a given site. Similarly, we cannot put forward objections to planning applications or be involved in campaigns.

# **Supplying records**

Our desktop biodiversity reports are only as good as the data we hold. We rely on the continuous submission of records to keep our database up-to-date. We are always grateful to receive records from ecological consultants and members of the public alike. We accept records in many different formats – please see our <u>website</u> for more details.

# **Confidential Records**

# The following species are not included in desktop biodiversity reports

# Badgers

Badgers are one of our most recognisable native British mammals. They are not considered rare but are protected along with their setts under The Protection of Badgers Act 1992 and schedule 6 of the Wildlife and Countryside Act (1981, as amended).

It is an offence to kill, injure, or take a badger or interfere with a badger sett.

"Interference" is defined by section 3 of The Protection of Badgers Act and includes damaging or destroying a badger sett, obstructing any entrance to a sett and also disturbing a badger when it is occupying a sett. If you need to do any work near to a sett (within 30m) you must contact Natural England for guidance as your activities may require a licence.

# With continued persecution of badgers, often for the most cruel and barbaric 'sport', badger records are <u>not</u> included in our species inventory reports, as it has been requested that they remain confidential.

If you need further information about badgers in your enquiry area please contact the Badger Trust Sussex. Contact details can be found on their website: <u>www.badgertrust-sussex.org.uk</u>

# Otters

Otters are slowly making a return to Sussex after becoming extinct in the 1960s, but are nowhere near their former numbers and remain very vulnerable.

If there is a river or tributary within 1km of your enquiry area please be aware of the potential for otters in the vicinity, especially if you are undertaking operations that may impact potential otter habitat.

Otters are protected by European and UK law. It is an offence under the Wildlife and

Countryside Act 1981 to kill, injure or take an otter from the wild without a licence; to damage or obstruct a holt; or disturb an otter in its resting place. Licences are required for checking holts or for carrying out work that may disturb otters, such as the management of trees that are known to be used as resting sites. Natural England are responsible for issuing these licences in England.

If you need to find out if otters have been recorded in your enquiry area, please get in touch with the Record Centre.

# Wood White and Duke of Burgundy butterflies

These two rare butterfly species have a very restricted range in Sussex and records have been made confidential based on advice given from Butterfly Conservation Sussex Branch.

# Other confidential records

SxBRC holds records of other species that are confidential. Confidentiality can be for a variety of reasons but is usually to benefit the site or the species. If you need to know if any confidential records have been recorded in your enquiry area, please get in touch with the Record Centre.





# MAPS

There are three maps included in a standard desktop biodiversity report which show designated sites (statutory and non-statutory); habitats and natural features; and ownership and management.

The key on a map only shows those layers which are located within the enquiry area or immediate area. Below is a list of all layers which we currently show on our maps, with details of the data source. Citation sheets and further information on each layer can be found towards the back of the pdf report.

| Designated sites                                      |   |  |
|---|---|--|
| Statutory   |   |  |
| Area of Outstanding Natural Beauty (AONB)             | Downloaded from NE website.   |  |
| Country Park  | Downloaded from NE website.   |  |
| Local Nature Reserve (LNR)                            | Downloaded from NE website.   |  |
| Marine Site of Nature Conservation Importance (MSNCI) | Supplied by ESCC in 2005.   |  |
| National Nature Reserve (NNR)                         | Downloaded from NE website.   |  |
| National Park   | Downloaded from NE website.   |  |
| Ramsar  | Downloaded from NE website.   |  |
| Site of Special Scientific Interest (SSSI)            | Downloaded from NE website.   |  |
| Special Area of Conservation (SAC)                    | Downloaded from NE website.   |  |
| Special Protection Area (SPA)                         | Downloaded from NE website.   |  |
| Non-Statutory   |   |  |
| Local Geological Site (LGS)                           | Originally supplied as hand drawn maps by the Booth Museum<br>(Brighton) in 2009, LGS boundaries were digitised by SxBRC. Site<br>boundaries are now administered by SxBRC and the Sussex Geodiversity<br>Partnership and have been further improved as a result of ground<br>surveys between 2010 to 2012. |  |
| Notable Road Verge                                    | Owned and provided by ESCC and WSCC.  |  |
| Site of Nature Conservation Importance (SNCI)         | Supplied by WSCC, ESCC & BHCC.  |  |
| Habitats and natural features                         |   |  |
| Ancient/veteran tree                                  | Merged dataset created in July 2009. Data from Ancient Tree Hunt<br>(national survey carried out in 2007/2008) and Tree Register of the<br>British Isles (a charity which collates and updates data on notable trees).  |  |
| Ancient woodland                                      | Downloaded from NE website.   |  |
| Black poplar  | Created by SxBRC based upon species records arising from Sussex Wetland Landscapes Project.   |  |
| Chalk stream  | Created and owned by SWLP and SxBRC.  |  |
| Coastal & floodplain grazing marsh                    | Downloaded from NE website.   |  |
| Coastal saltmarsh                                     | Supplied by EA, based on data from the SRCMP Habitat Mapping Project.   |  |
| Coastal sand dune                                     | Supplied by EA, based on data from the SRCMP Habitat Mapping Project.   |  |
| Coastal vegetated shingle                             | Downloaded from NE website.   |  |
| Ghyll woodland  | Boundaries drawn on paper maps by Dr Francis Rose which were then digitised by SxBRC. Not ground-truthed.   |  |
| Intertidal chalk                                      | Supplied by EA, based on data from the SRCMP Habitat Mapping Project.   |  |
| Intertidal mudflat                  | Supplied by EA, based on data from the SRCMP Habitat Mapping Project.  |  |  |
|-------------------------------------|--|--|--|
| Lowland calcareous grassland        | Merged dataset from NE and SDJC sources, created in 2005.<br>Administered by SxBRC.  |  |  |
| Lowland fen                         | Created by SxBRC in June 2011. Layer is an amalgamation of all the fen data currently available to SxBRC.  |  |  |
| Lowland heathland                   | High Weald Heathland data created by the High Weald Unit in 2006. The rest of Sussex Heathland data was created by SxBRC, with funding from WSCC and RSPB in 2007. |  |  |
| Lowland meadow                      | Downloaded from NE website.  |  |  |
| Maritime cliff and slope            | Supplied by EA, based on data from the SRCMP Habitat Mapping Project.  |  |  |
| Open water                          | Derived from OS mapping. This includes inland and tidal, running and standing water.   |  |  |
| Reedbed                             | Created by SxBRC in June 2011. Layer is an amalgamation of all the reedbed data currently available to SxBRC.  |  |  |
| Saline lagoon                       | Created by SxBRC.  |  |  |
| Traditional orchard                 | Downloaded from NE website.  |  |  |
| Wood-pasture & parkland             | Downloaded from NE website.  |  |  |
| Ownership and management            |  |  |  |
| Environmental Stewardship Agreement | Downloaded from NE website.  |  |  |
| National Trust property             | Owned and provided by National Trust.  |  |  |
| RSPB reserve                        | Owned and provided by RSPB. Downloadable from their website.   |  |  |
| Sussex Wildlife Trust reserve       | Created and maintained by SxBRC on behalf of SWT.  |  |  |
| Woodland Trust site                 | Owned and provided by the Woodland Trust.  |  |  |

#### Abbreviations

| Brighton and Hove City Council                  |
|---|
| Environment Agency                              |
| East Sussex County Council                      |
| Natural England                                 |
| People's Trust for Endangered Species           |
| Royal Society for the Protection of Birds       |
| South Downs Joint Committee                     |
| Strategic Regional Coastal Monitoring Programme |
| Sussex Biodiversity Record Centre               |
| Sussex Wetland Landscapes Project               |
| Sussex Wildlife Trust                           |
| West Sussex County Council                      |
|   |

# Natural England datasets

These are available for anyone to download and use in their own Geographical Information System (GIS). Visit <u>www.gis.naturalengland.org.uk</u> for more information and register as a user.



SNCI

SSSI

LNR LGS

Notable road verge

National Park

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RAMSAR, Special Area of Conservation (SAC), Special Protection Area (SPA), National Park, Area of Outstanding Natural Beauty (AONB), National Nature Reserve (NNR), Site of Special Scientific Interest (SSSI), Local Nature Reserve (LNR) and Country Park data reproduced with permission of Natural England. Site of Nature Conservation Importance (SNCI) data provided by East and West Sussex County Councils, and Brighton & Hove City Council. Notable Road Verge data supplied by East and West Sussex County Councils. Local Geological Site (LGS) data created by SxBRC in partnership with Sussex Geodiversity Group. © Crown Copyright. All rights reserved 2015.



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Ancient woodland, traditional orchards, woodpasture and parkland, vegetated shingle and saline lagoon data reproduced with permission of Natural England. Revised coastal and floodplain grazing marsh data remains provisional and is also reproduced with permission of Natural England. Chalk grassland data supplied by Natural England and South Downs Conservation Board. Black Poplar data supplied by Sussex Wetland Landscapes Project. Ghyll woodland data supplied by Dr Francis Rose. Reedbed data funded by Environment Agency and West Sussex County Council is provided by Sussex Biodiversity Record Centre and maintained by RSPB. Heathland data funded by West Sussex County Council, RSPB and High Weald AONB Unit. Ancient/veteran tree data derived from results of the Ancient Tree Hunt Project and the Tree Register of the British Isles (TROBI). South East Coastal Habitat Mapping data reproduced with permission of Environment Agency. © Crown Copyright. All rights reserved 2015.

Habitat data held by Sussex Biodiversity Record Centre (SxBRC) are created in-house or obtained from a variety of dataset providers. SxBRC continually strive to further improve and update these data wherever possible. However, this map should be treated as indicative rather than definitive: data may be generated from a range of field survey and/or predictive methods, each of which may have its own inherent limitations. In some situations a recent ground survey may be required to establish definitively the current status of a particular habitat at a specific location.

Ancient/veteran tree
 Chalk stream
 Intertidal mudflat
 Coastal vegetated shingle
 Saline lagoon
 Coastal saltmarsh
 Open Water
 Traditional orchard
 Wood-pasture & parkland

Lowland calcareous grassland Coastal & floodplain grazing marsh



Species search area

**RSPB** reserve

**Environmental Stewardship Agreements:** 

Higher Level Stewardship (HLS)

Entry Level Stewardship (ELS) **Organic ELS** 

Organic ELS plus HLS

ELS plus HLS

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# SUMMARY REPORT

# Land at New Salts Farm, Shoreham + 2km buffer

23 June 2015 ESD/15/443 Search Area: TQ1704 toTQ2205; TQ1703 to TQ1903; TQ1806 to TQ2106 Vicky Hale (PJC Ecology)

| Protected Species Register (not including bats, badgers, otters or birds) |     |
|---|-----|
| Number of species recorded  | 12  |
| European Directorial Species  |     |
| European Protected Species  |     |
| Number of species recorded  | 13  |
| Bats  |     |
| Number of species recorded  | 10  |
| Birds   |     |
| Number of species recorded  | 294 |
| Number of BoCC Red list species recorded                                  | 48  |
| Number of BoCC Amber list species recorded                                | 111 |
| Number of W&CA Schedule 1 species recorded                                | 71  |
| Number of significant breeding bird records                               | 230 |
|   |     |
| BAP species (not including bats or birds)                                 |     |
| Number of species recorded  | 63  |
| Rare Species (not including bats, birds or otters)                        |     |
|   | 100 |
| Number of species recorded  | 106 |
| Invasive Alien Species  |     |
| Number of species recorded  | 19  |
|   |     |

# The Protected Species Register does not include bat, bird, badger or otter records.

Bat and bird records are included in separate inventories, while badger and otter records are not included in SxBRC reports.

The Sussex Protected Species Register (PSR) consists of species of plants, fungi and animals that are protected under Schedules 5, 6 and 8 of the Wildlife and Countryside Act 1981 and other legislation.

# Please note the following limitations to the PSR:

- PSR records are labelled so that only one record per species per grid reference is included in a SxBRC report. This will usually be the most up to date record.
- If a protected species record appears in a SxBRC biodiversity report it does not mean that the species is still present. It means that the protected species was recorded last at that time and place by the recorder listed. The implications of the record should be further evaluated, and a survey to establish the current status of the species may be required.
- If there is no record of any particular protected species, this does not confirm that the species is absent from the site in question. It may mean that it has not been recorded, that the site has not been surveyed for this species, or that the Record Centre has not been informed of its presence.
- Some sites are part of the National Dormouse Monitoring Programme (NDMP) and therefore we are likely to hold historic records/more detailed information. If NDMP is mentioned in the location name of a record and you would like the historic dormouse data for that site, please contact the SxBRC.

# Wildlife Protection Legislation in England

Legislation that protects wildlife in England exists at the European and national level.

## **European law**

Legislation produced at a European level is an EU Directive, produced to have an effect at national level as regulations. The most relevant regulation for biodiversity is the 'Conservation of Habitats & Species Regulations 2010 (informally known as 'The Habitats Directive'). Further information can be found here: <a href="https://www.naturenet.net/law/habsregs.html">www.naturenet.net/law/habsregs.html</a>

# **National law**

The Wildlife and Countryside Act (WCA) 1981 (as amended), strengthened by the Countryside and Rights of Way Act 2000, are together the most important legislation aimed at protecting wildlife in England. The Wildlife and Countryside Act is divided into four parts, details of which are available from: www.naturenet.net/law/wcagen.html

# Species protection is provided under Schedules 1, 5, 6 and 8 of the WCA:

**Schedule 1: Birds** – Please refer to the Sussex Bird Inventory results and explanation sheet in your SxBRC biodiversity report.

# Schedule 5: Protected animals (other than birds)

Intentional or reckless killing, injuring, taking, possessing, disturbing and selling (including parts and derivatives) as well as damaging, destroying or obstructing access to any structure or place of refuge etc. are prohibited. N.B. Protection of some species is limited to certain sections of the Act, which are indicated in the lists as follows:

Section 9(1) Protection limited to intentional killing, injury or taking.

**Section 9(2)** Protection limited to possessing and controlling.

- **Section 9(4a)** Protection limited to damaging, destroying or obstructing access to any structure or place used by the animal for shelter or protection.
- **Section 9(4b)** Protection limited to disturbing the animal while it is occupying any structure or place which it uses for shelter or protection.
- **Section 9(5a)** Protection limited to selling, offering for sale, possessing or transporting for the purpose of sale (live or dead animal, part or derivative).
- **Section 9(5b)** Protection limited to advertising for buying or selling such things.

## Schedule 6: Animals which may not be killed or taken by certain methods

Methods include traps and nets, poisons, automatic weapons, electrical devices, smokes/gases and various others. Even humane trapping for research requires a licence.

## Schedule 8: Protected plants and fungi

Intentional picking, uprooting, destroying, trading (including parts and derivatives) etc. are prohibited. Under the Wildlife and Countryside Act, all wild plants in Britain are protected from intentional uprooting by an unauthorised person. Land owners, land occupiers, persons authorised by either of these, or persons authorised in writing by the Local Authority for the area are however exempt from this, except for Schedule 8 species which you can see on this website: <a href="https://www.naturenet.net/law/sched8.html">www.naturenet.net/law/sched8.html</a>

## Legislation protecting bats

Please refer to the explanation sheet of the Sussex Bat Inventory within your SxBRC biodiversity report, or visit the <u>SxBRC website</u>.

## Legislation protecting badgers and otters

Please refer to the 'Confidential Records' sheet at the start of the report for information on badger and otter records in Sussex.



# SUSSEX PROTECTED SPECIES REGISTER REPORT

Please note that bat, bird, badger and otter records are not included in this report.

Land at New Salts Farm, Shoreham + 2km buffer

23 June 2015 ESD/15/443 Search Area: TQ1704 toTQ2205; TQ1703 to TQ1903; TQ1806 to TQ2106 Vicky Hale (PJC Ecology)

# Gammarus insensibilis

# Lagoon Sand-shrimp

#### Crustacean

A widespread but rare sand shrimp of coastal saline lagoons. Recorded in our area from Thorney Great Deep, Birdham Pool and Widewater all in West Sussex.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; Sussex Biodiversity Action Plan; Sussex Protected Species Register; Sussex Rare Species Inventory; UK Biodiversity Action Plan priority species; Wildlife and Countryside Act 1981 Schedule 5 Sections (9.1 killing/injuring; 9.1 taking; 9.2; 9.4; subdivision a; 9.4b; 9.5a; 9.5b; Schedule 5)

| Grid Reference | Recorder    | Date       | Locality                                 |
|----------------|-------------|------------|--|
| TQ19840413     | Ben Rainbow | 25/07/2013 | Widewater Lagoon LNR, West Sussex (VC13) |
| TQ19980418     | Ben Rainbow | 25/07/2013 | Widewater Lagoon LNR, West Sussex (VC13) |

# Triturus cristatus

# **Great Crested Newt**

#### Amphibian

The largest British newt. It is black or dark brown and the males have a crest along the back and an orange underside spotted with black. Frequently confused with male smooth newts, which also have a crest. The great crested newt prefers larger, open ponds that are free of fish and waterfowl and has declined substantially in Britain and across Europe, mainly due to habitat loss. The species is fully legally protected and Britain has special responsibility for its conservation as some of the best European populations occur here. Scattered across East and Central Sussex but scarce in the west.

#### Designations

Bern Convention Appendix 2; European Protected Species; Habitats Directive Annex 2 - non-priority species; Habitats Directive Annex 4; Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; Sussex Biodiversity Action Plan; Sussex Protected Species Register; UK Biodiversity Action Plan priority species; Wildlife and Countryside Act 1981 Schedule 5 Sections (9.4b; 9.5a; 9.5b; Schedule 5)

| Grid Reference | Recorder                            | Date       | Locality  |
|----------------|-------------------------------------|------------|---|
| TQ213055       | SARG Sussex Amphibian & Reptile Grp | 01/01/1993 | The Meads, Victoria Road, Shoreham,<br>West Sussex (VC13) |

# Delphinus delphis

# **Common Dolphin**

## Marine mammal

Widely distributed in temperate marine waters of the Atlantic and Pacific Oceans. Although it remains abundant globally, several regional populations are thought to be in serious trouble. In Atlantic waters off western Europe there has been large-scale and recurrent mortality in trawl nets, tuna driftnets, and sink gillnets. Not infrequent in Sussex waters and sometimes stranded on our beaches.

#### Designations

Bern Convention Appendix 2; Convention on Migratory Species; Appendix 2; EC CITES Annex A; European Protected Species; Habitats Directive Annex 4; Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; Sussex Biodiversity Action Plan; Sussex Protected Species Register; UK Biodiversity Action Plan priority species; Wildlife and Countryside Act 1981 Schedule 5 Sections (9.4; subdivision a; 9.4b; 9.5a; 9.5b; Schedule 5)

| Grid Reference | Recorder     | Date       | Locality            |
|----------------|--------------|------------|---------------------|
| TQ188036       | Trevor Weeks | 21/03/2005 | Lancing, Lancing CP |

# Tursiops truncatus

**Bottle-Nosed Dolphin** 

#### Marine mammal

A large dolphin up to 4 m long, with a dark to light grey back that fades to white on its underside. May be found from deep coastal waters to the shallower areas off river entrances. Resident populations are known from Wales, Scotland and the west coast of Ireland. Recorded from time to time off the south west and south coasts of England, including Sussex.

A legally protected species

#### Designations

Bern Convention Appendix 2; Convention on Migratory Species; Appendix 2; EC CITES Annex A; European Protected Species; Habitats Directive Annex 2 - non-priority species; Habitats Directive Annex 4; Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; Sussex Biodiversity Action Plan; Sussex Protected Species Register; UK Biodiversity Action Plan priority species; Wildlife and Countryside Act 1981 Schedule 5 Sections (9.4; subdivision a; 9.4b; 9.5a; 9.5b; Schedule 5)

| Grid Reference | Recorder              | Date       | Locality                         |
|----------------|-----------------------|------------|----------------------------------|
| TQ189034       | Russel Wilson         | 03/04/2002 | Lancing, Lancing Sea             |
| TQ193036       | Brian Street          | 29/01/2004 | Lancing Beach, Lancing Sea       |
| TQ197038       | Anon                  | 03/05/2007 | Lancing Beach                    |
| TQ2104         | Sussex Mammal Records | 08/07/1921 | Shoreham                         |
| TQ218042       | Stephen Savage        | 27/05/1999 | Shoreham sea, West Sussex (VC13) |
| TQ225042       | Joy Hall              | 26/03/2002 | Shoreham-by-Sea, Shoreham Sea    |
| TQ226042       | Paul Willis           | 11/07/2006 | Shoreham, Shoreham Sea           |

## Arvicola amphibius

# European Water Vole

#### **Terrestrial mammal**

The fastest declining native British mammal, the water vole was 'Ratty' in Wind in the Willows. Water voles prefer slow flowing streams, rivers and dykes with steep earth banks and luxuriant emergent vegetation. They have been in decline for over a century mainly due to loss of habitat while the presence of American mink has greatly hastened this decline. In many areas of mainland Britain water voles are already extinct but there are still some strong populations in Sussex. A legally protected species, listed on the Sussex Rare Species Inventory and the subject of a Sussex Species Action Programme.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; Sussex Biodiversity Action Plan; Sussex Protected Species Register; Sussex Rare Species Inventory; UK Biodiversity Action Plan priority species; Wildlife and Countryside Act 1981 Schedule 5 Sections (9.1 killing/injuring; 9.1 taking; 9.2; 9.4; subdivision a; 9.4b; 9.5a; 9.5b; Schedule 5)

| Grid Reference | Recorder | Date        | Locality                                 |
|----------------|----------|-------------|--|
| TQ207048       | Anon     | 1989 - 1990 | Shoreham backwater, West Sussex (VC13)   |
| TQ208068       | Unknown  | 1989 - 1990 | Adur meadows, Mill Hill, Shoreham-by-Sea |

# Anguis fragilis

## Slow-worm

# Reptile

A legally protected legless lizard resembling a small snake. Slow-worms are widespread in southern England and found in open habitats such as rough grassland, heath and on road and railway embankments. They are often common in urban and suburban areas. Like most reptiles and amphibians they have declined considerably and need protection wherever they occur.

# Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; Sussex Biodiversity Action Plan; Sussex Protected Species Register; UK Biodiversity Action Plan priority species; Wildlife and Countryside Act 1981 Schedule 5 Sections (9.1 killing/injuring; 9.5a; 9.5b)

| Grid Reference | Recorder  | Date                        | Locality  |
|----------------|---|-----------------------------|---|
| TQ1704         | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 15/05/1995                  | 89, Wembley Avenue, Lancing, West<br>Sussex (VC13)                  |
| TQ1705         | SARG 2002 Leaflet                                 | 2002                        | 39 Berriedale Drive, Sompting, Lancing,<br>West Sussex (VC13)       |
| TQ172054       | Anon Bioblitz Card                                | 2010                        | Busticle Lane   |
| TQ173047       | Anon Bioblitz Card                                | 2010                        | Grafton Gardens   |
| TQ176057       | SARG 2002 Leaflet                                 | 2002                        | West Sussex, West Sussex (VC13)                                     |
| TQ178046       | SARG 2002 Leaflet                                 | 2002                        | West Sussex, West Sussex (VC13)                                     |
| TQ179052       | Anon Bioblitz Card                                | 2010                        | Pratton Avenue  |
| TQ1804         | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 11/03/1998                  | Monks Close, Lancing, West Sussex (VC13)                            |
| TQ1805         | SARG Sussex Amphibian & Reptile Grp               | 29/05/1996                  | First Avenue, Lancing, West Sussex (VC13)                           |
| TQ1806         | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/03/1991                  | 19 Firle Road, Lancing, West Sussex (VC13)                          |
| TQ182057       | Anon Bioblitz Card                                | 2010                        | Church Close  |
| TQ182061       | SARG Sussex Amphibian & Reptile Grp               | 01/07/1990                  | 26 Fairview Road, North Lancing, West Sussex (VC13)                 |
| TQ18250602     | A.J. Quelch                                       | 03/06/2013                  | North Lancing   |
| TQ183057       | SARG 2002 Leaflet                                 | 2002                        | West Sussex (VC13)  |
| TQ184057       | SARG recorder                                     | 02/07/2001                  | Mill Rd, Lancing, Lancing CP  |
| TQ185059       | Anon Bioblitz Card                                | 2010                        | Norbury Drive   |
| TQ186044       | SARG 2002 Leaflet                                 | 2002                        | West Sussex (VC13)  |
| TQ188044       | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/01/1992                  | Lancing, West Sussex (VC13)   |
| TQ188045       | SARG recorder                                     | 22/09/1999                  | The Paddocks, Lancing, Lancing CP                                   |
| TQ195065       | Barry Kemp  | 30/07/2007                  | Lancing College   |
| TQ19810572     | Simon Colenutt                                    | 08/05/2001                  | Shoreham Airport, West Sussex (VC13)                                |
| TQ199050       | recorder@EcologyConsultancyLtd                    | May 2011 - June<br>2011     | Shoreham Airport  |
| TQ200059       | Simon Colenutt                                    | July 2001 -<br>October 2001 | Shoreham Airport,NW corner, West<br>Sussex (VC13)                   |
| TQ2004         | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 17/02/1999                  | Shoreham, West Sussex (VC13)  |
| TQ2005         | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/01/1993                  | 269 Old Shoreham Road, Southwick, West Sussex (VC13)                |
| TQ209058       | SARG Sussex Amphibian & Reptile Grp               | 17/06/1998                  | 92, Connaught Avenue, Shoreham, West<br>Sussex (VC13)               |
| TQ2099905488   | Recorder @ WildCall                               | 21/09/2012                  | Downs Way link, Shoreham by Sea, West Sussex (VC13)                 |
| TQ2105         | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/01/1991                  | The Mead Allotments, Victoria Road,<br>Shoreham, West Sussex (VC13) |
| TQ2106         | SARG Sussex Amphibian & Reptile Grp               | 30/07/1998                  | Adur Avenue, Shoreham, West Sussex (VC13)                           |
| TQ211047       | SARG Sussex Amphibian & Reptile Grp               | 01/08/1988                  | Shoreham Beach, West Sussex (VC13)                                  |
| TQ212067       | Mark Elliott;Penny Green                          | 13/09/2005                  | Mill Hill Nature Reserve  |
| TQ21480454     | Jacqueline Woolcock                               | 24/04/2014                  | Shoreham Beach  |
| TQ215058       | SARG 2002 Leaflet                                 | 2002                        | West Sussex, West Sussex (VC13)                                     |
| TQ215065       | SARG Sussex Amphibian & Reptile Grp               | 22/04/1990                  | Shoreham Allotment, West Sussex (VC13)                              |

| TQ217058 | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/01/1994 | 16 Windlesham Road, Shoreham, West<br>Sussex (VC13) |
|----------|---|------------|---|
| TQ218058 | Barrie Watson                                     | 22/03/2011 | 83 Buckingham Road, Shoreham-by-Sea                 |
| TQ219059 | Anon Bioblitz Card                                | 2010       | Upper Shoreham Road                                 |
| TQ2205   | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/01/1993 | 87 Mansell Road, Shoreham, West Sussex (VC13)       |
| TQ221055 | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 10/05/1993 | Nicolson Road, Shoreham, West Sussex (VC13)         |
| TQ223047 | Anon Bioblitz Card                                | 2010       | Harbour Way   |
| TQ223055 | SARG 2002 Leaflet                                 | 2002       | West Sussex, West Sussex (VC13)                     |
| TQ223056 | Helen Swyer                                       | 07/08/2007 | Allotments, Eastern Avenue, Shoreham-by-<br>Sea     |
| TQ225044 | SARG Sussex Amphibian & Reptile Grp               | - 2002     | Shoreham Beach, West Sussex (VC13)                  |

# Natrix natrix

# Grass Snake

#### Reptile

A widespread, but legally protected, snake with a normally olive body flecked with black and a distinctive yellow collar. Frequent in Sussex near places where its food, largely frogs, is readily available. Like most reptiles and amphibians, grass snakes have declined considerably and need protection wherever they occur.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; Sussex Biodiversity Action Plan; Sussex Protected Species Register; UK Biodiversity Action Plan priority species; Wildlife and Countryside Act 1981 Schedule 5 Sections (9.1 killing/injuring; 9.5a; 9.5b)

| Grid Reference | Recorder  | Date       | Locality  |
|----------------|---|------------|---|
| TQ176057       | SARG 2002 Leaflet                                 | 2002       | West Sussex, West Sussex (VC13)                             |
| TQ178056       | Mrs Waller  | 08/08/2007 | 13 Lynchmere Avenue, North Lancing,<br>BN15 0PD, Lancing CP |
| TQ1804         | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 27/07/1994 | 15, Larkfield Close, Lancing, West Sussex (VC13)            |
| TQ1805         | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 09/08/1997 | 18, Norbury Drive, Lancing, West Sussex (VC13)              |
| TQ1806         | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 19/05/1991 | Lancing Ring, West Sussex (VC13)                            |
| TQ182061       | SARG Sussex Amphibian & Reptile Grp               | 30/07/1990 | 26, Fairview Road, North Lancing, West<br>Sussex (VC13)     |
| TQ18250602     | A.J. Quelch                                       | 03/06/2013 | North Lancing   |
| TQ184057       | SARG recorder                                     | 02/07/2001 | Mill Rd, Lancing, Lancing CP                                |
| TQ185047       | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 13/06/1994 | 3, Monks Avenue, Lancing, West Sussex (VC13)                |
| TQ188044       | SARG Sussex Amphibian & Reptile Grp               | - 2002     | 10 The Paddocks, Lancing, West Sussex (VC13)                |
| TQ19810572     | Simon Colenutt                                    | 08/05/2001 | Shoreham Airport, West Sussex (VC13)                        |
| TQ200059       | Simon Colenutt                                    | 26/08/2001 | Shoreham Airport,NW corner, West<br>Sussex (VC13)           |
| TQ2006         | SARG Sussex Amphibian & Reptile Grp               | 01/01/1990 | Shoreham, West Sussex (VC13)                                |
| TQ2104         | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 26/09/1996 | Shoreham Beach nr Pumping Station,<br>West Sussex (VC13)    |

# Zootoca vivipara

# **Common Lizard**

# Reptile

The most abundant British lizard and widespread in Sussex in the Weald and along the coast. Probably under-recorded and increasingly confined to small areas of open sunny habitat. A legally protected species due to concern about its overall decline.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; Sussex Biodiversity Action Plan; Sussex Protected Species Register; UK Biodiversity Action Plan priority species; Wildlife and Countryside Act 1981 Schedule 5 Sections (9.1 killing/injuring; 9.5a; 9.5b)

| Grid Reference | Recorder  | Date                        | Locality  |
|----------------|---|-----------------------------|---|
| TQ1804         | SARG Sussex Amphibian & Reptile Grp               | 01/01/1992                  | Field Adj. To 10 The Paddocks, Lancing,<br>West Sussex (VC13)           |
| TQ1805         | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 29/05/1996                  | Fisrt Avenue, Lancing, West Sussex (VC13)                               |
| TQ182061       | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/09/1990                  | 26 Fairview Road, North Lancing, West<br>Sussex (VC13)                  |
| TQ187057       | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/01/1993                  | Lancing, West Sussex (VC13)   |
| TQ188044       | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/01/1992                  | Lancing, West Sussex (VC13)   |
| TQ188045       | SARG recorder                                     | 22/09/1999                  | The Paddocks, Lancing, Lancing CP                                       |
| TQ190040       | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/08/1991                  | South Lancing, West Sussex (VC13)                                       |
| TQ198041       | Betty Bishop                                      | 1995                        | Shingle around Widewater Lagoon   |
| TQ19810572     | Simon Colenutt                                    | 08/05/2001                  | Shoreham Airport, West Sussex (VC13)                                    |
| TQ199043       | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/01/1995                  | Widewater, West Sussex (VC13)   |
| TQ199049       | recorder@EcologyConsultancyLtd                    | May 2011 - June<br>2011     | Shoreham Airport  |
| TQ200059       | Simon Colenutt                                    | July 2001 -<br>October 2001 | Shoreham Airport,NW corner, West<br>Sussex (VC13)                       |
| TQ2005         | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 12/06/1990                  | Bank Of River Adur By A283 Opp.<br>Shoreham Airport, West Sussex (VC13) |
| TQ206056       | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/01/1992                  | Old Shoreham, West Sussex (VC13)  |
| TQ207059       | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/01/1995                  | Coast Link, West Sussex (VC13)  |
| TQ2104         | SARG Sussex Amphibian & Reptile Grp               | 01/01/1988                  | Shoreham - By Draw-Bridge, West Sussex (VC13)                           |
| TQ211047       | SARG Sussex Amphibian & Reptile Grp               | 01/08/1988                  | Shoreham Beach, West Sussex (VC13)                                      |
| TQ215058       | SARG 2002 Leaflet                                 | 2002                        | West Sussex, West Sussex (VC13)   |
| TQ217058       | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/01/1994                  | 16 Windlesham Road, Shoreham, West<br>Sussex (VC13)                     |
| TQ222057       | SARG Sussex Amphibian & Reptile Grp               | 01/01/1988                  | 9 The Curlews, Nicolson Drive, Shoreham,<br>West Sussex (VC13)          |
| TQ223045       | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/01/1995                  | The Beach, Shoreham, West Sussex (VC13)                                 |

# Vipera berus

## Adder

## Reptile

Britain's only venomous snake, though incidences of snakebite involving man or domestic animals are relatively uncommon. Adders have a distinctive zig zag pattern of black or brown and white. They occur in open areas on downs, heaths and in heathy woods. Grass snakes and slow-worms are often misidentified as adders. Though widespread in Britain and found in suitable areas across Sussex, the adder, like all our native reptiles has declined substantially through habitat loss and other factors. The adder is a protected species and it is illegal intentionally to kill or injure them.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; Sussex Biodiversity Action Plan; Sussex Protected Species Register; UK Biodiversity Action Plan priority species; Wildlife and Countryside Act 1981 Schedule 5 Sections (9.1 killing/injuring; 9.5a; 9.5b)

| Grid Reference | Recorder  | Date        | Locality   |
|----------------|---|-------------|--|
| TQ185064       | SARG Sussex Amphibian & Reptile Grp               | 01/08/1991  | Lancing Ring, West Sussex (VC13)                   |
| TQ188061       | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/03/1994  | Base Of Lancing Hill, West Sussex (VC13)           |
| TQ189067       | SARG Sussex Amphibian & Reptile Grp               | 22/04/1990  | North Lancing Hill, West Sussex (VC13)             |
| TQ1906         | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 05/07/1999  | Lancing College, West Sussex (VC13)                |
| TQ19810572     | Simon Colenutt                                    | 08/05/2001  | Shoreham Airport, West Sussex (VC13)               |
| TQ200059       | Simon Colenutt                                    | August 2001 | Shoreham Airport, NW corner, West<br>Sussex (VC13) |

# Edwardsia ivelli

# Ivell's Sea Anemone

#### Coelenterate (=cnidarian)

Ivell's sea anemone is known from only one location in the world - Widewater Lagoon near Shoreham by Sea in West Sussex. It was last seen in 1983 and is now possibly extinct. It is a globally threatened species listed by IUCN/WCMC and is protected under Schedule 5 of the WCA 1981. 1973-1983

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; Sussex Biodiversity Action Plan; Sussex Protected Species Register; Sussex Rare Species Inventory; UK Biodiversity Action Plan priority species; Wildlife and Countryside Act 1981 Schedule 5 Sections (9.1 killing/injuring; 9.1 taking; 9.2; 9.4; subdivision a; 9.4b; 9.5a; 9.5b; Schedule 5)

| Grid Reference | Recorder      | Date | Locality         |
|----------------|---------------|------|------------------|
| TQ200060       | Richard Ivell | 1973 | Widewater Lagoon |

# Pachycordyle navis

# **Brackish Hydroid**

#### Coelenterate (=cnidarian)

A brackish water hydroid which grows to a height of 30 mm and is predominantly found attached to algae. In the UK it is known only from Widewater Lagoon, West Sussex. It was first reported in 1973 attached to Chaetomorpha algae, and was recorded again in 1983, 1985 and 1987 surveys. In 1990 it was abundant and individuals were also recorded in a 1993 survey. Fieldwork in 1997 failed to record it but subsequent laboratory analysis of samples collected during the survey revealed one individual hydroid, thought to be C. navis, attached to an Ulva lactuca plant. Known from very few sites outside the British Isles.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; Sussex Biodiversity Action Plan; Sussex Protected Species Register; Sussex Rare Species Inventory; UK Biodiversity Action Plan priority species; Wildlife and Countryside Act 1981 Schedule 5 Sections (9.1 killing/injuring; 9.1 taking; 9.2; 9.4; subdivision a; 9.4b; 9.5a; 9.5b; Schedule 5)

| Grid Reference | Recorder      | Date                       | Locality         |
|----------------|---------------|----------------------------|------------------|
| TQ200042       | Robert Irving | 16/09/1997 -<br>17/09/1997 | Widewater Lagoon |

# Petrorhagia nanteuilii

# **Childing Pink**

# Flowering plant

A protected annual of thinly vegetated, stabilised shingle. Now found in our area only in West Sussex, with most records around Pagham Harbour. Present populations could be vulnerable to adverse weather, erosion or movement of shingle.

#### Designations

IUCN (2001) - Vulnerable; Sussex Protected Species Register; Sussex Rare Species Inventory; Wildlife and Countryside Act 1981 (Schedule 8)

| Grid Reference | Recorder                | Date       | Locality   |
|----------------|-------------------------|------------|--|
| TQ20H          | Alan Knapp;Eric Clement | 25/06/2004 | Shoreham, Shoreham Sea   |
| TQ229048       | Harry Montgomery        | 16/07/2002 | Sandy shingle on N side of Shoreham<br>Beach, West Sussex (VC13) |
| TQ22910484     | Jacky Woolcock          | 23/06/2010 | Shoreham Beach   |
| TQ22910485     | Jacqueline Woolcock     | 07/06/2014 | Shoreham Beach   |
| TQ22920486     | Alan Knapp              | 23/06/2009 | Shoreham, Shoreham Sea   |
| TQ22930485     | Jacky Woolcock          | 23/06/2010 | Shoreham Beach   |
| TQ22950485     | Jacqueline Woolcock     | 07/06/2014 | Silver Sands Shoreham Beach                                      |
| TQ2297204849   | Ben Rainbow             | 13/06/2013 | Shoreham Harbour, Shoreham, West<br>Sussex (VC13)                |

# SUSSEX BAT INVENTORY



## **Bat species**

There are 18 species of bat which are resident in the UK (17 of which are known to be breeding here), all of which have been recorded in Sussex:

Barbastella barbastellus Barbastelle Eptesicus serotinus Serotine Myotis alcathoe Alcathoe Myotis bechsteinii Bechstein's Myotis brandtii Brandt's Myotis daubentonii Daubenton's Myotis myotis Greater mouse-eared Myotis mystacinus Whiskered Myotis nattereri Natterer's Nyctalus leisleri Leisler's Nyctalus noctula Noctule Pipistrellus nathusii Nathusius's pipistrelle Pipistrellus pipistrellus Common pipistrelle Pipistrellus pygmaeus Soprano pipistrelle Plecotus auritus Brown long-eared Plecotus austriacus Grey long-eared Rhinolophus ferrumequinum Greater horseshoe Rhinolophus hipposideros Lesser horseshoe

Four other bat species have been recorded in Sussex as vagrants: Savi's pipistrelle (*Hypsugo savii*), Kuhl's pipistrelle (*Pipistrellus kuhlii*), parti-coloured bat (*Vespertilio murinus*) and Geoffroy's bat (*Myotis emarginatus*).

**Five species are included in Annex II of the EU Habitats Directive:** Barbastelle, Bechstein's, greater mouse-eared, greater horsehoe and lesser horseshoe. All 18 species are included in Annex IV.

**Seven species are included in the UK Biodiversity Action Plan:** Barbastelle, Bechstein's, brown long-eared, greater horseshoe, lesser horseshoe, noctule and soprano pipistrelle.

## Background

Bats are the only mammals capable of true flight. Those found in the UK feed exclusively on insects and use a sophisticated form of sonar to navigate and catch their prey at night. In late spring and summer, female bats form maternity colonies to raise their young. This is when they are most obvious to us, as they leave the roost at or after sunset in search of food. Bats hibernate during the winter when insects are scarce, usually at a different site to the maternity roost where a constant cool temperature can be found i.e. in underground sites or within deep crevices in trees or buildings. **Bats return to the same roost sites every year, so even if the animals themselves are not present, the roost is still legally protected.** 

Unfortunately there are many misconceptions about bats. They are in fact sociable, intelligent, clean animals that rarely come into contact with humans. They do not build nests and very rarely cause structural damage to buildings.

# **Current status and threats**

Bat populations have suffered huge declines in the last century. The common pipistrelle (*Pipistrellus pipistrellus*) and soprano pipistrelle (*Pipistrellus pygmaeus*) remain the most abundant and widespread species of bat, but are thought to have suffered from a huge reduction in numbers. Estimates from a National Bat Colony Survey suggest a population decline of around 70% between 1978 and 1993.

This reduction in bat numbers is largely due to their roosts being disturbed or destroyed, a loss of suitable feeding and flightline habitat (e.g. hedgerows) and a reduction in insect numbers (e.g. through farming intensification and the use of pesticides). A number of species are now included in the National Bat Monitoring Programme (NBMP), run by the Bat Conservation Trust (BCT), which gives up-to-date information on population trends.

Bats are also particularly vulnerable to human interference for the following reasons:

- They have a low reproductive rate; generally one pup a year.
- They require specific conditions for each of their roost types.
- They are very secretive and often go unnoticed until discovered by building works or home improvements.

Consequently, bats and their roosts receive some of the highest levels of legal protection.

## Bats and the law

All species of bat and their roosts are protected by UK and European law. Bats and their roosts may also be protected by site designations, for example if their roost site or feeding grounds are notified as a Special Area of Conservation (SAC) or a Site of Special Scientific Interest (SSSI).

# You could be committing a criminal offence if you:

- 1. Deliberately capture, injure or kill a bat
- 2. Intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats
- 3. Damage or destroy a bat roosting place (even if bats are not occupying the roost at the time)
- 4. Intentionally or recklessly obstruct access to a bat roost
- 5. Possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat

# It is not illegal to:

Tend/care for a bat solely for the purpose of restoring it to health and subsequent release. (This should always be done by an experienced bat handler, contact details of which can be found through the Sussex Bat Group.)

# Licensing

If you have a bat roost in your property, it does not necessarily mean that building work cannot take place. Work can be planned so as not to interfere with the roost and at a time that bats may be absent. If you are planning any sort of work that may interfere with bats, advice must be sought first from Natural England (see contact details below). Similarly, if you discover bats <u>after</u> work has begun, you must stop and contact Natural England for their advice <u>before</u> continuing.

Licences to permit illegal activities relating to bats and their roost sites can be issued for specific purposes. It is an offence not to comply with the terms and conditions of such a licence. If you carry out work affecting bats or roosts without a licence, you will be breaking the law.

# Further advice and information:

## **Bat Conservation Trust**

The national charity working for bat conservation.

Website: <u>www.bats.org.uk</u> Bat helpline: 0845 1300 228 Email: <u>enquiries@bats.org.uk</u>

## **Natural England**

The government body responsible for issuing licences for work that may affect bats or their roosts. Website: <a href="https://www.naturalengland.org.uk/ourwork/regulation/wildlife/species/bats.aspx">www.naturalengland.org.uk/ourwork/regulation/wildlife/species/bats.aspx</a> General and licensing enquiries. Tel: 0845 601 4523 (local rate).

# Sussex Bat Group

A local voluntary group working for the conservation of bats in Sussex. Website: <u>www.sussexbatgroup.org.uk</u> Email: <u>contact@sussexbatgroup.org.uk</u>

# Sussex Biodiversity Record Centre

# SUSSEX BAT INVENTORY REPORT SUMMARY

Please note that all species of bat and their roosts are protected by UK and European law, under the Wildlife and Countryside Act 1981 (WCA) in the UK and the Habitats Directive in the EU. Bats and their roosts may also be protected by site designations, for example if their roost site or feeding grounds are notified as Special Area of Conservation (SAC) or a Site of Special Scientific Interest (SSSI).

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#### Key to Indicators

| M/S | Mating/Swarming   |
|-----|-------------------|
| Н   | Hibernaculum      |
| FR  | Feeding Roost     |
| MR  | Maternity Roost   |
| UR  | Unspecified Roost |
| D   | Droppings         |
|     |                   |

#### Land at New Salts Farm, Shoreham + 2km buffer

23 June 2015

5 ESD/15/443

Search Area: TQ1704 toTQ2205; TQ1703 to TQ1903; TQ1806 to TQ2106

Vicky Hale (PJC Ecology)

| Common Name                 | Latin Name                | No of   |                  |
|-----------------------------|---------------------------|---------|------------------|
|                             |                           | Records | M/S H FR MR UR D |
| Bat sp.                     | Chiroptera                | 5       |                  |
| Brown Long-eared Bat        | Plecotus auritus          | 1       |                  |
| Common Pipistrelle (45 kHz) | Pipistrellus pipistrellus | 11      |                  |
| Daubenton's Bat             | Myotis daubentonii        | 3       |                  |
| Grey Long-eared Bat         | Plecotus austriacus       | 1       |                  |
| Noctule Bat                 | Nyctalus noctula          | 1       |                  |
| Pipstrelle sp.              | Pipistrellus              | 9       |                  |
| Serotine                    | Eptesicus serotinus       | 4       |                  |
| Soprano Pipstrelle (55 kHz) | Pipistrellus pygmaeus     | 12      |                  |
| Unidentified Bat            | Myotis                    | 1       |                  |



#### Woods Mill, Henfield, West Sussex BN5 9SD info@sxbrc.org.uk www.sxbrc.org.uk 01273 497521

# SUSSEX BAT INVENTORY REPORT

Please note that all species of bat and their roosts are protected by UK and European law, under the Wildlife and Countryside Act 1981 (WCA) in the UK and the Habitats Directive in the EU. Bats and their roosts may also be protected by site designations, for example if their roost site or feeding grounds are notified as Special Area of Conservation (SAC) or a Site of Special Scientific Interest (SSSI).

#### You could be committing a criminal offence if you :

1. Deliberately capture, injure or kill a bat.2. Intentionally or recklessly disturb a bat in the roost or deliberately disturb a group of bats. 3. Damage or destroy a bat roosting place (even if bats are not occupying the roost at the time). 4. Intentionally or recklessly obstruct access to a bat roost. 5. Possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat.

## Land at New Salts Farm, Shoreham + 2km buffer

 23 June 2015
 ESD/15/443
 Search Area:
 TQ1704 toTQ2205; TQ1703 to TQ1903; TQ1806 to TQ2106

Vicky Hale (PJC Ecology)

# Chiroptera

# Bat sp.

Chiroptera (from the ancient Greek for 'wing hand') is the natural group, or order, that covers all the bats. In Britain we have 18 bat species and all have the highest level of legal protection. Many people simply record bats in general when they are not able to assign them to a particular species and these are then included under Chiroptera in our reports.

| Date       | Location  | Grid Reference | Recorder                | Sampling Method M/S H FR MR UR D | Abundance     | Notes  |
|------------|---|----------------|-------------------------|----------------------------------|---------------|--|
| 27/09/2014 | Lancing College, central<br>courtyard eastern elevation of<br>Handford House, West<br>Sussex (VC13) | TQ1906         | recorder @<br>wildthing | Re-entry survey                  | Present Taxon | 06:30am (Last record): Heard and not<br>seen. BatBox Duet (frequency<br>division) attached to a Roland R-05<br>recorder. |
| 27/09/2014 | Lancing College,<br>southwestern gable and<br>western area of site, West<br>Sussex (VC13)           | TQ1906         | recorder @<br>wildthing | Re-entry survey                  | Present Taxon | 06:18am: Faint call recorded.<br>Petterson D240x (time expansion)<br>detector  |

Ownership of this data remains with the original recorder whilst copyright of this material remains property of the Sussex Biodiversity Records Centre.

#### Key to Indicators

- M/S Mating/Swarming
- H Hibernaculum
- FR Feeding Roost
- MR Maternity Roost
- UR Unspecified Roost
  - Droppings

D

| 22/08/2011  | Orchard Avenue, Lancing,<br>West Sussex (VC13)   | TQ18440501   | Ann Watts  | Grounded Bat  |               | 1 Adult       | Dead bat found on track running behind houses.  |
|---|--|--|--|---|---------------|---------------|---|
| 12/07/2007  | Shoreham-by-Sea, West<br>Sussex (VC13)   | TQ215064   | BCT Surveyor   | Sunset Survey   |               | Bats Present  |   |
| 01/11/1978  | Lancing College, Lancing,<br>West Sussex (VC13)  | TQ194065   | Mr Frankin   | Visual  |               | taxon Present | Record from historic correspondence<br>file from Dr Stebbings. Appears roost<br>at the college but not positive ID of<br>species.   |
| Eptesicus   | serotinus  | Serotine   |  |   |               |               |   |
| A large bat that<br>buildings where<br>numbers. Its Bri | frequents pasture, parklands and ga<br>it also probably hibernates. A wides<br>itish strongholds are in the south ea | ardens as well as the wi<br>spread southern species<br>st (widespread in Susse | der countryside. It for<br>in the UK, though of<br>x) and parts of the W | rms summer roosts i<br>ten only present in s<br>'est Country. | n<br>mall     |               |   |
| Date  | Location   | Grid Reference   | Recorder   | Sampling Metho  | dM/SH FRMRURD | Abundance     | Notes   |
| 26/09/2014  | Lancing College,<br>southwestern gable and<br>western area of site, West<br>Sussex (VC13)                            | TQ1906   | recorder @<br>wildthing  | Roost Exit Count  |               | Present Taxon | 19:20pm: Emerged from hanging<br>tiles/soffit box area. Flew towards the<br>trees west of the Hanford House.<br>19:32 - 20:45pm: Several passes<br>feeding and foraging in the tree copse<br>to the west of Hanford House. Bat<br>seen flying in an easterly direction.<br>Petterson D240x (time expansion)<br>detector |
| 26/09/2014  | Lancing College,<br>northwestern aspect of<br>Handford House, West<br>Sussex (VC13)                                  | TQ1906   | recorder @<br>wildthing  | Roost Exit Count  |               | Present Taxon | 19:20- 20:45pm: Feeding and foraging<br>along the western aspect of Hanford<br>House. Several Passes were made by<br>this bat north to south. One Visual<br>record was made. Also evidence via<br>hand-held EM3+. Recorded on EM3+<br>Hand held detector and Elekon Bat<br>scanner.                                     |
| 03/07/2013  | Team House, Lancing College  | TQ194066   | Sheila Wright  | Droppings   |               |               | No bats seen but Serotine droppings of various ages found in roof void.   |
| 26/07/1999  | 23 Norbury Drive, North<br>Lancing, BN15 0QN, West   | TQ186058   | NE Bat Worker  | Building<br>Inspection  |               | 1 Present     |   |

| Myotis     |   | Unidentifie    | d Bat                   |                                  |               |   |
|------------|---|----------------|-------------------------|----------------------------------|---------------|---|
| Date       | Location  | Grid Reference | Recorder                | Sampling Method M/S H FR MR UR D | Abundance     | Notes   |
| 27/09/2014 | Lancing College,<br>southwestern gable and<br>western area of site, West<br>Sussex (VC13) | TQ1906         | recorder @<br>wildthing | Re-entry survey                  | Present Taxon | 06:25am: Entered the building at top<br>of ridge tiles on dormer gable end.<br>Petterson D240x (time expansion)<br>detector |

# Myotis daubentonii

# **Daubenton's Bat**

A medium-sized to small bat of woodland, usually near water (this species was sometimes known as the 'water bat'). It feeds largely on chironomid midges, caddis flies and mayflies. Summer roosts are in tree holes, semi-underground sites and occasionally buildings. During winter it hibernates in caves, mine tunnels, cellars and similar places. Widespread in Britain and apparently increasing in parts of its range and recorded throughout Sussex.

| Date       | Location  | Grid Reference | Recorder        | Sampling Method       | M/SH FRMRURD | Abundance     | Notes   |
|------------|---|----------------|-----------------|-----------------------|--------------|---------------|---|
| 05/08/2009 | Old Shoreham, Adur Flyover,<br>West Sussex (VC13)                   | TQ206064       | Gareth Williams | Aural bat<br>detector |              | Taxon Present | Survey time 48 minutes. 0 passes and 3 possible passes. |
| 09/08/1997 | Shoreham-by-Sea, Adur<br>Flyover, River Adur, West<br>Sussex (VC13) | TQ206064       | BCT Surveyor    | Waterway<br>transect  |              | Bats Present  |   |
| 02/08/1997 | Shoreham-by-Sea, Adur<br>Flyover, River Adur, West<br>Sussex (VC13) | TQ206064       | BCT Surveyor    | Waterway<br>transect  |              | Bats Present  |   |

#### BAP Nyctalus noctula Noctule Bat A large bat of woodlands and wetland that sometimes occurs in towns. Summer roosts are usually in trees, where it can also hibernate. Other hibernation sites can be in rock fissures, bat boxes and sometimes buildings. Widespread, but declining in Sussex and in both England and Wales generally. Date Location Grid Reference Recorder Sampling Method M/S H FR MR UR D Abundance Notes Roost Exit Count 26/09/2014 Lancing College, northern TQ1906 recorder @ Present Taxon 20:15pm: Foraging and feeding in gable elevation of Handford hedgerow moving westward. wildthing 20:20pm - 20:30pm: Feeding and House, West Sussex (VC13) foraging along hedgerow and tree line to the west. BatBox III (heterodyne) attached to a Roland R-05 recorder.

# Pipistrellus

# Pipstrelle sp.

There are three species of Pipistrelle bat found in the UK; common (Pipistrellus pipistrellus), soprano (P. pygmaeus) and Nathusius (P. Nathusii). Common and soprano pipistrelles were previously recorded as one species, but they are now recognised as separate species, with a peak frequency echolocation at 45 kHz and 55 kHz respectively. The following records refer to an aggregate of the two species, where the audio frequency or specific species is undetermined. Little is known about the Nathusius pipistrelle, but the other two species are found in all types of countryside (except very exposed areas) as well as in towns and suburbs. Summer roosts are usually in buildings, though tree holes and bat boxes are also used. Hibernation sites are in buildings and tree holes. Both common and soprano pipistrelles are widespread in Sussex, while Nathusius' is much rarer.

| Date       | Location  | Grid Reference | Recorder                       | Sampling Method        | M/S H | FR MR UR D | Abundance      | Notes  |
|------------|---|----------------|--------------------------------|------------------------|-------|------------|----------------|--|
| 01/07/2013 | 35 King's Close, Lancing,<br>West Sussex (VC13)               | TQ18620441     | Recorder @<br>WildCall         | Field Observation      |       |            | 20 Adult       | Seen here every summer for 30 years. I believe they roost in the roof of the bungalow. Unfortunately the current owner has recently past away and the house is now for sale. |
| 27/08/2010 | Widewater Lagoon LNR  | TQ200042       | John Knight                    | Field Observation      |       |            | 3 Present      |  |
| 02/04/2005 | 27 Nelson Close, Sompting                                     | TQ175056       | Amanda Millar                  | Grounded Bat           |       |            | 1 Adult Male   | died   |
| 01/05/2001 | Shoreham Airport, West<br>Sussex (VC13)                       | TQ19810572     | Abby Miller                    | Visual                 |       |            | 1 Present      | (North-West Corner) Observed along<br>N margin of Compartment 1. For<br>accurate map of Reptile Survey<br>Compartments see ESD No: 1620.                                     |
| 04/12/1998 | Old Salts Farm Road,<br>Lancing, West Sussex (VC13)           | TQ1904         | Recorder @<br>Sussex Bat Group | Building<br>Inspection |       |            | 1 Present      |  |
| 12/06/1997 | Shoreham-by-Sea, West<br>Sussex (VC13)                        | TQ212056       | BCT Surveyor                   | Roost Exit Count       |       |            | 5 Bat(s)       |  |
| 09/11/1995 | 19A. Victoria Road,<br>Shoreham-by-Sea, West<br>Sussex (VC13) | TQ213054       | Recorder @<br>Sussex Bat Group | Grounded Bat           |       |            | 1 Injured male |  |
| 27/01/1995 | 4 Thatch Court, The Street,<br>Lancing, West Sussex (VC13)    | TQ185058       | NE Bat Worker                  | Building<br>Inspection |       |            | 1 Present      | Bat hibernating under the lead window flashing.  |
| 21/08/1994 | 63 Freshbrook Road, Lancing,<br>West Sussex (VC13)            | TQ185045       | Recorder @<br>Sussex Bat Group | Grounded Bat           |       |            | 1 Juvenile     | Permanent captive.   |

# Pipistrellus pipistrellus Common Pipistrelle (45 kHz)

The common pipistrelle (Pipistrellus pipistrellus) and soprano pipistrelle (P. pygmaeus) were previously recorded as one species. They are now recognised as separate species, with a peak frequency echolocation at 45 kHz and 55 kHz respectively. Pipistrelles are the most common bat in the British Isles and are found in all types of countryside (except very exposed areas) as well as in towns and suburbs. Summer roosts are usually in buildings, though tree holes and bat boxes are also used. Winter roosts are in buildings and tree holes.

| Date       | Location  | Grid Reference | Recorder                | Sampling Method | M/S H | FR MR UR D | Abundance     | Notes  |
|------------|---|----------------|-------------------------|-----------------|-------|------------|---------------|--|
| 27/09/2014 | Lancing College,<br>northwestern aspect of<br>Handford House, West<br>Sussex (VC13)                 | TQ1906         | recorder @<br>wildthing | Re-entry survey |       |            | Present Taxon | 06:05am - 06:20am: Feeding and<br>foraging along the western aspect of<br>Hanford House. Several Passes were<br>made by this bat north to south. One<br>Visual record was made. Also<br>evidence via hand-held EM3+.<br>Recorded on EM3+ Hand held<br>detector and Elekon Bat scanner.                                       |
| 27/09/2014 | Lancing College,<br>southwestern gable and<br>western area of site, West<br>Sussex (VC13)           | TQ1906         | recorder @<br>wildthing | Re-entry survey |       |            | Present Taxon | 06:00am: Social calls recorded on<br>Patterson D240. 06:20 - 06:22am:<br>Visual sighting flying around south-<br>western gable and entered Hanford<br>House at 06:24am close to cladding<br>tiles. 06:24am: Entered Hanford<br>House near top window close to<br>hanging tiles. Petterson D240x (time<br>expansion) detector |
| 27/09/2014 | Lancing College,<br>northwestern aspect of<br>Handford House, West<br>Sussex (VC13)                 | TQ1946106670   | recorder @<br>wildthing | Re-entry survey |       |            | Present Taxon | 05:30 - 05:45am: Feeding and<br>Foraging along the tree line Recorded<br>on EM3+ Hand held detector and<br>Elekon Bat scanner.   |
| 27/09/2014 | Lancing College, central<br>courtyard eastern elevation of<br>Handford House, West<br>Sussex (VC13) | TQ1946106670   | recorder @<br>wildthing | Re-entry survey |       |            | Present Taxon | 05:00 (first record) - 05:20am:<br>Feeding and Foraging along the tree<br>line. BatBox Duet (frequency division)<br>attached to a Roland R-05 recorder.  |

| 26/09/2014 | Lancing College, northern<br>gable elevation of Handford<br>House, West Sussex (VC13)               | TQ1906   | recorder @<br>wildthing | Roost Exit Count       | Present Taxon | 19:30 (first record): Social calling and<br>commuting eastwards. 19:30pm -<br>20:00pm: Several passes foraging<br>and feeding along hedgerow.<br>20:20pm - 20:30pm: Feeding and<br>foraging along hedgerow and tree line<br>to the west. F20:30pm (last record):<br>feeding and foraging. BatBox III<br>(heterodyne) attached to a Roland R-<br>05 recorder.   |
|------------|---|----------|-------------------------|------------------------|---------------|--|
| 26/09/2014 | Lancing College,<br>northwestern aspect of<br>Handford House, West<br>Sussex (VC13)                 | TQ1906   | recorder @<br>wildthing | Roost Exit Count       | Present Taxon | 19:30: Emerged from lead flashing left<br>of the chimney stack. Flew<br>(commuted) directly west along hedge<br>line. Visual observation made by<br>recorder 1. Audio and EM3+<br>sonogram confirmed species seen.<br>19:40 - 20:30: Feeding and Foraging<br>along the hedge line running east to<br>west along the northern boundary,<br>Continuous feeding and foraging.<br>Recorded on EM3+ Hand held<br>detector and Elekon Bat scanner. |
| 26/09/2014 | Lancing College,<br>southwestern gable and<br>western area of site, West<br>Sussex (VC13)           | TQ1906   | recorder @<br>wildthing | Roost Exit Count       | Present Taxon | 19:16 (first record): Recorded foraging<br>around the woodland copse to the<br>west of Hanford House. 19:17pm:<br>Flew out from eastern aspect of the<br>Hanford House. 19:30 -20:45pm: Was<br>heard and recorded but not seen.<br>Petterson D240x (time expansion)<br>detector  |
| 26/09/2014 | Lancing College, central<br>courtyard eastern elevation of<br>Handford House, West<br>Sussex (VC13) | TQ1906   | recorder @<br>wildthing | Roost Exit Count       | Present Taxon | 19:15 (first record): Emerged from<br>fascia board to left of top window to<br>the left on eastern aspect of Hanford<br>House. 19:20pm: Second bat<br>emerged from fascia to the right of the<br>top window. 19:25pm (last record): A<br>third bat emerged from the right hand<br>side of the guttering. BatBox Duet<br>(frequency division) attached to a<br>Roland R-05 recorder.  |
| 17/07/2014 | Lancing   | TQ177051 | David Mutters           | Unknown                | Present Taxon | Flew over our garden at dusk.  |
| 03/07/2013 | Science Block, Lancing<br>College   | TQ194066 | Sheila Wright           | Building<br>Inspection | 48 Bat(s)     | At least 48 bats present under hanging tiles on wall.  |
| 02/08/2010 | 8 Boundstone Lane, Lancing  | TQ174045 | Amanda Millar           | Grounded Bat           | 1 Present     |  |

# Pipistrellus pygmaeus Sopra

# Soprano Pipstrelle (55 kHz)

For a while considered as a variant of the common pipistrelle, the soprano pipistrelle is now recognised as a separate species. Pipistrelles are the most common bat in the British Isles and are found in all types of countryside (except very exposed areas) as well as in towns and suburbs. This species has a stronger association with water than common pipistrelle. Summer roosts are usually in buildings, though tree holes and bat boxes are also used. Winter roosts are in buildings and tree holes.

| Date       | Location  | Grid Reference | Recorder                | Sampling Method  | IM/SH | FR MR UR D | Abundance     | Notes  |
|------------|---|----------------|-------------------------|------------------|-------|------------|---------------|--|
| 27/09/2014 | Lancing College,<br>northwestern aspect of<br>Handford House, West<br>Sussex (VC13)                 | TQ1946106670   | recorder @<br>wildthing | Re-entry survey  |       |            | Present Taxon | 05:30 - 05:45am: Feeding and<br>Foraging along the tree line Recorded<br>on EM3+ Hand held detector and<br>Elekon Bat scanner.   |
| 27/09/2014 | Lancing College,<br>southwestern gable and<br>western area of site, West<br>Sussex (VC13)           | TQ1964606640   | recorder @<br>wildthing | Re-entry survey  |       |            | Present Taxon | 05:15 (first record): Feeding and foraging in trees Petterson D240x (time expansion) detector                                    |
| 27/09/2014 | Lancing College,<br>northwestern aspect of<br>Handford House, West<br>Sussex (VC13)                 | TQ1964606640   | recorder @<br>wildthing | Re-entry survey  |       |            | Present Taxon | Feeding and foraging in trees<br>Recorded on EM3+ Hand held<br>detector and Elekon Bat scanner.                                  |
| 27/09/2014 | Lancing College, central<br>courtyard eastern elevation of<br>Handford House, West<br>Sussex (VC13) | TQ1939306650   | recorder @<br>wildthing | Re-entry survey  |       |            | Present Taxon | 05:30am: Feeding and Foraging along<br>the tree line. BatBox Duet (frequency<br>division) attached to a Roland R-05<br>recorder. |
| 07/06/2008 | Shoreham-by-Sea, West<br>Sussex (VC13)  | TQ196067       | BCT Surveyor            | Roost Exit Count |       |            | 26 Bat(s)     |  |
| 06/06/2007 | Shoreham-by-Sea, West<br>Sussex (VC13)  | TQ196067       | BCT Surveyor            | Roost Exit Count |       |            | 57 Bat(s)     |  |
| 21/06/2002 | Shoreham-by-Sea, West<br>Sussex (VC13)  | TQ196067       | BCT Surveyor            | Roost Exit Count |       |            | 32 Bat(s)     |  |
| 20/06/2000 | Shoreham-by-Sea, West<br>Sussex (VC13)  | TQ196067       | BCT Surveyor            | Roost Exit Count |       |            | 33 Bat(s)     |  |
| 13/06/2000 | Shoreham-by-Sea, West<br>Sussex (VC13)  | TQ196067       | BCT Surveyor            | Roost Exit Count |       |            | 35 Bat(s)     |  |
| 24/06/1999 | Shoreham-by-Sea, West<br>Sussex (VC13)  | TQ196067       | BCT Surveyor            | Roost Exit Count |       |            | 31 Bat(s)     |  |

| 15/06/1999 | Shoreham-by-Sea, West<br>Sussex (VC13)  | TQ196067 | BCT Surveyor                   | Roost Exit Count       | 26 Bat(s)  |   |
|------------|---|----------|--------------------------------|------------------------|------------|---|
| 23/07/1998 | Lancing College, Swimming<br>Pool Building, Shoreham-by-<br>sea, West Sussex (VC13) | TQ196067 | Recorder @<br>Sussex Bat Group | Building<br>Inspection | 35 Present | Droppings found. Colony used to be inside college chapel. |

# Plecotus auritus

# Brown Long-eared Bat

One of the more common British bat species, but difficult to distinguish from the much rarer grey long-eared bat (Plecotus austriacus), unless in the hand. It frequents woodland and orchards and has summer roosts in older buildings and trees. It often hibernates in caves, tunnels and mines. The brown long-eared has declined in the British Isles though it remains widespread.

| Date       | Location   | Grid Reference | Recorder      | Sampling Method | M/SH FRMRURD | Abundance              | Notes   |
|------------|--|----------------|---------------|-----------------|--------------|------------------------|---|
| 17/10/2011 | Lancing College, Shoreham,<br>West Sussex (VC13) | TQ194066       | Sheila Wright | Grounded Bat    |              | 1 Female<br>nulliparus | Most likely in school buildings, roosts known |

# Plecotus austriacus

# **Grey Long-eared Bat**

A rare species found mainly near the coast, from Sussex to south west England. It can be difficult to distinguish from the much more common brown long-eared bat (Plecotus auritus) and was first recognised in Britain in 1963. It is recorded from several Sussex localities, especially in West Sussex.

| Date       | Location   | Grid Reference | Recorder                       | Sampling Method | M/S H | FR MR UR | D | Abundance | Notes              |
|------------|--|----------------|--------------------------------|-----------------|-------|----------|---|-----------|--------------------|
| 06/10/1998 | Lancing College, Shoreham-<br>by-Sea, West Sussex (VC13) | TQ196067       | Recorder @<br>Sussex Bat Group | Grounded Bat    |       |          |   | 1 Injured | Injured then died. |

BAP

# SUSSEX NOTABLE BIRD INVENTORY

The Sussex Notable Bird Inventory is based on a list of birds that are particularly scarce or vulnerable to development in Sussex. This report has been created with ecological consultants in mind, to help sort the more sensitive bird species from the more common. These records are only available to ecological consultants due to the sensitivity of the data. The Sussex Ornithological Society (SOS) has kindly shared this data with us, with the view that better planning decisions can be made with the availability of this data. Please see the appended list of species included in this report and the date ranges/criteria for each species' inclusion.



# Icons used in the Notable Bird Inventory:

# Schedule 1 birds

I

R

A

Schedule 1 of the Wildlife and Countryside Act 1981 provides an additional tier of protection so that rare species are specially protected by increased penalties and cannot be intentionally or recklessly disturbed when nesting. **Schedule 1 status also infers a right of arrest** by a police officer if someone is suspected of committing certain offences against one of these species.

# **BAP** Biodiversity Action Plan Species (UK BAP)

Twenty-six species of bird are identified as Priority Species in the UK Biodiversity Action Plan (UK BAP), each the subject of a dedicated action plan which seeks to reverse their declines and protect vulnerable populations. Any Priority Species recorded within your enquiry area will be indicated in the species information of the bird report. Further details of BAP bird species can be found on the <u>JNCC website</u>.

# N Natural Environment & Rural Communities (NERC) Act

There are 49 bird species on the England Biodiversity List which was drawn up to meet the requirements of Section 41 of the Act. Further details of the NERC Act can be found on the <u>Natural England website</u>.

## Birds of Conservation Concern 3 (2009)

Every five years the leading governmental and non-governmental conservation organisations in the UK review the population status of the 247 species of bird that are regularly found in the UK. There are three lists – Red, Amber and Green - into which each of the species has been placed. 40 species are Red-listed, 121 are Amber-listed and 86 are Green-listed. The status decisions are based on several factors which include: the species' global and European conservation status; recent and historical decline; whether it is a rare breeder; if it is only confined to a few sites in the UK; and if the species is of international importance.

# **Red List** species are those that are **Globally Threatened** according to IUCN criteria; those whose population or range has decline rapidly in recent years; and those that have declined historically and not shown a substantial recent recovery.

**Amber List** species are those with **Unfavourable Conservation Status** in Europe; those whose population or range has declined moderately in recent years; those whose population has declined historically but made a substantial recent recovery; rare breeders; and those with internationally important or localised populations.

**Green List** species are those that do not fulfil any of the above criteria. Some of these species are however protected by law and the list includes some Schedule 1 species which have the highest level of protection. A green icon will <u>not</u> appear in our reports.

This information has been obtained from '*Birds of Conservation Concern 3*' (BoCC3) which can be downloaded from the <u>RSPB website</u>.

# Other bird legislation and conservation measures:

# Wildlife and Countryside Act (WCA) 1981

All British birds, their nests and eggs are protected by UK law. It is an offence to take, kill or injure any wild bird or to take, damage, destroy any nest or egg of any wild bird under Part 1 of the Wildlife and Countryside Act 1981, Schedules 1-4.

## Hedgerow removal and birds

It is advisable not to trim, cut or remove hedgerows during the bird nesting season. You will be violating the Wildlife and Countryside Act if there are birds nesting within it due to the disturbance or destruction of their habitat whilst nesting. The Hedgerows Regulations were introduced in 1997 to protect important hedgerows in the countryside. The regulations state that it is a criminal offence, unless an exception applies, to deliberately remove or otherwise destroy a hedgerow without permission. Please apply to your local planning authority for a Hedgerow Removal Application. Domestic hedges are not included in this regulation, however it is still illegal to cut or remove any hedges if birds are suspected to be nesting in it.

## Birds in roofs

There are various species that may nest in roofs. Unless they are causing a health hazard, the nests, eggs and chicks are protected by law. The parent birds must not be prevented from gaining access to their nest. Many of the birds that use roof spaces are now species of conservation concern because of their population decline over the past 25 years. Starlings and House Sparrows are Red-listed, while Barn Owls, House Martins and Swallows are Amber-listed (see next page for details). Roofs are also important for Swifts.

Further information about birds and the law can be found on the **<u>RSPB website</u>**.

## **Environmental Stewardship Target Species**

Farmland birds are one of the key targets of which a landowner can be awarded points through the Higher Level Stewardship scheme. Each Joint Character Area (e.g. High Weald, South Downs, South Coast Plain etc.) has specific key bird species whose populations must be maintained or enhanced to gain points as part of the land owner's 'Farm Environment Plan'. This can be done through a combination of management practices which should provide year round habitat requirements, in locations where these birds are known to be present or within 2km of such sites. If a key farmland bird species appears in your report, it will show to which Joint Character Area it is linked.

Further information about agri-environment schemes can be found on the RSPB website.

## **EU Birds Directive**

The Birds Directive addresses the conservation of all wild birds throughout the European Union, including marine areas, and covers their protection, management, control and exploitation. It applies to the birds, their eggs, nests and habitats. It places a broad requirement on Member States to take necessary measures to maintain the populations of all wild birds at levels determined by ecological, scientific and cultural needs. In doing so, Member States must also consider economic and recreational needs.

The Directive divides into two main parts: **habitat conservation** and **species protection**. In summary, it requires Member States to preserve, maintain and re-establish sufficient diversity and area of habitats for all wild birds.

#### Annex I:

Species listed in Annex 1 of the Birds Directive are the subject of special conservation measures concerning their habitat to ensure their survival and reproduction. This includes the designation of areas as Special Protection Areas (SPAs).

#### Annex 2:

Annex 2 of the Birds Directive lists birds that can be hunted under the legislation of the Member States. The Directive bands certain non-selective methods of hunting and defines the limits within which Member States can set the hunting season.

Further information about the EU Birds Directive can be found on the BirdLife website.

#### **IUCN Red List**

The World Conservation Union (IUCN) has been assessing the conservation status of species, subspecies, varieties and even selected sub-populations on a global scale in order to highlight taxa threatened with extinction, and therefore promote their conservation. The IUCN Red List (different from the previously mentioned Red List) is the world's most comprehensive inventory of the global conservation status of plant and animal species. It uses a set of criteria to evaluate the extinction risk of thousands of species and subspecies. These criteria are relevant to all species and all regions of the world. With its strong scientific base, the IUCN Red List is recognized as the most authoritative guide to the status of biological diversity.

Further information about the Red List can be found on the <u>IUCN website</u>.

# SUSSEX NOTABLE BIRD LIST

| Species              | Search criteria 1                              | Search criteria 2            |   | Desigr | ations |   |
|----------------------|--|------------------------------|---|--------|--------|---|
| Eurasian Wigeon      | Positive breeding status                       | Late May- early July records |   |        |        |   |
| Gadwall              | Positive breeding status                       | Late May- early July records |   |        |        |   |
| Pintail              | Positive breeding status                       | Late May- early July records |   |        |        |   |
| Garganey             | Positive breeding status                       | Late May- early July records | A |        |        |   |
| Common Pochard       | Positive breeding status                       | Late May- early July records |   |        |        |   |
| Grey Partridge       | Positive breeding status                       | March - August records       | R |        | BAP    | N |
| Common Quail         | Positive breeding status                       | March - August records       |   | !      |        |   |
| Eurasian Bittern     | All records                                    | March - August records       | R | 1      | BAP    | N |
| Little Egret         | Confirmed breeding records + recognised roosts | May and June records         |   |        |        |   |
| Grey Heron           | Confirmed breeding records                     | March - May records          |   |        |        |   |
| Honey-buzzard        | March - August records                         |                              |   | !      |        |   |
| Red Kite             | Positive breeding status + recognised roosts   | March -August records        | A | 1      |        |   |
| Marsh Harrier        | Positive breeding status + recognised roosts   | Mid May-July records         |   | !      |        |   |
| Hen Harrier          | Winter roosts                                  | 3 or more birds              | R | 1      |        | N |
| Montagu's Harrier    | Mid May-July records                           |                              |   | !      |        |   |
| Goshawk              | January - August records                       | All records                  |   | ļ      |        |   |
| Osprey               | Mid May-July records                           |                              |   | 1      |        |   |
| Hobby                | Positive breeding status                       | April - August records       |   | 1      |        |   |
| Peregrine Falcon     | Positive breeding status                       | March - August records       |   | !      |        |   |
| Spotted Crake        | Positive breeding status                       | March - August records       | A | ļ      |        |   |
| Avocet               | Positive breeding status                       | April - July records         |   | !      |        |   |
| Stone-curlew         | March - August records                         |                              | A | ļ.     | BAP    | Ν |
| Little Ringed Plover | Positive breeding status                       | March - July records         |   | !      |        |   |
| Northern Lapwing     | Positive breeding status                       | April -June records          | R |        | BAP    | N |
| Common Snipe         | Positive breeding status                       | April - July records         |   |        |        |   |
| Black-tailed Godwit  | Positive breeding status                       | late May-June                | R | ļ.     |        |   |
| Eurasian Curlew      | Positive breeding status                       | April - July records         |   |        | BAP    | Ν |
| Common Redshank      | Positive breeding status                       | April -June records          | A |        |        |   |
| Kittiwake            | Positive breeding status                       |                              |   |        |        |   |
| Mediterranean Gull   | Positive breeding status                       | May-June records             |   | ļ      |        |   |
| Little Tern          | Positive breeding status                       |                              |   | !      |        |   |
| Common Tern          | Positive breeding status                       |                              | A |        |        |   |
| Turtle Dove          | Positive breeding status                       |                              | R |        | BAP    | Ν |
| Barn Owl             | All records                                    |                              |   | ļ.     |        |   |
| Long-eared Owl       | Positive breeding status + recognised roosts   | March - August records       |   |        |        |   |
| Common Swift         | Confirmed & probably breeding records          |                              |   |        |        |   |

| Barn Swallow              | Confirmed & probably breeding records        |                         | A |     |     |   |
|---------------------------|--|-------------------------|---|-----|-----|---|
| House Martin              | Confirmed & probably breeding records        |                         | A |     |     |   |
| Common Kingfisher         | Positive breeding status                     | March - August records  |   | ļ   |     |   |
| Lesser Spotted Woodpecker | All records                                  |                         | R |     | BAP | N |
| Raven                     | Positive breeding status                     | February - July records |   |     |     |   |
| Firecrest                 | Positive breeding status                     | March - August records  | A | ļ   |     |   |
| Willow Tit                | All records                                  |                         | R |     |     |   |
| Bearded Tit               | Positive breeding status                     | March - August records  | A | ļ   |     |   |
| Wood Lark                 | Positive breeding status                     | March - August records  |   | !   | BAP | Ν |
| Cetti's Warbler           | Positive breeding status                     | March - August records  |   | ļ   |     |   |
| Wood Warbler              | Positive breeding status                     | April - August records  | R |     | BAP | Ν |
| Dartford Warbler          | Positive breeding status                     | March - August records  | A | . İ |     |   |
| Savi's Warbler            | Positive breeding status                     | April - August records  | R | !   | BAP | Ν |
| Marsh Warbler             | Positive breeding status                     | April - August records  | R | ļ   | BAP | N |
| Black Redstart            | May-July                                     |                         |   | -   |     |   |
| Tree Sparrow              | All records                                  |                         | R |     | BAP | N |
| Yellow Wagtail            | Positive breeding status + recognised roosts | May-June records        | R |     | BAP | Ν |
| Common Crossbill          | Positive breeding status                     | February - July records |   | . İ |     |   |
| Hawfinch                  | All records                                  |                         |   |     | BAP | Ν |
| Corn Bunting              | All records                                  |                         | R |     | BAP | N |

Key to symbols (see main explanation sheet for detail on these designations):

Schedule 1

BoCC Red List Species

A BoCC Amber List Species

- BAP Biodiversity Action Plan Species
- N Natural Environment & Rural Communities (NERC) Act Species

## Selection based on:

**Positive Breeding** = where a bird has been confirmed as breeding, or there are signs that there is probable breeding.

**Date** = a date range which represents each species' breeding season, this criteria will be used where breeding has not been confirmed. Please note that this criteria will also bring up non-breeding records which may not be relevant to the data user.

**Roost** = where a species has been recorded as being in a recognised roost or a winter roost. **All Records** = where all records for a species are flagged up.



# SUSSEX BIRD INVENTORY REPORT SUMMARY

N.B. This summary report gives details of a ALL bird records. Details of notable bird records appear after this summary.

## Land at New Salts Farm, Shoreham + 2km buffer

23 June 2015 ESD/15/443 Search Area: TQ1704 toTQ2205; TQ1703 to TQ1903; TQ1806 to TQ2106

Vicky Hale (PJC Ecology)

| Common Name         | Latin Name            | First Date | Last Date  | No. of Rec's | Total Abundance | Max. Abundance |
|---------------------|-----------------------|------------|------------|--------------|-----------------|----------------|
| Mandarin Duck       | Aix galericulata      | 24/11/1996 | 15/02/2003 | 5            | 9               | 2              |
| Wood Duck           | Aix sponsa            | 13/01/1982 | -          | 1            | 1               | 1              |
| Egyptian Goose      | Alopochen aegyptiacus | 07/11/2002 | 26/08/2010 | 75           | 76              | 2              |
| Pintail             | Anas acuta            | 28/10/1990 | 22/01/2013 | 20           | 52              | 22             |
| Shoveler            | Anas clypeata         | 23/09/1886 | 03/05/2011 | 41           | 105             | 12             |
| Teal                | Anas crecca           | 17/10/1886 | 03/02/2015 | 393          | 5372            | 150            |
| Wigeon              | Anas penelope         | 22/02/1879 | 25/11/2013 | 161          | 5873            | 600            |
| Mallard             | Anas platyrhynchos    | 31/01/1885 | 29/12/2013 | 941          | 14441           | 140            |
| Chiloë Wigeon       | Anas sibilatrix       | 15/01/1997 | -          | 1            | 1               | 1              |
| Gadwall             | Anas strepera         | 12/01/1985 | 26/02/2013 | 89           | 262             | 18             |
| White-fronted Goose | Anser albifrons       | 25/12/1962 | 01/01/2012 | 18           | 505             | 240            |
| Greylag Goose       | Anser anser           | 09/02/1985 | 11/09/2013 | 23           | 135             | 34             |
| Pink-footed Goose   | Anser brachyrhynchus  | 16/02/1969 | -          | 1            | 1               | 1              |
| Emperor Goose       | Anser canagicus       | 02/04/2004 | -          | 1            | 1               | 1              |
| Pochard             | Aythya ferina         | 14/02/1929 | 24/12/2013 | 436          | 9818            | 89             |
| Tufted Duck         | Aythya fuligula       | 04/12/1879 | 07/12/2013 | 306          | 2786            | 117            |
| Scaup               | Aythya marila         | 08/12/1885 | 14/03/2011 | 135          | 291             | 19             |
| Brent Goose         | Branta bernicla       | 12/01/1979 | 14/11/2013 | 178          | 7228            | 1000           |
| Canada Goose        | Branta canadensis     | 12/03/1991 | 27/08/2013 | 43           | 319             | 70             |
| Barnacle Goose      | Branta leucopsis      | 10/01/1886 | 13/02/1963 | 2            | 9               | 8              |
| Goldeneye           | Bucephala clangula    | 27/11/1879 | 16/02/2012 | 83           | 254             | 14             |
| Muscovy Duck        | Cairina moschata      | 13/12/2007 | 08/04/2010 | 5            | 5               | 1              |
| Long-tailed Duck    | Clangula hyemalis     | 09/12/1887 | 25/11/2013 | 69           | 72              | 3              |

| Common Name              | Latin Name                         | First Date | Last Date  | No. of Rec's | Total Abundance | Max. Abundance |
|--------------------------|------------------------------------|------------|------------|--------------|-----------------|----------------|
| Black Swan               | Cygnus atratus                     | 19/09/1998 | 17/05/2008 | 24           | 30              | 2              |
| Bewick's Swan            | Cygnus columbianus subsp. bewickii | 07/01/1979 | 01/11/2006 | 4            | 36              | 27             |
| Whooper Swan             | Cygnus cygnus                      | 01/01/1895 | 25/12/2010 | 7            | 24              | 10             |
| Black-necked Swan        | Cygnus melanocorypha               | 01/02/1978 | 01/01/1982 | 3            | 3               | 1              |
| Mute Swan                | Cygnus olor                        | 03/05/1946 | 02/01/2014 | 1156         | 11790           | 100            |
| Marbled Duck             | Marmaronetta angustirostris        | 28/04/2009 | -          | 1            | 1               | 1              |
| Velvet Scoter            | Melanitta fusca                    | 27/11/1886 | 26/01/2013 | 65           | 479             | 30             |
| Common Scoter            | Melanitta nigra                    | 10/01/1881 | 17/12/2013 | 132          | 6310            | 378            |
| Smew                     | Mergellus albellus                 | 24/02/1947 | 09/02/1997 | 40           | 113             | 8              |
| Goosander                | Mergus merganser                   | 14/02/1929 | 14/12/2013 | 57           | 225             | 38             |
| Red-breasted Merganser   | Mergus serrator                    | 03/12/1885 | 03/01/2014 | 347          | 1741            | 41             |
| Red-crested Pochard      | Netta rufina                       | 01/01/1988 | 24/12/2010 | 13           | 23              | 10             |
| Ruddy Duck               | Oxyura jamaicensis                 | 12/09/1993 | 29/07/2008 | 25           | 26              | 2              |
| Eider                    | Somateria mollissima               | 04/10/1882 | 12/12/2013 | 91           | 610             | 50             |
| Ruddy Shelduck           | Tadorna ferruginea                 | 28/01/2002 | 13/03/2003 | 52           | 52              | 1              |
| Common Shelduck          | Tadorna tadorna                    | 12/01/1977 | 17/12/2013 | 153          | 786             | 51             |
| Swift                    | Apus apus                          | 15/07/1885 | 06/08/2013 | 265          | 4280            | 400            |
| Razorbill                | Alca torda                         | 05/07/1880 | 17/12/2013 | 73           | 5074            | 2500           |
| Little Auk               | Alle alle                          | 09/03/1900 | 05/12/2003 | 12           | 12              | 1              |
| Puffin                   | Fratercula arctica                 | 23/03/1968 | 02/04/1976 | 2            | 2               | 1              |
| Guillemot                | Uria aalge                         | 30/11/1878 | 17/12/2013 | 81           | 1353            | 370            |
| Kentish Plover           | Charadrius alexandrinus            | 04/08/1975 | 13/05/2007 | 11           | 13              | 3              |
| Little Ringed Plover     | Charadrius dubius                  | 24/08/1989 | 21/04/2008 | 16           | 20              | 3              |
| Ringed Plover            | Charadrius hiaticula               | 25/02/1885 | 07/12/2013 | 824          | 35309           | 446            |
| Dotterel                 | Charadrius morinellus              | 20/05/2010 | -          | 1            | 0               | 0              |
| Oystercatcher            | Haematopus ostralegus              | 20/05/1885 | 08/03/2015 | 333          | 1475            | 87             |
| Golden Plover            | Pluvialis apricaria                | 16/12/1885 | 12/12/2013 | 95           | 501             | 94             |
| Grey Plover              | Pluvialis squatarola               | 01/05/1878 | 24/11/2013 | 320          | 2928            | 80             |
| Sociable Plover          | Vanellus gregarius                 | 03/01/1986 | -          | 1            | 1               | 1              |
| Lapwing                  | Vanellus vanellus                  | 20/02/1886 | 05/02/2015 | 670          | 344719          | 45000          |
| Black-headed Gull        | Chroicocephalus ridibundus         | 15/02/1886 | 12/03/2015 | 643          | 67629           | 30000          |
| Little Gull              | Hydrocoloeus minutus               | 07/01/1879 | 14/10/2013 | 51           | 180             | 28             |
| Caspian Tern             | Hydroprogne caspia                 | 28/07/1981 | -          | 1            | 1               | 1              |
| Herring Gull             | Larus argentatus                   | 15/02/1886 | 08/03/2015 | 771          | 32746           | 2000           |
| Herring Gull             | Larus argentatus subsp. argentatus | 21/11/1993 | 21/09/2006 | 5            | 6               | 2              |
| Laughing Gull            | Larus atricilla                    | 06/04/1991 | -          | 3            | 3               | 1              |
| Common Gull              | Larus canus                        | 09/03/1886 | 24/12/2013 | 297          | 55482           | 2500           |
| Ring-billed Gull         | Larus delawarensis                 | 22/01/1985 | -          | 1            | 1               | 1              |
| Lesser Black-backed Gull | Larus fuscus                       | 12/05/1886 | 10/02/2015 | 201          | 2903            | 1000           |

| Common Name             | Latin Name                           | First Date | Last Date  | No. of Rec's | Total Abundance | Max. Abundance |
|-------------------------|--------------------------------------|------------|------------|--------------|-----------------|----------------|
| Iceland Gull            | Larus glaucoides subsp. glaucoides   | 31/12/1959 | 29/04/2012 | 22           | 22              | 1              |
| Glaucous Gull           | Larus hyperboreus                    | 27/12/1954 | 16/02/2008 | 26           | 26              | 1              |
| Great Black-backed Gull | Larus marinus                        | 11/12/1886 | 02/01/2014 | 338          | 7383            | 700            |
| Mediterranean Gull      | Larus melanocephalus                 | 24/09/1950 | 04/12/2013 | 247          | 429             | 73             |
| Yellow-legged Gull      | Larus michahellis                    | 29/07/1982 | 06/03/2013 | 208          | 999             | 68             |
| Herring Gull            | Larus michahellis subsp. michahellis | 15/01/1990 | 26/11/2000 | 110          | 677             | 40             |
| Kittiwake               | Rissa tridactyla                     | 05/02/1886 | 04/12/2013 | 26           | 5462            | 3000           |
| Little Tern             | Sternula albifrons                   | 07/06/1884 | 04/05/2011 | 28           | 114             | 33             |
| Sabine's Gull           | Xema sabini                          | 16/10/1856 | 21/10/1987 | 4            | 4               | 1              |
| Grey Phalarope          | Phalaropus fulicarius                | 05/10/1875 | 06/09/2008 | 51           | 52              | 2              |
| Red-necked Phalarope    | Phalaropus lobatus                   | 07/09/1989 | -          | 1            | 1               | 1              |
| Pallas's Sandgrouse     | Syrrhaptes paradoxus                 | 08/11/1888 | 30/06/1988 | 2            | 2               | 1              |
| Avocet                  | Recurvirostra avosetta               | 01/01/1888 | 07/12/2013 | 21           | 22              | 2              |
| Common Sandpiper        | Actitis hypoleucos                   | 24/06/1886 | 28/08/2013 | 251          | 677             | 18             |
| Spotted Sandpiper       | Actitis macularius                   | 01/11/1908 | -          | 1            | 1               | 1              |
| Turnstone               | Arenaria interpres                   | 18/05/1878 | 17/12/2013 | 491          | 7340            | 200            |
| Sanderling              | Calidris alba                        | 12/05/1886 | 17/12/2013 | 341          | 7003            | 136            |
| Dunlin                  | Calidris alpina                      | 09/12/1885 | 07/12/2013 | 653          | 107743          | 1650           |
| Baird's Sandpiper       | Calidris bairdii                     | 18/08/1981 | -          | 1            | 1               | 1              |
| Knot                    | Calidris canutus                     | 21/05/1884 | 10/02/2012 | 119          | 362             | 50             |
| Broad-billed Sandpiper  | Calidris falcinellus                 | 01/10/1865 | -          | 1            | 1               | 1              |
| Curlew Sandpiper        | Calidris ferruginea                  | 23/05/1879 | 06/09/2010 | 111          | 312             | 10             |
| Purple Sandpiper        | Calidris maritima                    | 18/10/1878 | 16/12/2013 | 59           | 174             | 11             |
| Pectoral Sandpiper      | Calidris melanotos                   | 26/09/1970 | -          | 1            | 1               | 1              |
| Little Stint            | Calidris minuta                      | 12/09/1982 | 03/10/2010 | 65           | 150             | 10             |
| Ruff                    | Calidris pugnax                      | 21/05/1883 | 12/12/2013 | 91           | 165             | 12             |
| Temminck's Stint        | Calidris temminckii                  | 01/07/1887 | -          | 1            | 1               | 1              |
| Snipe                   | Gallinago gallinago                  | 11/12/1885 | 28/02/2015 | 236          | 6840            | 291            |
| Great Snipe             | Gallinago media                      | 24/02/1929 | 21/09/1947 | 2            | 2               | 1              |
| Bar-tailed Godwit       | Limosa lapponica                     | 12/09/1981 | 07/10/2012 | 100          | 941             | 341            |
| Black-tailed Godwit     | Limosa limosa                        | 07/02/1991 | 28/08/2013 | 49           | 78              | 13             |
| Jack Snipe              | Lymnocryptes minimus                 | 30/09/1887 | 22/01/2013 | 35           | 39              | 3              |
| Curlew                  | Numenius arquata                     | 25/10/1884 | 22/06/2013 | 98           | 168             | 30             |
| Whimbrel                | Numenius phaeopus                    | 12/05/1886 | 03/08/2013 | 138          | 629             | 100            |
| Woodcock                | Scolopax rusticola                   | 01/02/1947 | 30/12/2010 | 35           | 39              | 3              |
| Spotted Redshank        | Tringa erythropus                    | 12/09/1981 | 10/10/2008 | 14           | 15              | 2              |
| Wood Sandpiper          | Tringa glareola                      | 11/08/1991 | 26/08/1996 | 14           | 24              | 2              |
| Greenshank              | Tringa nebularia                     | 05/05/1876 | 20/08/2013 | 178          | 305             | 6              |
| Green Sandpiper         | Tringa ochropus                      | 16/08/1879 | 26/01/2013 | 33           | 40              | 4              |

| Common Name          | Latin Name               | First Date | Last Date  | No. of Rec's | Total Abundance | Max. Abundance |
|----------------------|--------------------------|------------|------------|--------------|-----------------|----------------|
| Redshank             | Tringa totanus           | 06/03/1886 | 10/02/2015 | 841          | 26752           | 300            |
| Long-tailed Skua     | Stercorarius longicaudus | 11/09/1981 | -          | 1            | 1               | 1              |
| Arctic Skua          | Stercorarius parasiticus | 09/09/1990 | 24/08/2013 | 35           | 54              | 5              |
| Pomarine Skua        | Stercorarius pomarinus   | 07/01/1983 | 29/04/2012 | 15           | 65              | 27             |
| Great Skua           | Stercorarius skua        | 05/09/1980 | 13/12/2013 | 16           | 14              | 1              |
| Black Tern           | Chlidonias niger         | 21/05/1879 | 06/10/2010 | 24           | 130             | 70             |
| Gull-billed Tern     | Gelochelidon nilotica    | 17/09/1950 | 02/06/2005 | 15           | 15              | 1              |
| Roseate Tern         | Sterna dougallii         | 14/05/1971 | 13/05/1982 | 5            | 10              | 4              |
| Common Tern          | Sterna hirundo           | 28/04/1883 | 13/04/2013 | 39           | 236             | 64             |
| Arctic Tern          | Sterna paradisaea        | 01/01/1883 | 10/10/2013 | 14           | 362             | 335            |
| Sandwich Tern        | Sterna sandvicensis      | 12/06/1880 | 27/09/2013 | 135          | 1577            | 183            |
| Great White Egret    | Ardea alba               | 07/01/2010 | -          | 2            | 1               | 1              |
| Grey Heron           | Ardea cinerea            | 12/02/1979 | 24/11/2013 | 389          | 1261            | 20             |
| Purple Heron         | Ardea purpurea           | 28/05/1981 | -          | 1            | 1               | 1              |
| Bittern              | Botaurus stellaris       | 01/01/1887 | 13/12/2010 | 6            | 6               | 1              |
| Cattle Egret         | Bubulcus ibis            | 28/04/1962 | -          | 1            | 1               | 1              |
| Little Egret         | Egretta garzetta         | 28/04/1992 | 02/01/2014 | 1018         | 2719            | 41             |
| Little Bittern       | Ixobrychus minutus       | 01/06/1986 | 09/04/1995 | 2            | 2               | 1              |
| Night-heron          | Nycticorax nycticorax    | 12/12/1954 | -          | 1            | 1               | 1              |
| White Stork          | Ciconia ciconia          | 19/08/1929 | 01/08/1990 | 4            | 7               | 3              |
| Spoonbill            | Platalea leucorodia      | 08/04/2005 | 04/11/2012 | 8            | 22              | 6              |
| Glossy Ibis          | Plegadis falcinellus     | 18/09/1986 | -          | 1            | 1               | 1              |
| Rock Dove            | Columba livia            | 01/07/1885 | 26/12/2013 | 308          | 1403            | 100            |
| Stock Dove           | Columba oenas            | 24/05/1885 | 29/12/2013 | 149          | 906             | 120            |
| Woodpigeon           | Columba palumbus         | 14/05/1885 | 08/05/2014 | 486          | 33140           | 10000          |
| Collared Dove        | Streptopelia decaocto    | 18/12/1975 | 26/12/2013 | 352          | 1738            | 100            |
| Turtle Dove          | Streptopelia turtur      | 25/05/1885 | 07/06/2009 | 69           | 125             | 12             |
| Budgerigar           | Melopsittacus undulatus  | 10/01/1997 | 03/11/2007 | 2            | 2               | 1              |
| Cockatiel            | Nymphicus hollandicus    | 26/03/1988 | 20/08/2003 | 6            | 6               | 1              |
| Ring-necked Parakeet | Psittacula krameri       | 24/08/1984 | 12/04/2010 | 9            | 8               | 1              |
| Kingfisher           | Alcedo atthis            | 31/03/1927 | 16/03/2015 | 668          | 794             | 8              |
| Bee-eater            | Merops apiaster          | 06/06/1955 | 02/06/2005 | 4            | 6               | 2              |
| Great Spotted Cuckoo | Clamator glandarius      | 01/05/1990 | 09/04/2005 | 16           | 16              | 1              |
| Cuckoo               | Cuculus canorus          | 10/06/1885 | 29/04/2013 | 45           | 46              | 2              |
| Sparrowhawk          | Accipiter nisus          | 19/05/1887 | 13/12/2013 | 336          | 449             | 6              |
| Buzzard              | Buteo buteo              | 03/10/1911 | 29/12/2013 | 185          | 359             | 7              |
| Marsh Harrier        | Circus aeruginosus       | 07/05/1978 | 31/08/2013 | 23           | 24              | 2              |
| Hen Harrier          | Circus cyaneus           | 14/01/1979 | 30/10/2013 | 11           | 11              | 1              |
| Black Kite           | Milvus migrans           | 15/04/2009 | -          | 1            | 1               | 1              |

| Common Name          | Latin Name                  | First Date | Last Date  | No. of Rec's | Total Abundance | Max. Abundance |
|----------------------|-----------------------------|------------|------------|--------------|-----------------|----------------|
| Red Kite             | Milvus milvus               | 22/11/2010 | 01/09/2012 | 3            | 3               | 1              |
| Osprey               | Pandion haliaetus           | 12/09/1954 | 20/10/2013 | 41           | 41              | 1              |
| Honey-buzzard        | Pernis apivorus             | 24/09/1993 | 06/10/2013 | 6            | 6               | 2              |
| Merlin               | Falco columbarius           | 06/03/1886 | 04/02/2012 | 71           | 70              | 1              |
| Peregrine            | Falco peregrinus            | 31/12/1984 | 30/11/2013 | 64           | 74              | 3              |
| Hobby                | Falco subbuteo              | 01/09/1976 | 21/09/2013 | 43           | 45              | 2              |
| Kestrel              | Falco tinnunculus           | 14/06/1885 | 02/01/2014 | 313          | 415             | 8              |
| Helmeted Guineafowl  | Numida meleagris            | 25/02/2010 | 01/09/2012 | 23           | 47              | 3              |
| Red-legged Partridge | Alectoris rufa              | 15/06/1885 | 20/09/2013 | 15           | 24              | 5              |
| Quail                | Coturnix coturnix           | 18/06/1886 | 21/07/2011 | 13           | 15              | 3              |
| Grey Partridge       | Perdix perdix               | 13/05/1885 | 20/09/2013 | 43           | 236             | 39             |
| Pheasant             | Phasianus colchicus         | 23/11/1998 | 29/12/2013 | 145          | 472             | 40             |
| Black-throated Diver | Gavia arctica               | 01/01/1918 | 17/12/2013 | 23           | 40              | 5              |
| Great Northern Diver | Gavia immer                 | 30/11/1885 | 17/12/2013 | 13           | 15              | 2              |
| Red-throated Diver   | Gavia stellata              | 02/12/1886 | 17/12/2013 | 131          | 649             | 110            |
| Corncrake            | Crex crex                   | 07/10/1885 | 15/07/1964 | 5            | 5               | 1              |
| Coot                 | Fulica atra                 | 09/02/1886 | 24/12/2013 | 486          | 24383           | 243            |
| Moorhen              | Gallinula chloropus         | 06/06/1885 | 29/12/2013 | 541          | 5079            | 57             |
| Little Crake         | Porzana parva               | 01/01/1849 | 01/01/1894 | 2            | 2               | 1              |
| Spotted Crake        | Porzana porzana             | 18/10/1951 | 19/02/2008 | 3            | 3               | 1              |
| Baillon's Crake      | Porzana pusilla             | 13/11/1900 | -          | 1            | 1               | 1              |
| Water Rail           | Rallus aquaticus            | 16/02/1886 | 13/12/2013 | 238          | 258             | 3              |
| Sedge Warbler        | Acrocephalus schoenobaenus  | 21/05/1885 | 20/08/2013 | 144          | 394             | 29             |
| Reed Warbler         | Acrocephalus scirpaceus     | 06/06/1885 | 16/05/2014 | 241          | 2304            | 124            |
| Long-tailed Tit      | Aegithalos caudatus         | 12/05/1885 | 29/12/2013 | 288          | 2687            | 87             |
| Skylark              | Alauda arvensis             | 01/05/1886 | 04/12/2013 | 220          | 12024           | 2500           |
| Shore Lark           | Eremophila alpestris        | 04/02/1974 | -          | 1            | 1               | 1              |
| Crested Lark         | Galerida cristata           | 20/10/1863 | -          | 2            | 2               | 1              |
| Woodlark             | Lullula arborea             | 25/10/1999 | 22/01/2013 | 22           | 69              | 12             |
| Waxwing              | Bombycilla garrulus         | 01/01/1947 | 09/01/2013 | 17           | 97              | 37             |
| Treecreeper          | Certhia familiaris          | 06/03/1885 | 29/12/2013 | 121          | 215             | 19             |
| Cetti's Warbler      | Cettia cetti                | 07/10/1977 | 18/11/2013 | 73           | 78              | 4              |
| Carrion Crow         | Corvus corone agg.          | 06/05/2003 | -          | 1            | 1               | 1              |
| Raven                | Corvus corax                | 11/12/1996 | 21/09/2013 | 7            | 7               | 2              |
| Hooded Crow          | Corvus cornix               | 25/02/1885 | 05/03/1988 | 10           | 16              | 3              |
| Carrion Crow         | Corvus corone               | 17/10/1885 | 29/12/2013 | 565          | 3590            | 160            |
| Carrion Crow         | Corvus corone subsp. corone | 01/06/1999 | -          | 1            | 0               | 0              |
| Rook                 | Corvus frugilegus           | 15/03/1885 | 29/12/2013 | 171          | 1735            | 296            |
| Jackdaw              | Corvus monedula             | 01/05/1886 | 29/12/2013 | 247          | 5787            | 319            |

| Common Name             | Latin Name                        | First Date | Last Date  | No. of Rec's | Total Abundance | Max. Abundance |
|-------------------------|-----------------------------------|------------|------------|--------------|-----------------|----------------|
| Jay                     | Garrulus glandarius               | 01/05/1930 | 29/12/2013 | 203          | 391             | 10             |
| Magpie                  | Pica pica                         | 15/05/1885 | 29/12/2013 | 472          | 1977            | 40             |
| Lapland Bunting         | Calcarius lapponicus              | 16/02/1991 | 17/02/1991 | 2            | 2               | 1              |
| Corn Bunting            | Emberiza calandra                 | 06/07/1885 | 04/08/2013 | 148          | 3618            | 400            |
| Rock Bunting            | Emberiza cia                      | 01/10/1902 | 31/12/2002 | 2            | 3               | 2              |
| Cirl Bunting            | Emberiza cirlus                   | 05/12/1885 | 13/05/1978 | 15           | 17              | 2              |
| Yellowhammer            | Emberiza citrinella               | 15/05/1885 | 04/12/2013 | 73           | 484             | 55             |
| Ortolan Bunting         | Emberiza hortulana                | 11/09/1985 | -          | 1            | 1               | 1              |
| Little Bunting          | Emberiza pusilla                  | 02/11/1947 | -          | 1            | 1               | 1              |
| Reed Bunting            | Emberiza schoeniclus              | 15/02/1885 | 04/12/2013 | 197          | 1022            | 100            |
| Snow Bunting            | Plectrophenax nivalis             | 09/01/1949 | 23/02/2012 | 80           | 198             | 50             |
| Lesser Redpoll          | Acanthis cabaret                  | 06/11/1975 | 07/11/2013 | 79           | 278             | 35             |
| Common (Mealy) Redpoll  | Acanthis flammea                  | 25/10/1964 | -          | 1            | 1               | 1              |
| Goldfinch               | Carduelis carduelis               | 31/01/1885 | 07/03/2015 | 594          | 9124            | 1000           |
| Greenfinch              | Carduelis chloris                 | 14/05/1885 | 24/12/2013 | 316          | 4549            | 400            |
| Greenfinch              | Chloris chloris                   | 07/01/2007 | 24/12/2009 | 93           | 358             | 16             |
| Chaffinch               | Fringilla coelebs                 | 14/05/1885 | 29/12/2013 | 354          | 2810            | 200            |
| Brambling               | Fringilla montifringilla          | 02/03/1886 | 19/01/2013 | 35           | 415             | 250            |
| Linnet                  | Linaria cannabina                 | 03/05/1886 | 18/11/2013 | 177          | 5904            | 1500           |
| Twite                   | Linaria flavirostris              | 09/02/1886 | 01/03/2005 | 71           | 1047            | 70             |
| Common Crossbill        | Loxia curvirostra                 | 13/08/1986 | 14/08/2012 | 10           | 58              | 18             |
| Bullfinch               | Pyrrhula pyrrhula                 | 25/03/1885 | 03/01/2013 | 84           | 784             | 90             |
| Island Canary           | Serinus canaria                   | 20/10/1998 | -          | 2            | 2               | 1              |
| Siskin                  | Spinus spinus                     | 13/02/1886 | 28/10/2013 | 100          | 1520            | 400            |
| House Martin            | Delichon urbicum                  | 13/05/1885 | 17/11/2013 | 264          | 39934           | 6757           |
| Swallow                 | Hirundo rustica                   | 17/04/1885 | 07/11/2013 | 406          | 80361           | 20000          |
| Sand Martin             | Riparia riparia                   | 09/10/1885 | 28/09/2013 | 74           | 2895            | 718            |
| Red-backed Shrike       | Lanius collurio                   | 25/05/1878 | 03/09/1995 | 9            | 9               | 1              |
| Great Grey Shrike       | Lanius excubitor                  | 26/10/1953 | -          | 1            | 1               | 1              |
| Woodchat Shrike         | Lanius senator                    | 12/09/1956 | -          | 1            | 2               | 2              |
| Savi's Warbler          | Locustella luscinioides           | 06/09/1989 | -          | 1            | 1               | 1              |
| Grasshopper Warbler     | Locustella naevia                 | 30/04/1977 | 27/08/2013 | 23           | 29              | 3              |
| Tawny Pipit             | Anthus campestris                 | 27/09/1904 | 17/08/1958 | 2            | 2               | 1              |
| Rock Pipit              | Anthus petrosus                   | 22/02/1976 | 17/12/2013 | 124          | 249             | 10             |
| Scandinavian Rock Pipit | Anthus petrosus subsp. littoralis | 15/03/1999 | 17/03/2003 | 4            | 5               | 2              |
| Meadow Pipit            | Anthus pratensis                  | 10/05/1885 | 04/12/2013 | 258          | 3859            | 536            |
| Richard's Pipit         | Anthus richardi                   | 18/11/1893 | 30/11/1969 | 2            | 3               | 2              |
| Water Pipit             | Anthus spinoletta                 | 06/04/1956 | 06/01/1997 | 36           | 41              | 2              |
| Tree Pipit              | Anthus trivialis                  | 16/05/1886 | 26/08/2012 | 67           | 607             | 182            |
| Common Name           | Latin Name                      | First Date | Last Date  | No. of Rec's | Total Abundance | Max. Abundance |
|-----------------------|---------------------------------|------------|------------|--------------|-----------------|----------------|
| Pied Wagtail          | Motacilla alba                  | 17/05/1885 | 24/12/2012 | 267          | 3081            | 700            |
| White Wagtail         | Motacilla alba subsp. alba      | 01/04/1872 | 14/03/2009 | 32           | 45              | 3              |
| Pied Wagtail          | Motacilla alba subsp. yarrellii | 02/01/2007 | 13/03/2015 | 127          | 467             | 65             |
| Grey Wagtail          | Motacilla cinerea               | 22/11/1885 | 24/12/2013 | 306          | 537             | 56             |
| Yellow Wagtail        | Motacilla flava                 | 04/03/1885 | 25/09/2013 | 170          | 2370            | 440            |
| Blue-headed Wagtail   | Motacilla flava subsp. flava    | 27/09/1992 | 30/09/1993 | 4            | 4               | 1              |
| Robin                 | Erithacus rubecula              | 24/03/1885 | 08/05/2014 | 453          | 3193            | 131            |
| Pied Flycatcher       | Ficedula hypoleuca              | 01/05/1921 | 11/08/2013 | 44           | 64              | 7              |
| Nightingale           | Luscinia megarhynchos           | 14/05/1885 | 05/06/2011 | 36           | 38              | 2              |
| Bluethroat            | Luscinia svecica                | 12/09/1958 | 23/09/1959 | 3            | 3               | 1              |
| Spotted Flycatcher    | Muscicapa striata               | 05/06/1885 | 05/10/2013 | 143          | 1215            | 192            |
| Wheatear              | Oenanthe oenanthe               | 04/03/1885 | 06/11/2013 | 293          | 1066            | 47             |
| Black Redstart        | Phoenicurus ochruros            | 14/05/1985 | 27/12/2013 | 226          | 245             | 4              |
| Redstart              | Phoenicurus phoenicurus         | 12/04/1886 | 21/09/2013 | 119          | 662             | 161            |
| Whinchat              | Saxicola rubetra                | 07/05/1886 | 14/06/2012 | 92           | 265             | 30             |
| Stonechat             | Saxicola rubicola               | 21/12/1975 | 11/03/2015 | 355          | 674             | 21             |
| Redwing               | Turdus iliacus                  | 19/11/1885 | 29/12/2013 | 157          | 2120            | 250            |
| Blackbird             | Turdus merula                   | 30/03/1885 | 08/05/2014 | 501          | 4494            | 218            |
| Song Thrush           | Turdus philomelos               | 05/03/1885 | 10/12/2014 | 317          | 1370            | 81             |
| Fieldfare             | Turdus pilaris                  | 29/03/1885 | 28/01/2013 | 83           | 3821            | 700            |
| Ring Ouzel            | Turdus torquatus                | 30/09/1993 | 07/04/2012 | 18           | 20              | 2              |
| Mistle Thrush         | Turdus viscivorus               | 04/03/1885 | 04/12/2013 | 133          | 289             | 12             |
| Golden Oriole         | Oriolus oriolus                 | 19/04/1872 | 28/05/1960 | 2            | 2               | 1              |
| Blue Tit              | Cyanistes caeruleus             | 14/05/1885 | 08/05/2014 | 424          | 5331            | 322            |
| Great Tit             | Parus major                     | 24/05/1885 | 08/05/2014 | 355          | 2679            | 197            |
| Coal Tit              | Periparus ater                  | 25/03/1885 | 13/11/2013 | 27           | 33              | 3              |
| Continental Coal Tit  | Periparus ater subsp. ater      | 08/10/2005 | 10/10/2005 | 2            | 2               | 1              |
| Marsh Tit             | Poecile palustris               | 24/05/1980 | 20/07/1990 | 5            | 5               | 1              |
| House Sparrow         | Passer domesticus               | 21/05/1886 | 12/02/2015 | 448          | 4532            | 300            |
| Tree Sparrow          | Passer montanus                 | 12/05/1886 | 17/11/2005 | 28           | 533             | 100            |
| Chiffchaff            | Phylloscopus collybita          | 03/04/1885 | 29/12/2013 | 663          | 8621            | 1296           |
| Yellow-browed Warbler | Phylloscopus inornatus          | 19/10/1985 | 20/10/2012 | 6            | 6               | 1              |
| Pallas's Warbler      | Phylloscopus proregulus         | 25/10/1999 | -          | 3            | 3               | 1              |
| Wood Warbler          | Phylloscopus sibilatrix         | 29/04/1975 | 27/08/2013 | 10           | 10              | 1              |
| Willow Warbler        | Phylloscopus trochilus          | 11/03/1885 | 02/10/2013 | 232          | 5290            | 1053           |
| Red Bishop            | Euplectes orix                  | 08/06/2008 | -          | 1            | 1               | 1              |
| Dunnock               | Prunella modularis              | 03/04/1885 | 08/05/2014 | 365          | 2202            | 98             |
| Firecrest             | Regulus ignicapilla             | 01/09/1919 | 29/12/2013 | 69           | 79              | 4              |
| Goldcrest             | Regulus regulus                 | 31/01/1885 | 04/12/2013 | 230          | 1545            | 123            |

| Common Name               | Latin Name                | First Date | Last Date  | No. of Rec's | Total Abundance | Max. Abundance |
|---------------------------|---------------------------|------------|------------|--------------|-----------------|----------------|
| Nuthatch                  | Sitta europaea            | 14/07/2002 | 29/12/2013 | 57           | 94              | 8              |
| Starling                  | Sturnus vulgaris          | 15/05/1885 | 20/02/2015 | 605          | 192157          | 75000          |
| Melodious Warbler         | Hippolais polyglotta      | 21/09/1994 | -          | 1            | 1               | 1              |
| Bearded Tit               | Panurus biarmicus         | 22/10/1981 | -          | 1            | 3               | 3              |
| Blackcap                  | Sylvia atricapilla        | 12/04/1886 | 07/11/2013 | 380          | 5584            | 867            |
| Garden Warbler            | Sylvia borin              | 22/05/1947 | 19/09/2013 | 105          | 523             | 134            |
| Whitethroat               | Sylvia communis           | 14/05/1885 | 24/09/2013 | 217          | 2159            | 405            |
| Lesser Whitethroat        | Sylvia curruca            | 23/09/1975 | 05/07/2013 | 147          | 1627            | 363            |
| Barred Warbler            | Sylvia nisoria            | 31/08/1959 | -          | 1            | 1               | 1              |
| Dartford Warbler          | Sylvia undata             | 28/10/1992 | 02/01/2006 | 12           | 12              | 1              |
| Wren                      | Troglodytes troglodytes   | 13/05/1885 | 29/12/2013 | 343          | 1757            | 105            |
| Shag                      | Phalacrocorax aristotelis | 21/12/1990 | 04/12/2013 | 23           | 45              | 7              |
| Cormorant                 | Phalacrocorax carbo       | 04/03/1885 | 29/12/2013 | 662          | 5814            | 150            |
| Gannet                    | Morus bassanus            | 30/09/1930 | 04/12/2013 | 58           | 2017            | 400            |
| Great Spotted Woodpecker  | Dendrocopos major         | 10/05/1947 | 29/12/2013 | 265          | 488             | 12             |
| Lesser Spotted Woodpecker | Dendrocopos minor         | 29/07/1978 | 10/01/1997 | 6            | 6               | 1              |
| Wryneck                   | Jynx torquilla            | 07/09/2005 | -          | 1            | 1               | 1              |
| Green Woodpecker          | Picus viridis             | 01/07/1946 | 29/12/2013 | 290          | 561             | 10             |
| Slavonian Grebe           | Podiceps auritus          | 22/02/1879 | 12/12/2013 | 41           | 60              | 4              |
| Great Crested Grebe       | Podiceps cristatus        | 01/12/1879 | 17/12/2013 | 169          | 1476            | 90             |
| Red-necked Grebe          | Podiceps grisegena        | 01/03/1947 | 12/12/2013 | 9            | 12              | 2              |
| Black-necked Grebe        | Podiceps nigricollis      | 09/11/1876 | 29/03/2013 | 8            | 9               | 2              |
| Little Grebe              | Tachybaptus ruficollis    | 21/10/1885 | 13/03/2015 | 964          | 4731            | 29             |
| Storm Petrel              | Hydrobates pelagicus      | 24/05/1879 | 26/05/2006 | 6            | 10              | 5              |
| Leach's Petrel            | Oceanodroma leucorhoa     | 05/05/1885 | 29/11/2009 | 6            | 14              | 6              |
| Fulmar                    | Fulmarus glacialis        | 31/05/1979 | 04/05/2011 | 32           | 213             | 168            |
| Sooty Shearwater          | Puffinus griseus          | 24/10/1984 | -          | 1            | 1               | 1              |
| Balearic Shearwater       | Puffinus mauretanicus     | 06/08/2001 | 07/08/2010 | 13           | 44              | 8              |
| Manx Shearwater           | Puffinus puffinus         | 25/05/1979 | 17/05/2008 | 15           | 65              | 38             |
| Nightjar                  | Caprimulgus europaeus     | 24/06/1885 | 11/06/1946 | 4            | 4               | 1              |
| Short-eared Owl           | Asio flammeus             | 16/04/1976 | 23/11/2013 | 59           | 63              | 2              |
| Long-eared Owl            | Asio otus                 | 09/02/1992 | 02/01/2006 | 3            | 6               | 4              |
| Little Owl                | Athene noctua             | 05/05/1926 | 21/05/2011 | 36           | 38              | 2              |
| Eurasian Eagle Owl        | Bubo bubo                 | 15/03/1988 | -          | 1            | 1               | 1              |
| Tawny Owl                 | Strix aluco               | 31/05/1885 | 04/12/2013 | 68           | 79              | 4              |
| Barn Owl                  | Tyto alba                 | 09/12/1886 | 12/02/2013 | 73           | 85              | 2              |
| Ноорое                    | Upupa epops               | 15/05/1954 | 21/04/1976 | 7            | 7               | 1              |



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# SUSSEX NOTABLE BIRD REPORT

Land at New Salts Farm, Shoreham + 2km buffer

23 June 2015 ESD/15/443 Search Area: TQ1704 toTQ2205; TQ1703 to TQ1903; TQ1806 to TQ2106 Vicky Hale (PJC Ecology)

#### Anas strepera

### Gadwall

A grey-coloured dabbling duck which is a very scarce breeder, scarce summer non-breeder, fairly common winter visitor and scarce on observed passage. Breeds in small numbers throughout south and south east England and East Anglia on still inland waters such as reservoirs and flooded gravel pits. Feeds on stems, leaves and seeds.

Bird Population Status - amber; Birds Directive Annex 2.1; Convention on Migratory Species; Appendix 2

| Grid Reference | Recorder                      | Date       | Locality               | Abundance | Selection Based On |
|----------------|-------------------------------|------------|------------------------|-----------|--------------------|
| TQ2004         | Sussex Ornithological Society | 20/05/1996 | Lancing New Salts Farm | 1 Present | Date               |
|                |                               |            |                        |           |                    |

# Aythya ferina

Pochard

A stocky diving duck that is a scarce summer non-breeder, very scarce breeder and fairly common winter visitor. It is very scarce on observed passage. It breeds on large, reed-fringed lakes and winters on lakes, reservoirs and in sheltered bays. It has a varied diet of plants and seeds, snails, small fish and insects.

Bird Population Status - amber; Birds Directive Annex 2.1; Convention on Migratory Species; Appendix 2

| Grid Reference | Recorder                      | Date       | Locality            | Abundance | Selection Based On |
|----------------|-------------------------------|------------|---------------------|-----------|--------------------|
| TQ1703         | Sussex Ornithological Society | 10/06/2000 | Worthing Brooklands | 1 Present | Date               |
| TQ1703         | BoEE or WeBS Count            | 09/06/2002 | Worthing Brooklands | 1 Present | Date               |
| TQ1703         | BoEE or WeBS Count            | 26/06/2005 | Worthing Brooklands | 1 Present | Date               |

### Apus apus

### Swift

A well-known common summer visitor and passage migrant, widely distributed in Sussex. This sickle-shaped medium-sized dark aerial bird only stops flying when at the nest, it even sleeps on the wing! Many towns and villages have breeding populations. Very large migration movements are sometimes recorded with many thousands of birds involved. Can be seen in large screaming parties speeding around rooftops. They feed on flying insects and airborne spiders.

Bird Population Status - amber

| Grid Reference | Recorder                          | Date       | Locality               | Abundance  | Selection Based On |
|----------------|-----------------------------------|------------|------------------------|------------|--------------------|
| TQ1703         | Anon @ SOS Website                | 10/07/2013 | Worthing Brooklands    | 30 Present | Positive Breeding  |
| TQ1906         | Lancing College NHS archive       | 15/07/1885 | Lancing College & Farm | 1 Present  | Positive Breeding  |
| TQ1906         | Lancing College NHS archive       | 21/06/1886 | Lancing College & Farm | 1 Present  | Positive Breeding  |
| TQ208060       | Sussex Ornithological Society     | 20/06/1999 | Shoreham-by-Sea        | 1 Present  | Positive Breeding  |
| TQ208060       | Sussex Ornithological Society     | 04/07/1999 | Shoreham-by-Sea        | 1 Present  | Positive Breeding  |
| TQ208060       | Sussex Ornithological Society     | 07/06/2000 | Shoreham-by-Sea        | 1 Present  | Positive Breeding  |
| TQ20D          | Tetrad Atlas (2007-2011) TTV data | 11/05/2008 | Shoreham Mill Hill     | 3 Present  | Positive Breeding  |
| TQ20D          | Tetrad Atlas (2007-2011) TTV data | 20/06/2010 | Shoreham Mill Hill     | 11 Present | Positive Breeding  |
| TQ20H          | Tetrad Atlas (2007-2011) TTV data | 17/05/2008 | Shoreham Harbour       | 11 Present | Positive Breeding  |
| TQ2105         | Sussex Ornithological Society     | 12/05/1998 | Shoreham-by-Sea        | 6 Present  | Positive Breeding  |
| TQ2105         | Sussex Ornithological Society     | 16/07/1998 | Shoreham-by-Sea        | 20 Present | Positive Breeding  |
| TQ2105         | Sussex Ornithological Society     | 16/07/1998 | Shoreham-by-Sea        | 3 Present  | Positive Breeding  |
| TQ2105         | Sussex Ornithological Society     | 13/07/2008 | Shoreham-by-Sea        | 40 Present | Positive Breeding  |
| TQ2105         | Sussex Ornithological Society     | 19/07/2008 | Shoreham-by-Sea        | 2 Present  | Positive Breeding  |
| TQ218046       | Sussex Ornithological Society     | 23/07/2007 | Shoreham-by-Sea        | 1 Present  | Positive Breeding  |
| TQ2204         | National Biodiversit (Gateway)    | 01/06/2009 | Shoreham-by-Sea        | 1 Present  | Positive Breeding  |
| TQ2204         | National Biodiversit (Gateway)    | 01/06/2009 | Shoreham-by-Sea        | 1 Present  | Positive Breeding  |
| TQ223054       | National Biodiversit (Gateway)    | 01/06/2009 | Shoreham-by-Sea        | 1 Present  | Positive Breeding  |
| TQ224054       | Sussex Ornithological Society     | 20/06/1999 | Shoreham-by-Sea        | 1 Present  | Positive Breeding  |
| TQ224054       | Sussex Ornithological Society     | 04/07/1999 | Shoreham-by-Sea        | 6 Present  | Positive Breeding  |
| TQ224054       | Sussex Ornithological Society     | 07/06/2000 | Shoreham-by-Sea        | 10 Present | Positive Breeding  |
| TQ224054       | Sussex Ornithological Society     | 27/06/2000 | Shoreham-by-Sea        | 10 Present | Positive Breeding  |
| TQ224057       | Sussex Ornithological Society     | 26/07/2001 | Shoreham-by-Sea        | 5 Present  | Positive Breeding  |

# Burhinus oedicnemus

Stone-curlew

This unusual looking wader which feeds on worms and insects, is a very scarce passage migrant and very scarce breeder in Sussex. It is a rare but nationally increasing bird of grassland and arable now largely confined to Breckland and Wessex.

Bern Convention Appendix 2; Bird Population Status - amber; Birds Directive Annex 1; Convention on Migratory Species; Appendix 2; Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; UK Biodiversity Action Plan priority species; Wildlife and Countryside Act 1981 (Schedule 1 Part 1)

| Grid Reference | Recorder             | Date       | Locality   | Abundance | Selection Based On |
|----------------|----------------------|------------|------------|-----------|--------------------|
| TQ1804         | SOS Archived Records | 24/06/1982 | Lancing CP | 1 Present | Date               |

### Charadrius dubius

Little Ringed Plover

A small wader which is a scarce breeding summer visitor and passage migrant. A species that started to colonise Britain in 1938 and which first bred in Sussex in 1949, regularly since 1970. Widespread in Sussex in suitable habitats such as shingle banks and gravel pits, where it feeds on insects.

Bern Convention Appendix 2; Convention on Migratory Species; Appendix 2; Wildlife and Countryside Act 1981 (Schedule 1 Part 1)

| Grid Reference | Recorder                      | Date       | Locality            | Abundance | Selection Based On |
|----------------|-------------------------------|------------|---------------------|-----------|--------------------|
| TQ1904         | Sussex Ornithological Society | 09/05/1996 | Widewater Lagoon    | 3 Present | Date               |
| TQ2004         | Sussex Ornithological Society | 07/05/1990 | Widewater Lagoon    | 1 Present | Date               |
| TQ2004         | Sussex Ornithological Society | 21/04/2008 | Widewater Lagoon    | 1 Present | Date               |
| TQ2005         | Sussex Ornithological Society | 18/07/1996 | Shoreham River Adur | 1 Present | Date               |
| TQ2104         | Sussex Ornithological Society | 25/04/1990 | Shoreham River Adur | 2 Present | Date               |
| TQ2104         | Sussex Ornithological Society | 20/07/1992 | Shoreham River Adur | 1 Present | Date               |
| TQ2104         | Sussex Ornithological Society | 18/07/1996 | Shoreham River Adur | 1 Present | Date               |

# Vanellus vanellus

### Lapwing

A large wader which is a familiar farmland and wetland bird; it is a scarce or fairly common, but declining, resident and very common winter visitor. The bird declined markedly in South East England at the end of the last century. The favoured breeding habitat is mixed farmland and suitable habitats have been in short supply. Its diet consists of worms and insects.

Bird Population Status - red; Birds Directive Annex 2.2; Convention on Migratory Species; Appendix 2; Environmental Stewardship Target Species (Pevensey Levels); Environmental Stewardship Target Species (Romney Marsh); Environmental Stewardship Target Species (South Downs); Environmental Stewardship Target Species (Wealden Greensand); Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; UK Biodiversity Action Plan priority species

| Grid Reference | Recorder                      | Date                       | Locality               | Abundance    | Selection Based On |
|----------------|-------------------------------|----------------------------|------------------------|--------------|--------------------|
| TQ1806         | BTO Birdtrack data            | 01/05/2005                 | Lancing Clump          | 1 Present    | Date               |
| TQ1906         | BTO Birdtrack data            | 20/05/2007                 | Ladywells nr Coombes   | 2 Present    | Date               |
| TQ2004         | Sussex Ornithological Society | 18/06/1989 -<br>18/06/1989 | Lancing New Salts Farm | 6 Present    | Date               |
| TQ2004         | BTO Birdtrack data            | 14/06/2012                 | Shoreham Harbour       | 1 Present    | Date               |
| TQ2005         | Lancing College NHS archive   | 01/04/1925                 | Lower Adur Valley      | 1 Present    | Date               |
| TQ2005         | Lancing College NHS archive   | 01/04/1926                 | Lower Adur Valley      | 1 Present    | Date               |
| TQ2005         | Lancing College NHS archive   | 01/04/1927                 | Lower Adur Valley      | 1 Present    | Date               |
| TQ2005         | Lancing College NHS archive   | 01/04/1928                 | Lower Adur Valley      | 1 Present    | Date               |
| TQ2005         | Lancing College NHS archive   | 01/04/1929                 | Lower Adur Valley      | 1 Present    | Date               |
| TQ2005         | Lancing College NHS archive   | 02/04/1929                 | Lower Adur Valley      | 1 Present    | Date               |
| TQ2005         | Lancing College NHS archive   | 26/04/1929                 | Lower Adur Valley      | 1 Present    | Date               |
| TQ2005         | Lancing College NHS archive   | 27/04/1929                 | Lower Adur Valley      | 1 Present    | Date               |
| TQ2005         | Lancing College NHS archive   | 30/04/1929                 | Lower Adur Valley      | 1 Present    | Date               |
| TQ2005         | Lancing College NHS archive   | 23/05/1945                 | Lower Adur Valley      | 1 Present    | Date               |
| TQ2005         | Lancing College NHS archive   | 08/05/1947                 | Lower Adur Valley      | 1 Present    | Date               |
| TQ2005         | Lancing College NHS archive   | 10/05/1947                 | Lower Adur Valley      | 1 Present    | Date               |
| TQ2005         | Lancing College NHS archive   | 08/06/1947                 | Lower Adur Valley      | 1 Present    | Date               |
| TQ2005         | Lancing College NHS archive   | 20/05/1948                 | Lower Adur Valley      | 1 Present    | Date               |
| TQ2005         | Sussex Ornithological Society | 14/06/1996                 | Shoreham Airport       | 10 Present   | Date               |
| TQ2005         | Sussex Ornithological Society | 29/05/2007                 | River Adur (A259-A27)  | 1000 Present | Date               |
| TQ2005         | Anon @ Shoreham District O.S. | 16/04/2008                 | Shoreham Airport       | 1000 Present | Date               |
| TQ2005         | Sussex Ornithological Society | 05/06/2008                 | Shoreham Airport       | 1 Present    | Date               |

| TQ2006   | Sussex Ornithological Society     | 30/06/2002 | Coombes Cuckoos Corner       | 100 Present | Date |
|----------|-----------------------------------|------------|------------------------------|-------------|------|
| TQ2006   | BTO Birdtrack data                | 07/04/2012 | Lower Adur Valley            | 1 Present   | Date |
| TQ209047 | BTO Birdtrack data                | 16/06/2013 | Adur Saltings (RSPB Reserve) | 3 Present   | Date |
| TQ209047 | BTO Birdtrack data                | 19/06/2013 | Adur Saltings (RSPB Reserve) | 10 Present  | Date |
| TQ209047 | BTO Birdtrack data                | 19/06/2013 | Adur Saltings (RSPB Reserve) | 3 Present   | Date |
| TQ20C    | Tetrad Atlas (2007-2011) TTV data | 21/06/2008 | Shoreham Airport             | 1 Present   | Date |
| TQ2104   | Sussex Ornithological Society     | 21/06/2008 | Shoreham River Adur          | 17 Present  | Date |
| TQ2104   | BTO Birdtrack data                | 12/05/2013 | Shoreham River Adur          | 1 Present   | Date |
| TQ2105   | Sussex Ornithological Society     | 28/06/2001 | Shoreham River Adur          | 12 Present  | Date |

# Larus melanocephalus

# Mediterranean Gull

Fairly common throughout the year and increasing globally. Has bred annually since 1994, with an established breeding colony at Rye Harbour. This gull is slightly larger than a Black-headed Gull, with a bright red beak; it feeds on insects, fish, offal and carrion.

Bern Convention Appendix 2; Bird Population Status - amber; Birds Directive Annex 1; Convention on Migratory Species; Appendix 2; Wildlife and Countryside Act 1981 (Schedule 1 Part 1)

| Grid Reference | Recorder                      | Date       | Locality                     | Abundance | Selection Based On |
|----------------|-------------------------------|------------|------------------------------|-----------|--------------------|
| TQ1703         | Sussex Ornithological Society | 18/06/2003 | Worthing Brooklands          | 2 Present | Date               |
| TQ2004         | Sussex Ornithological Society | 04/05/2011 | Lancing Beach                | 2 Present | Date               |
| TQ2005         | Sussex Ornithological Society | 13/06/1991 | Shoreham River Adur          | 3 Present | Date               |
| TQ2005         | Sussex Ornithological Society | 01/05/1996 | Shoreham River Adur          | 1 Present | Date               |
| TQ2005         | Sussex Ornithological Society | 01/05/1997 | Shoreham River Adur          | 1 Present | Date               |
| TQ2005         | Sussex Ornithological Society | 28/06/2003 | Adur Rail - Tollbridge       | 1 Present | Date               |
| TQ2005         | BTO Birdtrack data            | 21/06/2007 | River Adur (A259-A27)        | 1 Present | Date               |
| TQ2104         | Sussex Ornithological Society | 08/05/1991 | Shoreham River Adur          | 1 Present | Date               |
| TQ2104         | Sussex Ornithological Society | 12/06/1991 | Shoreham River Adur          | 3 Present | Date               |
| TQ2104         | Sussex Ornithological Society | 17/06/1991 | Shoreham River Adur          | 1 Present | Date               |
| TQ2104         | Sussex Ornithological Society | 17/06/1991 | Shoreham River Adur          | 4 Present | Date               |
| TQ2104         | Sussex Ornithological Society | 18/06/1991 | Shoreham River Adur          | 1 Present | Date               |
| TQ2104         | Sussex Ornithological Society | 20/06/1991 | Shoreham River Adur          | 1 Present | Date               |
| TQ2104         | Sussex Ornithological Society | 25/06/1991 | Shoreham River Adur          | 1 Present | Date               |
| TQ2104         | Sussex Ornithological Society | 25/06/1991 | Shoreham River Adur          | 2 Present | Date               |
| TQ2104         | Sussex Ornithological Society | 28/05/1993 | Adur Saltings (RSPB Reserve) | 1 Present | Date               |
| TQ2104         | Sussex Ornithological Society | 01/05/1996 | Shoreham River Adur          | 1 Present | Date               |
| TQ2104         | Anon @ SOS Website            | 29/06/2003 | Shoreham River Adur          | 1 Present | Date               |
| TQ2104         | Sussex Ornithological Society | 10/06/2006 | Shoreham River Adur          | 1 Present | Date               |
| TQ2105         | Sussex Ornithological Society | 19/06/1991 | Shoreham River Adur          | 5 Present | Date               |

### Recurvirostra avosetta

A long-legged black and white wader with its characteristic long up-curved beak, which is a scarce winter visitor and passage migrant. Very scarce and localised breeder since 1979. Most records are from coastal sites, though there are some from inland. Diet consists of aquatic insects and their larvae, crustaceans and worms.

Bern Convention Appendix 2; Bird Population Status - amber; Birds Directive Annex 1; Convention on Migratory Species; Appendix 2; Wildlife and Countryside Act 1981 (Schedule 1 Part 1)

| Grid Reference | Recorder           | Date       | Locality               | Abundance | Selection Based On |
|----------------|--------------------|------------|------------------------|-----------|--------------------|
| TQ2005         | BTO Birdtrack data | 14/04/2012 | Adur Rail - Tollbridge | 1 Present | Date               |

### Gallinago gallinago

Snipe

Avocet

Now a very scarce breeder and fairly common winter visitor favouring poorly drained pasture. The UK population of Snipe has undergone particularly steep declines in lowland wet grassland in the past twenty-five years. It is a plump medium-sized wader with short legs and a long bill used to probe for small invertebrates, including worms and insect larvae. Males display by flying high in the air and then dropping steeply producing a noise by vibrating their tail feathers.

Bird Population Status - amber; Birds Directive Annex 2.1; Convention on Migratory Species; Appendix 2

| Grid Reference | Recorder                      | Date       | Locality                     | Abundance  | Selection Based On |
|----------------|-------------------------------|------------|------------------------------|------------|--------------------|
| TQ1906         | BTO Birdtrack data            | 14/04/2011 | Ladywells nr Coombes         | 1 Present  | Date               |
| TQ209047       | BTO Birdtrack data            | 01/04/2013 | Adur Saltings (RSPB Reserve) | 1 Present  | Date               |
| TQ209047       | BTO Birdtrack data            | 07/04/2013 | Adur Saltings (RSPB Reserve) | 1 Present  | Date               |
| TQ209047       | BTO Birdtrack data            | 08/04/2013 | Adur Saltings (RSPB Reserve) | 1 Present  | Date               |
| TQ209047       | BTO Birdtrack data            | 10/04/2013 | Adur Saltings (RSPB Reserve) | 1 Present  | Date               |
| TQ2104         | Sussex Ornithological Society | 28/07/1992 | Shoreham River Adur          | 31 Present | Date               |
| TQ2106         | Sussex Ornithological Society | 07/04/1995 | Shoreham Sanctuary           | 3 Present  | Date               |

### Limosa limosa

### **Black-tailed Godwit**

This large wader has long legs and a very long, straight bill. It is a fairly common but localised winter visitor and passage migrant, but a scarce non-breeder in summer. In our area it is recorded mainly from the Chichester and Pagham Harbour areas. It has suffered a large decline of its breeding populations in northern Europe and is now a rare breeder there. It can be found on estuaries and coastal lagoons where it feeds on insects, worms and snails.

Bird Population Status - red; Birds Directive Annex 2.2; Convention on Migratory Species; Appendix 2; UK Biodiversity Action Plan priority species; Wildlife and Countryside Act 1981 (Schedule 1 Part 1)

| Grid Reference | Recorder                      | Date       | Locality            | Abundance | Selection Based On |
|----------------|-------------------------------|------------|---------------------|-----------|--------------------|
| TQ2005         | Sussex Ornithological Society | 25/05/1996 | Shoreham River Adur | 1 Present | Date               |
| TQ2005         | Sussex Ornithological Society | 01/06/2001 | Shoreham Airport    | 1 Present | Date               |
| TQ2005         | Sussex Ornithological Society | 05/06/2008 | Shoreham Airport    | 1 Present | Date               |
| TQ2104         | Sussex Ornithological Society | 27/06/1995 | Shoreham River Adur | 1 Present | Date               |
| TQ2104         | Sussex Ornithological Society | 03/06/2008 | Shoreham River Adur | 1 Present | Date               |

# Numenius arquata

### Curlew

Formerly a very scarce breeder; this large wader is a common passage migrant and winter visitor. Mainly recorded from marshes, mudflats and saltmarsh, but sometimes elsewhere. Easily recognisable by its long down-curved bill which it uses to catch worms, shellfish and shrimps, and its distinctive bubbling call.

Bird Population Status - amber; Birds Directive Annex 2.2; Convention on Migratory Species; Appendix 2; Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; UK Biodiversity Action Plan priority species

| Grid Reference | Recorder                      | Date       | Locality                     | Abundance | Selection Based On |
|----------------|-------------------------------|------------|------------------------------|-----------|--------------------|
| TQ1806         | Sussex Ornithological Society | 18/06/2004 | Lancing Clump                | 1 Present | Date               |
| TQ1806         | BTO Birdtrack data            | 01/05/2005 | Lancing Clump                | 1 Present | Date               |
| TQ1906         | BTO Birdtrack data            | 23/06/2007 | Ladywells nr Coombes         | 2 Present | Date               |
| TQ2004         | Anon @ Shoreham District O.S. | 22/06/2013 | Lancing Widewater            | 3 Present | Date               |
| TQ2005         | BTO Birdtrack data            | 14/04/2007 | River Adur (A259-A27)        | 1 Present | Date               |
| TQ2005         | BTO Birdtrack data            | 24/05/2007 | River Adur (A259-A27)        | 1 Present | Date               |
| TQ2005         | BTO Birdtrack data            | 10/06/2007 | River Adur (A259-A27)        | 1 Present | Date               |
| TQ2005         | BTO Birdtrack data            | 29/07/2007 | River Adur (A259-A27)        | 1 Present | Date               |
| TQ2006         | Anon @ SOS Website            | 07/05/2003 | Coombes Cuckoos Corner       | 2 Present | Date               |
| TQ2006         | Sussex Ornithological Society | 29/06/2005 | Coombes Cuckoos Corner       | 1 Present | Date               |
| TQ2006         | Sussex Ornithological Society | 19/07/2005 | Coombes Cuckoos Corner       | 1 Present | Date               |
| TQ209047       | BTO Birdtrack data            | 14/04/2013 | Adur Saltings (RSPB Reserve) | 1 Present | Date               |
| TQ20C          | BTO Birdtrack data            | 02/05/2009 | Shoreham River Adur          | 1 Present | Date               |
| TQ2104         | Sussex Ornithological Society | 15/04/2004 | Shoreham River Adur          | 1 Present | Date               |
| TQ2104         | Sussex Ornithological Society | 05/05/2007 | Shoreham River Adur          | 1 Present | Date               |
| TQ2104         | Sussex Ornithological Society | 28/06/2007 | Shoreham River Adur          | 2 Present | Date               |
| TQ2104         | Sussex Ornithological Society | 27/06/2009 | Shoreham River Adur          | 1 Present | Date               |
| TQ2104         | Sussex Ornithological Society | 22/07/2009 | Shoreham River Adur          | 2 Present | Date               |
| TQ2106         | Sussex Ornithological Society | 29/06/1996 | Shoreham Sanctuary           | 2 Present | Date               |

# Tringa totanus

### Redshank

A medium-sized wader with a long red bill and long red legs. It is a scarce resident in wetlands close to rivers, and a fairly common winter visitor and passage migrant. Its preferred habitats are wet grassland, estuaries and saltmarshes where it can feed on insects, earthworms, molluscs and crustaceans. Most breeding sites in Sussex are within protected areas, such as nature reserves, which employ specific management for breeding waders.

Bird Population Status - amber; Birds Directive Annex 2.2; Convention on Migratory Species; Appendix 2; Environmental Stewardship Target Species (Pevensey Levels); Environmental Stewardship Target Species (Romney Marsh); Environmental Stewardship Target Species (South Downs)

| Grid Reference | Recorder                      | Date       | Locality              | Abundance | Selection Based On |
|----------------|-------------------------------|------------|-----------------------|-----------|--------------------|
| TQ1703         | BoEE or WeBS Count            | 10/04/2005 | Worthing Brooklands   | 1 Present | Date               |
| TQ1904         | Sussex Ornithological Society | 02/04/2004 | Widewater Lagoon      | 1 Present | Date               |
| TQ1904         | BTO Birdtrack data            | 02/04/2009 | Widewater Lagoon      | 2 Present | Date               |
| TQ2004         | Sussex Ornithological Society | 06/04/1990 | Widewater Lagoon      | 2 Present | Date               |
| TQ2004         | Sussex Ornithological Society | 02/05/2011 | Lancing Beach         | 1 Present | Date               |
| TQ2005         | Lancing College NHS archive   | 13/04/1928 | Lower Adur Valley     | 1 Present | Date               |
| TQ2005         | Lancing College NHS archive   | 26/04/1929 | Lower Adur Valley     | 1 Present | Date               |
| TQ2005         | Lancing College NHS archive   | 27/04/1929 | Lower Adur Valley     | 1 Present | Date               |
| TQ2005         | Lancing College NHS archive   | 01/05/1929 | Lower Adur Valley     | 1 Present | Date               |
| TQ2005         | Lancing College NHS archive   | 02/05/1929 | Lower Adur Valley     | 1 Present | Date               |
| TQ2005         | Lancing College NHS archive   | 11/05/1929 | Lower Adur Valley     | 1 Present | Date               |
| TQ2005         | Lancing College NHS archive   | 28/04/1946 | Lower Adur Valley     | 1 Present | Date               |
| TQ2005         | Lancing College NHS archive   | 04/05/1947 | Lower Adur Valley     | 1 Present | Date               |
| TQ2005         | Lancing College NHS archive   | 06/05/1947 | Lower Adur Valley     | 1 Present | Date               |
| TQ2005         | Lancing College NHS archive   | 22/05/1947 | Lower Adur Valley     | 1 Present | Date               |
| TQ2005         | Lancing College NHS archive   | 08/06/1947 | Lower Adur Valley     | 1 Present | Date               |
| TQ2005         | Lancing College NHS archive   | 01/05/1948 | Lower Adur Valley     | 1 Present | Date               |
| TQ2005         | SOS Archived Records          | 15/05/1985 | Shoreham River Adur   | 2 Present | Positive Breeding  |
| TQ2005         | Sussex Ornithological Society | 06/04/1995 | Shoreham River Adur   | 4 Present | Date               |
| TQ2005         | BTO Birdtrack data            | 04/05/2007 | River Adur (A259-A27) | 1 Present | Date               |
| TQ2005         | Sussex Ornithological Society | 23/05/2007 | Shoreham Airport      | 1 Present | Date               |
| TQ204060       | BTO Birdtrack data            | 06/04/2012 | Lower Adur Valley     | 2 Present | Date               |
| TQ208045       | Sussex Ornithological Society | 01/04/2001 | Shoreham River Adur   | 2 Present | Date               |

| TQ209047 | BTO Birdtrack data                | 16/06/2013 | Adur Saltings (RSPB Reserve) | Present Taxon | Date |
|----------|-----------------------------------|------------|------------------------------|---------------|------|
| TQ20C    | BTO Birdtrack data                | 01/04/2007 | Shoreham Airport             | 1 Present     | Date |
| TQ20C    | Tetrad Atlas (2007-2011) TTV data | 03/04/2008 | Shoreham Airport             | 1 Present     | Date |
| TQ210054 | Sussex Ornithological Society     | 29/05/2005 | Shoreham River Adur          | 1 Present     | Date |
| TQ2104   | Sussex Ornithological Society     | 25/06/1991 | Shoreham River Adur          | 9 Present     | Date |
| TQ2104   | BTO Birdtrack data                | 12/04/2010 | Shoreham River Adur          |               | Date |
| TQ2104   | BTO Birdtrack data                | 17/06/2012 | Shoreham River Adur          | 1 Present     | Date |
| TQ215047 | Sussex Ornithological Society     | 21/05/2007 | Shoreham River Adur          | 30 Present    | Date |

# Ardea cinerea

# Grey Heron

A fairly common resident, the Grey Heron is increasing in numbers and can be found in most wetland areas standing silently at the water's edge waiting for fish prey. Breeds colonially in tall trees near to plentiful fish supplies.

| Grid Reference | Recorder                      | Date       | Locality               | Abundance | Selection Based On |
|----------------|-------------------------------|------------|------------------------|-----------|--------------------|
| TQ10Y          | BTO Birdtrack data            | 08/05/2010 | Applesham nr Coombes   |           | Date               |
| TQ10Y          | Tetrad Atlas (Roving records) | 23/05/2011 | Applesham nr Coombes   | 3 Present | Positive Breeding  |
| TQ10Y          | Tetrad Atlas (Roving records) | 01/06/2011 | Applesham nr Coombes   | 3 Present | Positive Breeding  |
| TQ1703         | BoEE or WeBS Count            | 09/04/2000 | Worthing Brooklands    | 1 Present | Date               |
| TQ1705         | Anon @ BTO Garden Bird Watch  | 16/04/2007 | Sompting nr Worthing   | 1 Present | Date               |
| TQ1705         | BTO Birdtrack data            | 23/03/2013 | Sompting nr Worthing   | 1 Present | Date               |
| TQ1805         | BTO Birdtrack data            | 13/05/2013 | Lancing                | 1 Present | Date               |
| TQ1904         | BTO Birdtrack data            | 19/04/2009 | Lancing Old Salts Farm | 1 Present | Date               |
| TQ1905         | Mark Elliott                  | 06/05/2003 | Monks Farm, Lancing    | 1 Present | Date               |

| TQ1906 | BTO Birdtrack data            | 11/03/2007                 | Ladywells nr Coombes   | 2 Present | Date |
|--------|-------------------------------|----------------------------|------------------------|-----------|------|
| TQ1906 | BTO Birdtrack data            | 20/04/2007                 | Lancing College        | 1 Present | Date |
| TQ1906 | BTO Birdtrack data            | 22/04/2007                 | Ladywells nr Coombes   | 1 Present | Date |
| TQ1906 | BTO Birdtrack data            | 06/05/2007 -<br>20/05/2007 | Ladywells nr Coombes   | 1 Present | Date |
| TQ1906 | BTO Birdtrack data            | 20/05/2007                 | Ladywells nr Coombes   | 2 Present | Date |
| TQ1906 | BTO Birdtrack data            | 02/03/2008                 | Ladywells nr Coombes   | 2 Present | Date |
| TQ1906 | BTO Birdtrack data            | 16/04/2008                 | Ladywells nr Coombes   | 1 Present | Date |
| TQ1906 | BTO Birdtrack data            | 18/05/2008 -<br>30/05/2008 | Ladywells nr Coombes   | 1 Present | Date |
| TQ1906 | BTO Birdtrack data            | 31/03/2009                 | Ladywells nr Coombes   | 1 Present | Date |
| TQ1906 | BTO Birdtrack data            | 13/04/2009                 | Ladywells nr Coombes   | 2 Present | Date |
| TQ1906 | BTO Birdtrack data            | 13/05/2009 -<br>28/05/2009 | Ladywells nr Coombes   | 1 Present | Date |
| TQ1906 | BTO Birdtrack data            | 30/04/2010                 | Ladywells nr Coombes   | 1 Present | Date |
| TQ1906 | BTO Birdtrack data            | 10/05/2010 -<br>20/05/2010 | Ladywells nr Coombes   | 1 Present | Date |
| TQ1906 | BTO Birdtrack data            | 01/03/2011                 | Ladywells nr Coombes   | 2 Present | Date |
| TQ1906 | BTO Birdtrack data            | 30/03/2011                 | Ladywells nr Coombes   | 2 Present | Date |
| TQ1906 | BTO Birdtrack data            | 14/04/2011 -<br>29/04/2011 | Ladywells nr Coombes   | 1 Present | Date |
| TQ1906 | BTO Birdtrack data            | 19/05/2011                 | Ladywells nr Coombes   | 2 Present | Date |
| TQ1906 | BTO Birdtrack data            | 24/03/2012                 | Ladywell nr Coombes    | 2 Present | Date |
| TQ1906 | BTO Birdtrack data            | 07/04/2012 -<br>20/04/2012 | Ladywell nr Coombes    | 1 Present | Date |
| TQ1906 | BTO Birdtrack data            | 11/04/2012                 | Ladywell nr Coombes    | 2 Present | Date |
| TQ1906 | BTO Birdtrack data            | 12/05/2012 -<br>29/05/2012 | Ladywell nr Coombes    | 1 Present | Date |
| TQ1906 | BTO Birdtrack data            | 15/04/2013                 | Ladywell nr Coombes    | 1 Present | Date |
| TQ1906 | BTO Birdtrack data            | 12/05/2013 -<br>21/05/2013 | Ladywell nr Coombes    | 1 Present | Date |
| TQ1906 | BTO Birdtrack data            | 21/05/2013                 | Ladywell nr Coombes    | 2 Present | Date |
| TQ2004 | Sussex Ornithological Society | 11/03/2001                 | Widewater Lagoon       | 1 Present | Date |
| TQ2004 | Sussex Ornithological Society | 05/03/2006                 | Lancing New Salts Farm | 2 Present | Date |

| TQ2005   | Sussex Ornithological Society     | 12/03/1998 | Lower Adur Valley     | 3 Present | Date |
|----------|-----------------------------------|------------|-----------------------|-----------|------|
| TQ2005   | Sussex Ornithological Society     | 05/03/2005 | Lower Adur Valley     | 1 Present | Date |
| TQ2005   | BoEE or WeBS Count                | 13/03/2005 | Lower Adur Valley     | 2 Present | Date |
| TQ2005   | Sussex Ornithological Society     | 07/04/2005 | Lower Adur Valley     | 1 Present | Date |
| TQ2005   | BTO Birdtrack data                | 15/03/2007 | Lower Adur Valley     | 1 Present | Date |
| TQ2005   | BTO Birdtrack data                | 22/05/2007 | River Adur (A259-A27) | 1 Present | Date |
| TQ2005   | Sussex Ornithological Society     | 29/03/2009 | Lower Adur Valley     | 2 Present | Date |
| TQ20C    | Tetrad Atlas (2007-2011) TTV data | 03/04/2008 | Shoreham Airport      | 1 Present | Date |
| TQ20C    | BTO Birdtrack data                | 14/03/2010 | Shoreham River Adur   | 4 Present | Date |
| TQ20D    | Tetrad Atlas (2007-2011) TTV data | 11/05/2008 | Shoreham Mill Hill    | 1 Present | Date |
| TQ20H    | Tetrad Atlas (2007-2011) TTV data | 17/05/2008 | Shoreham Harbour      | 1 Present | Date |
| TQ210052 | Sussex Ornithological Society     | 24/05/2000 | Shoreham-by-Sea       | 1 Present | Date |
| TQ2104   | BoEE;NWC;WeBS SOS computed        | 12/03/1986 | Shoreham River Adur   | 3 Present | Date |
| TQ2104   | BTO Birdtrack data                | 12/05/2013 | Shoreham River Adur   | 1 Present | Date |
|          |                                   |            |                       |           |      |

Botaurus stellaris

Bittern

This elusive bird, well known for its "booming" call, is rare but increasing within the UK. In the breeding season it is confined almost entirely to lowland marshes and reedbeds in Norfolk, Suffolk and Lancashire where it feeds principally on fish and amphibians. It has been recorded as a wintering species in several Sussex wetlands including those at the Rye Harbour NR where extensive work has been undertaken to improve conditions for it.

Bern Convention Appendix 2; Bird Population Status - red; Birds Directive Annex 1; Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; UK Biodiversity Action Plan priority species; Wildlife and Countryside Act 1981 (Schedule 1 Part 1)

| Grid Reference | Recorder                      | Date       | Locality               | Abundance | Selection Based On |
|----------------|-------------------------------|------------|------------------------|-----------|--------------------|
| TQ2006         | Sussex Ornithological Society | 13/12/2010 | Coombes Cuckoos Corner | 1 Present | All records        |
| TQ2104         | Lancing College NHS archive   | 01/02/1929 | Shoreham River Adur    | 1 Present | All records        |
| TQ2104         | Sussex Bird Report            | 16/02/1954 | Shoreham River Adur    | 1 Present | All records        |
| TQ2105         | Lancing College NHS archive   | 01/01/1887 | Shoreham-by-Sea        | 1 Present | All records        |
| TQ2105         | Sussex Bird Report            | 24/02/1961 | Shoreham-by-Sea        | 1 Present | All records        |
| TQ2105         | Sussex Bird Report            | 02/01/1971 | Shoreham-by-Sea        | 1 Present | All records        |

# Egretta garzetta

### Little Egret

A medium-sized white heron with characteristic bright yellow feet which was formerly rare but has bred since 2001 and is a scarce and increasing resident, and probably scarce autumn visitor. Its status as winter visitor is uncertain. It overwinters in Britain primarily on estuaries in the south and west and it has been breeding at a few southern sites since 1996. The Little Egret has been recorded from many places along Sussex coasts and estuaries and Chichester and Langstone Harbours are one of the best British locations. It feeds on fish.

Bern Convention Appendix 2; Bird Population Status - amber; Birds Directive Annex 1; EC CITES Annex A

| Grid Reference | Recorder                      | Date       | Locality             | Abundance  | Selection Based On |
|----------------|-------------------------------|------------|----------------------|------------|--------------------|
| TQ10Y          | Tetrad Atlas (Roving records) | 23/05/2011 | Applesham nr Coombes | 10 Present | Positive Breeding  |
| TQ1805         | BTO Birdtrack data            | 23/06/2013 | Lancing              | 1 Present  | Date               |
| TQ1904         | Sussex Ornithological Society | 24/01/2002 | Widewater Lagoon     | 1 Present  | roost              |

| TQ1906 | BTO Birdtrack data            | 02/06/2007 -<br>17/06/2007 | Ladywells nr Coombes | 1 Present  | Date and roost |
|--------|-------------------------------|----------------------------|----------------------|------------|----------------|
| TQ1906 | BTO Birdtrack data            | 10/06/2007                 | Ladywells nr Coombes | 4 Present  | Date           |
| TQ1906 | BTO Birdtrack data            | 14/07/2007 -<br>28/07/2007 | Ladywells nr Coombes | 1 Present  | roost          |
| TQ1906 | BTO Birdtrack data            | 10/05/2008 -<br>30/05/2008 | Ladywells nr Coombes | 1 Present  | Date           |
| TQ1906 | BTO Birdtrack data            | 18/05/2008                 | Ladywells nr Coombes | 2 Present  | Date           |
| TQ1906 | BTO Birdtrack data            | 28/06/2008                 | Ladywells nr Coombes | 2 Present  | Date           |
| TQ1906 | BTO Birdtrack data            | 15/05/2009                 | Ladywells nr Coombes | 1 Present  | Date           |
| TQ1906 | BTO Birdtrack data            | 12/06/2009 -<br>23/06/2009 | Ladywells nr Coombes | 1 Present  | Date           |
| TQ1906 | BTO Birdtrack data            | 23/06/2009                 | Ladywells nr Coombes | 2 Present  | Date           |
| TQ1906 | BTO Birdtrack data            | 01/07/2009 -<br>20/07/2009 | Ladywells nr Coombes | 3 Present  | roost          |
| TQ1906 | Sussex Ornithological Society | 04/10/2009                 | Lancing College      | 30 Present | roost          |
| TQ1906 | BTO Birdtrack data            | 01/12/2009 -<br>24/12/2009 | Ladywells nr Coombes | 9 Present  | roost          |
| TQ1906 | BTO Birdtrack data            | 25/05/2010                 | Ladywells nr Coombes | 1 Present  | Date           |
| TQ1906 | BTO Birdtrack data            | 09/06/2010                 | Ladywells nr Coombes | 1 Present  | Date           |
| TQ1906 | BTO Birdtrack data            | 04/10/2010 -<br>18/10/2010 | Ladywells nr Coombes | 1 Present  | roost          |
| TQ1906 | BTO Birdtrack data            | 06/05/2011                 | Ladywells nr Coombes | 1 Present  | Date           |
| TQ1906 | BTO Birdtrack data            | 26/06/2011                 | Ladywells nr Coombes | 3 Present  | Date           |
| TQ1906 | BTO Birdtrack data            | 12/05/2012                 | Ladywell nr Coombes  | 1 Present  | Date           |
| TQ1906 | BTO Birdtrack data            | 13/06/2012                 | Ladywell nr Coombes  | 1 Present  | Date           |
| TQ1906 | BTO Birdtrack data            | 21/05/2013 -<br>29/05/2013 | Ladywell nr Coombes  | 3 Present  | Date           |

| TQ2004 | Anon @ Worthing Sea-watching Log | 21/05/1992                 | Widewater Lagoon       | 1 Present | Date |
|--------|----------------------------------|----------------------------|------------------------|-----------|------|
| TQ2004 | BoEE or WeBS Count               | 11/05/2002                 | Widewater Lagoon       | 3 Present | Date |
| TQ2004 | Anon @ Shoreham District O.S.    | 13/05/2002                 | Widewater Lagoon       | 3 Present | Date |
| TQ2004 | BoEE or WeBS Count               | 08/05/2005                 | Widewater Lagoon       | 1 Present | Date |
| TQ2004 | BoEE or WeBS Count               | 26/06/2005                 | Widewater Lagoon       | 2 Present | Date |
| TQ2004 | Sussex Ornithological Society    | 26/05/2006                 | Widewater Lagoon       | 1 Present | Date |
| TQ2004 | Sussex Ornithological Society    | 27/05/2006                 | Widewater Lagoon       | 1 Present | Date |
| TQ2004 | Anon @ Shoreham District O.S.    | 02/06/2006                 | Widewater Lagoon       | 7 Present | Date |
| TQ2004 | BoEE;NWC;WeBS SOS computed       | 10/06/2006                 | Widewater Lagoon       | 3 Present | Date |
| TQ2004 | Sussex Ornithological Society    | 21/06/2008                 | Widewater Lagoon       | 5 Present | Date |
| TQ2004 | BTO Birdtrack data               | 01/06/2011                 | Widewater Lagoon       | 1 Present | Date |
| TQ2004 | BTO Birdtrack data               | 14/06/2012                 | Shoreham Harbour       | 1 Present | Date |
| TQ2005 | Sussex Ornithological Society    | 22/06/1993                 | Shoreham River Adur    | 1 Present | Date |
| TQ2005 | Sussex Ornithological Society    | 27/06/1999                 | Shoreham River Adur    | 1 Present | Date |
| TQ2005 | Sussex Ornithological Society    | 01/05/2001                 | Shoreham Airport       | 1 Present | Date |
| TQ2005 | Sussex Ornithological Society    | 01/05/2001                 | Shoreham River Adur    | 1 Present | Date |
| TQ2005 | Sussex Ornithological Society    | 03/05/2001                 | Shoreham Airport       | 1 Present | Date |
| TQ2005 | Sussex Ornithological Society    | 03/05/2001                 | Shoreham River Adur    | 1 Present | Date |
| TQ2005 | Sussex Ornithological Society    | 07/06/2002                 | Shoreham Airport       | 3 Present | Date |
| TQ2005 | Sussex Ornithological Society    | 26/06/2002                 | Shoreham Airport       | 1 Present | Date |
| TQ2005 | Sussex Ornithological Society    | 13/06/2005                 | Lower Adur Valley      | 1 Present | Date |
| TQ2005 | Sussex Ornithological Society    | 17/06/2005                 | Lower Adur Valley      | 1 Present | Date |
| TQ2005 | Sussex Ornithological Society    | 18/06/2005                 | Lower Adur Valley      | 2 Present | Date |
| TQ2005 | BTO Birdtrack data               | 02/05/2007 -<br>03/05/2007 | River Adur (A259-A27)  | 1 Present | Date |
| TQ2005 | Sussex Ornithological Society    | 08/06/2007                 | Lower Adur Valley      | 1 Present | Date |
| TQ2005 | BTO Birdtrack data               | 10/06/2007                 | River Adur (A259-A27)  | 2 Present | Date |
| TQ2005 | BTO Birdtrack data               | 29/05/2009                 | Adur Rail - Tollbridge | 1 Present | Date |
| TQ2005 | BTO Birdtrack data               | 31/05/2010                 | Shoreham River Adur    | 1 Present | Date |
| TQ2005 | BTO Birdtrack data               | 15/06/2011                 | Adur Rail - Tollbridge | 4 Present | Date |
| TQ2005 | BTO Birdtrack data               | 09/05/2012                 | Adur Rail - Tollbridge | 2 Present | Date |

| TQ2006   | Sussex Ornithological Society     | 29/06/2005                 | Coombes Cuckoos Corner        | 7 Present  | Date  |
|----------|-----------------------------------|----------------------------|-------------------------------|------------|-------|
| TQ2006   | BTO Birdtrack data                | 11/05/2009 -<br>21/05/2009 | Coombes Cuckoos Corner        | 2 Present  | Date  |
| TQ2006   | Sussex Ornithological Society     | 16/09/2012                 | Coombes Cuckoos Corner        | 12 Present | roost |
| TQ203043 | Sussex Ornithological Society     | 01/05/2005                 | Widewater Lagoon              | 4 Present  | Date  |
| TQ207058 | Sussex Ornithological Society     | 14/05/1998                 | Lower Adur Valley             | 1 Present  | Date  |
| TQ207058 | Sussex Ornithological Society     | 25/05/2001                 | Shoreham Airport              | 1 Present  | Date  |
| TQ208055 | Sussex Ornithological Society     | 22/06/1993                 | Shoreham Airport              | 1 Present  | Date  |
| TQ209047 | BTO Birdtrack data                | 16/06/2013                 | Adur Saltings (RSPB Reserve)  | 2 Present  | Date  |
| TQ209047 | BTO Birdtrack data                | 17/06/2013                 | Adur Saltings (RSPB Reserve)  | 3 Present  | Date  |
| TQ20C    | BTO Birdtrack data                | 12/08/2007                 | Shoreham Airport              | 17 Present | roost |
| TQ20C    | Tetrad Atlas (2007-2011) TTV data | 21/06/2008                 | Shoreham Airport              | 5 Present  | Date  |
| TQ20C    | BTO Birdtrack data                | 02/05/2009                 | Shoreham River Adur           | 1 Present  | Date  |
| TQ20C    | BTO Birdtrack data                | 21/06/2009                 | Shoreham River Adur           | 1 Present  | Date  |
| TQ20D    | Tetrad Atlas (2007-2011) TTV data | 20/06/2010                 | Shoreham Mill Hill            | 3 Present  | Date  |
| TQ20H    | Tetrad Atlas (2007-2011) TTV data | 17/05/2008                 | Shoreham Harbour              | 5 Present  | Date  |
| TQ2104   | Sussex Ornithological Society     | 09/05/1995                 | Shoreham River Adur           | 1 Present  | Date  |
| TQ2104   | BTO Birdtrack data                | 29/05/2005                 | Shoreham River Adur           | 1 Present  | Date  |
| TQ2104   | Sussex Ornithological Society     | 29/09/2006                 | Shoreham River Adur           | 41 Present | roost |
| TQ2104   | Sussex Ornithological Society     | 08/09/2007                 | Shoreham River Adur           | 31 Present | roost |
| TQ2104   | BTO Birdtrack data                | 17/06/2012                 | Shoreham River Adur           | 2 Present  | Date  |
| TQ2104   | BTO Birdtrack data                | 12/05/2013                 | Shoreham River Adur           | 1 Present  | Date  |
| TQ2105   | BTO Birdtrack data                | 29/05/2009                 | Shoreham River Adur           | 1 Present  | Date  |
| TQ2105   | BTO Birdtrack data                | 15/06/2011                 | River Adur A259 to Railbridge | 2 Present  | Date  |
| TQ2105   | BTO Birdtrack data                | 09/05/2012                 | Shoreham River Adur           | 1 Present  | Date  |
| TQ2106   | Sussex Ornithological Society     | 04/08/1996                 | Shoreham Sanctuary            | 1 Present  | roost |
| TQ2106   | Sussex Ornithological Society     | 10/08/1996                 | Shoreham Sanctuary            | 1 Present  | roost |
| TQ2106   | Sussex Ornithological Society     | 13/05/1997                 | Shoreham Sanctuary            | 1 Present  | Date  |

# Streptopelia turtur

### Turtle Dove

A declining summer migrant that breeds at the northern edge of its range in the UK. It is confined largely to the south and east of England and is associated with fertile arable farmland in warm, dry situations where it feeds on seed. Nests in thick hedges, bushes and low trees in woodland edges, copses, commons, heaths and parkland. Easily identified by its evocative purring call.

Bird Population Status - red; Birds Directive Annex 2.2; EC CITES Annex A; Environmental Stewardship Target Species (High Weald); Environmental Stewardship Target Species (Romney Marsh); Environmental Stewardship Target Species (South Downs); Environmental Stewardship Target Species (Wealden Greensand); Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; UK Biodiversity Action Plan priority species

| Grid Reference | Recorder                      | Date       | Locality               | Abundance | Selection Based On |
|----------------|-------------------------------|------------|------------------------|-----------|--------------------|
| TQ1906         | Lancing College NHS archive   | 09/06/1886 | Lancing College & Farm | 1 Present | Positive Breeding  |
| TQ1906         | Lancing College NHS archive   | 05/06/1887 | Lancing College & Farm | 1 Present | Positive Breeding  |
| TQ1906         | Lancing College NHS archive   | 30/05/1928 | Lancing College & Farm | 1 Present | Positive Breeding  |
| TQ1906         | Lancing College NHS archive   | 15/06/1947 | Ladywell nr Coombes    | 1 Present | Positive Breeding  |
| TQ1906         | Lancing College NHS archive   | 11/05/1948 | Ladywell nr Coombes    | 1 Present | Positive Breeding  |
| TQ2005         | Sussex Ornithological Society | 01/07/2000 | Lower Adur Valley      | 2 Present | Positive Breeding  |
| TQ2106         | Sussex Ornithological Society | 01/06/1977 | Shoreham Sanctuary     | 2 Present | Positive Breeding  |
| TQ2106         | Sussex Ornithological Society | 16/06/1987 | Shoreham Sanctuary     | 2 Present | Positive Breeding  |
| TQ2106         | Sussex Ornithological Society | 03/06/1992 | Shoreham Sanctuary     | 1 Present | Positive Breeding  |

# Alcedo atthis

### Kingfisher

Fairly common resident and occasional winter visitor which is widespread across Sussex, but often declines following hard winters. A brilliantly coloured blue and orange bird which can be found in lowland freshwater areas such as rivers, ponds and streams, and during the winter on the coast and in estuarine areas. Nests in hole in riverbank or sandpit.

Bern Convention Appendix 2; Bird Population Status - amber; Birds Directive Annex 1; Wildlife and Countryside Act 1981 (Schedule 1 Part 1)

| Grid Reference | Recorder                      | Date       | Locality            | Abundance | Selection Based On |
|----------------|-------------------------------|------------|---------------------|-----------|--------------------|
| TQ170036       | Mark Elliott                  | 05/03/2005 | Worthing Borough    | 1 Present | Date               |
| TQ1703         | Sussex Ornithological Society | 02/08/1994 | Worthing Brooklands | 1 Present | Date               |
| TQ1703         | Sussex Ornithological Society | 22/07/2000 | Worthing Brooklands | 1 Present | Date               |
| TQ1703         | Sussex Ornithological Society | 14/08/2002 | Worthing Brooklands | 1 Present | Date               |
| TQ1703         | Sussex Ornithological Society | 30/03/2003 | Worthing Brooklands | 1 Present | Date               |
| TQ1703         | Sussex Ornithological Society | 17/08/2003 | Worthing Brooklands | 1 Present | Date               |
| TQ1703         | Sussex Ornithological Society | 08/03/2005 | Worthing Brooklands | 1 Present | Date               |
| TQ1703         | Sussex Ornithological Society | 12/08/2005 | Worthing Brooklands | 1 Present | Date               |
| TQ1804         | Sussex Ornithological Society | 30/07/1992 | Lancing CP          | 1 Present | Date               |
| TQ1904         | SOS Archived Records          | 12/08/1981 | Widewater Lagoon    | 1 Present | Date               |
| TQ1904         | SOS Archived Records          | 07/07/1986 | Widewater Lagoon    | 1 Present | Date               |
| TQ1905         | SOS Archived Records          | 11/07/1980 | Shoreham Airport    | 1 Present | Date               |
| TQ1905         | SOS Archived Records          | 16/05/1984 | Shoreham Airport    | 1 Present | Date               |

| TQ1906 | Lancing College NHS archive   | 31/03/1927                 | Lancing College & Farm | 1 Present | Positive Breeding |
|--------|-------------------------------|----------------------------|------------------------|-----------|-------------------|
| TQ1906 | SOS Archived Records          | 01/05/1980                 | Lancing College & Farm | 2 Present | Positive Breeding |
| TQ1906 | Sussex Ornithological Society | 25/08/1991                 | Ladywells nr Coombes   | 1 Present | Date              |
| TQ1906 | BTO Birdtrack data            | 28/07/2007                 | Ladywells nr Coombes   | 1 Present | Date              |
| TQ1906 | Sussex Ornithological Society | 28/07/2007                 | Ladywells nr Coombes   | 1 Present | Date              |
| TQ1906 | BTO Birdtrack data            | 25/08/2007                 | Ladywells nr Coombes   | 1 Present | Date              |
| TQ1906 | BTO Birdtrack data            | 23/04/2008                 | Ladywells nr Coombes   | 1 Present | Date              |
| TQ1906 | Sussex Ornithological Society | 12/07/2008 -<br>26/07/2008 | Ladywells nr Coombes   | 2 Present | Date              |
| TQ1906 | BTO Birdtrack data            | 12/07/2008 -<br>26/07/2008 | Ladywells nr Coombes   | 1 Present | Date              |
| TQ1906 | BTO Birdtrack data            | 26/07/2008                 | Ladywells nr Coombes   | 2 Present | Date              |
| TQ1906 | BTO Birdtrack data            | 15/05/2009                 | Ladywells nr Coombes   | 1 Present | Positive Breeding |
| TQ1906 | Sussex Ornithological Society | 23/06/2009 -<br>24/12/2009 | Ladywells nr Coombes   | 4 Present | Date              |
| TQ1906 | BTO Birdtrack data            | 23/06/2009                 | Ladywells nr Coombes   | 1 Present | Date              |
| TQ1906 | BTO Birdtrack data            | 04/08/2009 -<br>29/08/2009 | Ladywells nr Coombes   | 2 Present | Date              |
| TQ1906 | BTO Birdtrack data            | 30/07/2010                 | Ladywells nr Coombes   | 1 Present | Date              |
| TQ1906 | Sussex Ornithological Society | 30/07/2010 -<br>06/11/2010 | Ladywells nr Coombes   |           | Date              |
| TQ1906 | BTO Birdtrack data            | 01/08/2011 -<br>29/08/2011 | Ladywells nr Coombes   | 1 Present | Date              |
| TQ1906 | Sussex Ornithological Society | 01/08/2011 -<br>20/10/2011 | Ladywells nr Coombes   | 5 Present | Date              |
| TQ1906 | Sussex Ornithological Society | 24/03/2012                 | Ladywell nr Coombes    | 1 Present | Date              |
| TQ1906 | BTO Birdtrack data            | 24/03/2012                 | Ladywell nr Coombes    | 1 Present | Date              |
| TQ1906 | BTO Birdtrack data            | 22/07/2013                 | Ladywell nr Coombes    | 1 Present | Date              |

| TQ2004 | SOS Archived Records          | 22/08/1978 | Lancing New Salts Farm | 1 Present | Date |
|--------|-------------------------------|------------|------------------------|-----------|------|
| TQ2004 | SOS Archived Records          | 22/07/1984 | Lancing New Salts Farm | 1 Present | Date |
| TQ2004 | SOS Archived Records          | 17/03/1986 | Lancing New Salts Farm | 1 Present | Date |
| TQ2004 | Sussex Ornithological Society | 04/08/1992 | Lancing New Salts Farm | 2 Present | Date |
| TQ2004 | Sussex Ornithological Society | 11/03/1993 | Lancing New Salts Farm | 1 Present | Date |
| TQ2004 | Sussex Ornithological Society | 19/07/1994 | Widewater Lagoon       | 1 Present | Date |
| TQ2004 | Sussex Ornithological Society | 19/08/1995 | Lancing New Salts Farm | 1 Present | Date |
| TQ2004 | Sussex Ornithological Society | 10/03/1996 | Lancing New Salts Farm | 1 Present | Date |
| TQ2004 | Sussex Ornithological Society | 21/03/1996 | Lancing New Salts Farm | 1 Present | Date |
| TQ2004 | Sussex Ornithological Society | 23/07/1997 | Lancing New Salts Farm | 1 Present | Date |
| TQ2004 | Sussex Ornithological Society | 12/08/2002 | Adur Recreation Ground | 1 Present | Date |
| TQ2004 | Anon @ Shoreham District O.S. | 09/03/2004 | Widewater Lagoon       | 1 Present | Date |
| TQ2004 | Anon @ Shoreham District O.S. | 03/08/2005 | Widewater Lagoon       | 1 Present | Date |
| TQ2004 | Sussex Ornithological Society | 12/03/2006 | Lancing New Salts Farm | 1 Present | Date |
| TQ2004 | Sussex Ornithological Society | 31/08/2008 | Widewater Lagoon       | 1 Present | Date |
| TQ2004 | BTO Birdtrack data            | 09/03/2009 | Shoreham-by-Sea        | 1 Present | Date |
| TQ2004 | Sussex Ornithological Society | 31/08/2009 | Widewater Lagoon       | 1 Present | Date |
| TQ2004 | Sussex Ornithological Society | 23/08/2011 | Widewater Lagoon       | 2 Present | Date |

| TQ2005 | SOS Archived Records          | 01/08/1978 | Shoreham River Adur    | 2 Present | Positive Breeding |
|--------|-------------------------------|------------|------------------------|-----------|-------------------|
| TQ2005 | SOS Archived Records          | 01/07/1982 | Shoreham River Adur    | 1 Present | Date              |
| TQ2005 | SOS Archived Records          | 06/06/1986 | Shoreham River Adur    | 1 Present | Date              |
| TQ2005 | Sussex Ornithological Society | 22/08/1994 | Shoreham River Adur    | 1 Present | Date              |
| TQ2005 | Sussex Ornithological Society | 28/08/1995 | Shoreham River Adur    | 1 Present | Date              |
| TQ2005 | Sussex Ornithological Society | 27/08/1999 | Shoreham River Adur    | 1 Present | Date              |
| TQ2005 | Sussex Ornithological Society | 26/07/2000 | Lower Adur Valley      | 1 Present | Date              |
| TQ2005 | Sussex Ornithological Society | 03/08/2000 | Shoreham River Adur    | 1 Present | Date              |
| TQ2005 | Sussex Ornithological Society | 24/08/2000 | Shoreham Airport       | 1 Present | Date              |
| TQ2005 | Anon @ Shoreham District O.S. | 21/08/2001 | Shoreham Airport       | 1 Present | Date              |
| TQ2005 | Sussex Ornithological Society | 08/03/2002 | Lower Adur Valley      | 1 Present | Date              |
| TQ2005 | Sussex Ornithological Society | 12/03/2002 | Shoreham Airport       | 2 Present | Date              |
| TQ2005 | Sussex Ornithological Society | 10/04/2002 | Shoreham Airport       | 1 Present | Date              |
| TQ2005 | Sussex Ornithological Society | 22/07/2002 | Shoreham Airport       | 1 Present | Date              |
| TQ2005 | Sussex Ornithological Society | 02/08/2002 | Shoreham Airport       | 1 Present | Date              |
| TQ2005 | Sussex Ornithological Society | 12/08/2002 | Adur Rail - Tollbridge | 1 Present | Date              |
| TQ2005 | BTO Birdtrack data            | 15/07/2011 | Adur Rail - Tollbridge | 1 Present | Date              |
| TQ2005 | BTO Birdtrack data            | 02/03/2013 | Adur Rail - Tollbridge | 1 Present | Date              |
| TQ2005 | BTO Birdtrack data            | 24/08/2013 | Shoreham River Adur    | 1 Present | Date              |
| TQ2006 | Sussex Ornithological Society | 26/05/2002 | Coombes Cuckoos Corner | 2 Present | Positive Breeding |
| TQ2006 | Sussex Ornithological Society | 04/06/2002 | Coombes Cuckoos Corner | 2 Present | Positive Breeding |
| TQ2006 | Anon @ Shoreham District O.S. | 10/06/2002 | Coombes Cuckoos Corner | 2 Present | Positive Breeding |
| TQ2006 | Sussex Ornithological Society | 21/07/2004 | Coombes Cuckoos Corner | 2 Present | Date              |
| TQ2006 | Sussex Ornithological Society | 19/07/2005 | Coombes Cuckoos Corner | 1 Present | Date              |
| TQ2006 | Sussex Ornithological Society | 13/08/2005 | Coombes Cuckoos Corner | 1 Present | Date              |
| TQ2006 | Sussex Ornithological Society | 16/08/2005 | Coombes Cuckoos Corner | 2 Present | Date              |
| TQ2006 | Sussex Ornithological Society | 29/07/2008 | Lower Adur Valley      | 1 Present | Date              |
| TQ2006 | BTO Birdtrack data            | 27/08/2008 | Lower Adur Valley      | 1 Present | Date              |
| TQ2006 | Sussex Ornithological Society | 01/03/2009 | Coombes Cuckoos Corner | 1 Present | Date              |
| TQ2006 | Sussex Ornithological Society | 29/08/2011 | Coombes Cuckoos Corner | 1 Present | Date              |
| TQ2006 | Sussex Ornithological Society | 23/08/2012 | Coombes Cuckoos Corner | 2 Present | Date              |

| TQ203042 | Sussex Ornithological Society | 06/08/2005 | Widewater Lagoon             | 1 Present | Date |
|----------|-------------------------------|------------|------------------------------|-----------|------|
| TQ203049 | Sussex Ornithological Society | 02/03/2006 | Shoreham Airport             | 2 Present | Date |
| TQ206047 | Sussex Ornithological Society | 13/07/1997 | Lancing New Salts Farm       | 1 Present | Date |
| TQ206048 | Sussex Ornithological Society | 30/08/2001 | Adur Recreation Ground       | 1 Present | Date |
| TQ207067 | SOS Archived Records          | 09/06/1978 | Shoreham Airport             | 1 Present | Date |
| TQ210054 | Sussex Ornithological Society | 31/07/2005 | Shoreham River Adur          | 1 Present | Date |
| TQ2104   | Sussex Ornithological Society | 16/07/1990 | Shoreham River Adur          | 1 Present | Date |
| TQ2104   | Sussex Ornithological Society | 26/08/1991 | Shoreham River Adur          | 1 Present | Date |
| TQ2104   | Sussex Ornithological Society | 11/08/2003 | Shoreham River Adur          | 1 Present | Date |
| TQ2104   | Sussex Ornithological Society | 13/03/2004 | Shoreham River Adur          | 1 Present | Date |
| TQ2104   | Sussex Ornithological Society | 04/03/2006 | Shoreham River Adur          | 1 Present | Date |
| TQ2104   | BoEE;NWC;WeBS SOS computed    | 17/03/2006 | Shoreham River Adur          | 1 Present | Date |
| TQ2104   | Sussex Ornithological Society | 30/08/2007 | Shoreham River Adur          | 2 Present | Date |
| TQ2104   | Sussex Ornithological Society | 12/03/2010 | Adur Saltings (RSPB Reserve) | 1 Present | Date |
| TQ2105   | Sussex Ornithological Society | 21/08/1999 | Shoreham River Adur          | 1 Present | Date |

| TQ2106   | Sussex Ornithological Society | 25/08/1976 -<br>17/09/1976 | Shoreham Sanctuary     | 3 Present | Date              |
|----------|-------------------------------|----------------------------|------------------------|-----------|-------------------|
| TQ2106   | Sussex Ornithological Society | 27/08/1977 -<br>29/08/1977 | Shoreham Sanctuary     | 2 Present | Date              |
| TQ2106   | Sussex Ornithological Society | 19/08/1978 -<br>13/09/1978 | Shoreham Sanctuary     | 2 Present | Date              |
| TQ2106   | Sussex Ornithological Society | 12/07/1980 -<br>19/10/1980 | Shoreham Sanctuary     | 7 Present | Date              |
| TQ2106   | SOS Archived Records          | 12/07/1980                 | Shoreham Sanctuary     | 2 Present | Positive Breeding |
| TQ2106   | Sussex Ornithological Society | 15/07/1981 -<br>05/12/1981 | Shoreham Sanctuary     | 2 Present | Date              |
| TQ2106   | Sussex Ornithological Society | 31/08/1983 -<br>25/09/1983 | Shoreham Sanctuary     | 2 Present | Date              |
| TQ2106   | SOS Archived Records          | 03/06/1984                 | Shoreham Sanctuary     | 1 Present | Date              |
| TQ2106   | SOS Archived Records          | 15/06/1988                 | Shoreham Sanctuary     | 2 Present | Positive Breeding |
| TQ2106   | Sussex Ornithological Society | 15/06/1988 -<br>22/06/1988 | Shoreham Sanctuary     | 2 Present | Date              |
| TQ2106   | Sussex Ornithological Society | 27/08/1990                 | Shoreham Sanctuary     | 1 Present | Date              |
| TQ2106   | Sussex Ornithological Society | 27/08/1990                 | Shoreham Sanctuary     | 1 Present | Date              |
| TQ2106   | Sussex Ornithological Society | 08/08/1993 -<br>08/10/1993 | Shoreham Sanctuary     | 1 Present | Date              |
| TQ2106   | Sussex Ornithological Society | 08/08/1993                 | Shoreham Sanctuary     | 1 Present | Date              |
| TQ2106   | Sussex Ornithological Society | 23/07/1995                 | Shoreham Sanctuary     | 1 Present | Date              |
| TQ2106   | Sussex Ornithological Society | 02/08/1998                 | Shoreham Sanctuary     | 1 Present | Date              |
| TQ2106   | Sussex Ornithological Society | 25/08/1998                 | Shoreham Sanctuary     | 1 Present | Date              |
| TQ2106   | Sussex Ornithological Society | 15/05/1999                 | Shoreham Sanctuary     | 1 Present | Date              |
| TQ2106   | Sussex Ornithological Society | 15/05/1999                 | Shoreham Sanctuary     | 1 Present | Date              |
| TQ2106   | Sussex Ornithological Society | 24/07/2004 -<br>29/08/2004 | Shoreham Sanctuary     | 2 Present | Date              |
| TQ2106   | Sussex Ornithological Society | 29/08/2004                 | Shoreham Sanctuary     | 1 Present | Date              |
| TQ211052 | Sussex Ornithological Society | 04/07/1998                 | Shoreham-by-Sea        | 1 Present | Date              |
| TQ211068 | SOS Archived Records          | 11/08/1979                 | Shoreham Sanctuary     | 1 Present | Date              |
| TQ211068 | SOS Archived Records          | 15/07/1981                 | Shoreham Sanctuary     | 1 Present | Date              |
| TQ211069 | Sussex Ornithological Society | 25/08/1998                 | Shoreham Sanctuary     | 1 Present | Date              |
| TQ212069 | Sussex Ornithological Society | 28/05/2002                 | Coombes Cuckoos Corner | 2 Present | Date              |

| TQ21290472 | J. Gallagher                  | 16/03/2015 | Shoreham                     | 1 Present | Date |
|------------|-------------------------------|------------|------------------------------|-----------|------|
| TQ214048   | Sussex Ornithological Society | 01/08/2004 | Adur Saltings (RSPB Reserve) | 1 Present | Date |
| TQ215047   | Sussex Ornithological Society | 03/03/2007 | Shoreham River Adur          | 2 Present | Date |
| TQ216048   | Sussex Ornithological Society | 22/08/1998 | Shoreham Harbour             | 1 Present | Date |

#### Circus aeruginosus

#### Marsh Harrier

This bulky raptor is the largest of the Harriers, and is a scarce spring and autumn passage migrant, and a very scarce winter visitor. It is a very scarce breeder which bred for the first time in 2004. Usually found in and around wetland habitats such as reedbeds and marshes, where it can feed on small birds and mammals. It has recovered well from historic declines, however it is still a bird of conservation concern.

Bird Population Status - amber; Birds Directive Annex 1; Convention on Migratory Species; Appendix 2; EC CITES Annex A; Wildlife and Countryside Act 1981 (Schedule 1 Part 1)

| Grid Reference | Recorder                      | Date       | Locality            | Abundance | Selection Based On |
|----------------|-------------------------------|------------|---------------------|-----------|--------------------|
| TQ1904         | Sussex Ornithological Society | 05/05/1984 | Widewater Lagoon    | 1 Present | Positive Breeding  |
| TQ1905         | Sussex Ornithological Society | 07/05/1978 | Shoreham Airport    | 1 Present | Positive Breeding  |
| TQ1905         | Sussex Ornithological Society | 09/05/1978 | Shoreham Airport    | 2 Present | Positive Breeding  |
| TQ2005         | Sussex Ornithological Society | 04/05/1980 | Shoreham River Adur | 1 Present | Positive Breeding  |

# Milvus milvus

### Red Kite

This unmistakable large bird of prey is a very scarce breeding resident (first bred in 2004) and scarce but increasing visitor. Red kites were almost extinct in the UK by the early 1900s but in the last two decades, they have been re-introduced to England and Scotland, with magnificent results. It is easily recognised by its red colour and forked tail. It feeds on carrion, worms and small mammals.

Bird Population Status - amber; Birds Directive Annex 1; Convention on Migratory Species; Appendix 2; EC CITES Annex A; Wildlife and Countryside Act 1981 (Schedule 1 Part 1)

| Grid Reference | Recorder                      | Date       | Locality               | Abundance | Selection Based On |
|----------------|-------------------------------|------------|------------------------|-----------|--------------------|
| TQ1704         | Sussex Ornithological Society | 06/05/2005 | Lancing CP             | 1 Present | Positive Breeding  |
| TQ1804         | Sussex Ornithological Society | 19/03/2008 | Lancing CP             | 1 Present | Date               |
| TQ1804         | Sussex Ornithological Society | 24/05/2009 | Lancing CP             | 3 Present | Date               |
| TQ1804         | Sussex Ornithological Society | 24/05/2009 | Lancing CP             | 3 Present | Date               |
| TQ1804         | Sussex Ornithological Society | 16/03/2010 | Lancing CP             | 1 Present | Date               |
| TQ1804         | Sussex Ornithological Society | 25/04/2011 | Lancing CP             | 2 Present | Date               |
| TQ1805         | BTO Birdtrack data            | 26/03/2013 | Lancing                | 1 Present | Date               |
| TQ1906         | BTO Birdtrack data            | 24/04/2010 | Ladywells nr Coombes   | 2 Present | Date               |
| TQ1906         | BTO Birdtrack data            | 24/03/2012 | Ladywell nr Coombes    | 1 Present | Date               |
| TQ1906         | BTO Birdtrack data            | 01/04/2012 | Ladywell nr Coombes    | 1 Present | Date               |
| TQ1906         | BTO Birdtrack data            | 29/05/2012 | Ladywell nr Coombes    | 1 Present | Date               |
| TQ1906         | BTO Birdtrack data            | 12/05/2013 | Ladywell nr Coombes    | 1 Present | Date               |
| TQ206059       | Sussex Ornithological Society | 10/04/2010 | Adur Rail - Tollbridge | 1 Present | Date               |
| TQ207063       | Sussex Ornithological Society | 26/05/1997 | Shoreham River Adur    | 2 Present | Date               |
| TQ2105         | Sussex Ornithological Society | 04/04/2011 | Shoreham-by-Sea        | 1 Present | Date               |
| TQ2106         | Sussex Ornithological Society | 01/05/2000 | Shoreham Sanctuary     | 1 Present | Date               |
| TQ214064       | Dave Green;Penny Green        | 23/04/2011 | West Sussex (VC13)     | 1 Adult   | Date               |
| TQ218058       | Sussex Ornithological Society | 08/04/2013 | Shoreham-by-Sea        | 1 Present | Date               |

# Pandion haliaetus

### Osprey

This impressive black and white bird of prey is a scarce passage migrant, identified by its uniquely shaped wings which kink at the wrist to make an "M" shape. This is a species that has increased steadily over the last fifty years with records from the coast and reservoirs inland. It can be seen hovering over water before it plunges in, feet first, to catch its fish prey.

Bird Population Status - amber; Birds Directive Annex 1; Convention on Migratory Species; Appendix 2; EC CITES Annex A; Wildlife and Countryside Act 1981 (Schedule 1 Part 1)

| Grid Reference | Recorder                      | Date       | Locality             | Abundance | Selection Based On |
|----------------|-------------------------------|------------|----------------------|-----------|--------------------|
| TQ1704         | BTO Birdtrack data            | 30/06/2010 | Sompting nr Worthing | 1 Present | Date               |
| TQ2106         | Sussex Ornithological Society | 30/07/1995 | Shoreham Sanctuary   | 1 Present | Date               |

# Falco peregrinus

### Peregrine

Scarce breeding resident, passage migrant and winter visitor usually nesting on cliffs. This large and powerful falcon is well-known for its propensity to roost on tall buildings and has been widely recorded in Sussex. Takes medium-sized birds, such as wading birds, pigeons and small ducks.

Bern Convention Appendix 2; Birds Directive Annex 1; Convention on Migratory Species; Appendix 2; EC CITES Annex A; Wildlife and Countryside Act 1981 (Schedule 1 Part 1)

| Grid Reference | Recorder                      | Date       | Locality            | Abundance | Selection Based On |
|----------------|-------------------------------|------------|---------------------|-----------|--------------------|
| TQ1703         | Sussex Ornithological Society | 21/08/2009 | Worthing Brooklands | 1 Present | Date               |
| TQ1703         | BTO Birdtrack data            | 20/03/2011 | Worthing Brooklands | 1 Present | Date               |
| TQ1703         | BTO Birdtrack data            | 05/06/2011 | Worthing Brooklands | 1 Present | Date               |
| TQ1704         | Sussex Ornithological Society | 08/08/1991 | Lancing CP          | 1 Present | Date               |
| TQ1803         | Sussex Ornithological Society | 30/04/2000 | Lancing Beach       | 1 Present | Date               |
| TQ1804         | Sussex Ornithological Society | 25/03/1994 | Lancing CP          | 1 Female  | Date               |
| TQ1804         | Sussex Ornithological Society | 19/03/1997 | Lancing CP          | 1 Present | Date               |
| TQ1806         | Sussex Ornithological Society | 26/08/1993 | Lancing Clump       | 1 Present | Date               |
| TQ1806         | Sussex Ornithological Society | 31/08/1993 | Lancing Clump       | 1 Present | Date               |
| TQ1806         | Sussex Ornithological Society | 21/08/1995 | Lancing Clump       | 1 Present | Date               |
| TQ1806         | Sussex Ornithological Society | 25/08/1996 | Lancing Clump       | 1 Male    | Date               |
| TQ1904         | Sussex Ornithological Society | 13/05/1983 | Widewater Lagoon    | 1 Present | Positive Breeding  |
| TQ1904         | Sussex Ornithological Society | 22/04/1987 | Widewater Lagoon    | 1 Present | Date               |
| TQ1904         | Sussex Ornithological Society | 03/04/1988 | Widewater Lagoon    | 1 Present | Positive Breeding  |

| TQ1906 | Sussex Ornithological Society | 03/07/1997                 | Lancing College      | 1 Present | Positive Breeding |
|--------|-------------------------------|----------------------------|----------------------|-----------|-------------------|
| TQ1906 | BTO Birdtrack data            | 20/05/2007                 | Ladywells nr Coombes | 2 Present | Date              |
| TQ1906 | BTO Birdtrack data            | 06/06/2007 -<br>17/06/2007 | Ladywells nr Coombes | 1 Present | Date              |
| TQ1906 | BTO Birdtrack data            | 10/06/2007                 | Ladywells nr Coombes | 2 Present | Date              |
| TQ1906 | BTO Birdtrack data            | 13/04/2009                 | Ladywells nr Coombes | 1 Present | Date              |
| TQ1906 | BTO Birdtrack data            | 24/04/2010                 | Ladywells nr Coombes |           | Date              |
| TQ1906 | BTO Birdtrack data            | 09/07/2010 -<br>22/07/2010 | Ladywells nr Coombes | 2 Present | Date              |
| TQ1906 | BTO Birdtrack data            | 06/08/2010 -<br>27/08/2010 | Ladywells nr Coombes | 1 Present | Date              |
| TQ1906 | BTO Birdtrack data            | 07/06/2011                 | Ladywells nr Coombes | 2 Present | Date              |
| TQ1906 | BTO Birdtrack data            | 29/08/2011 -<br>31/08/2011 | Ladywells nr Coombes | 1 Present | Date              |
| TQ1906 | BTO Birdtrack data            | 24/03/2012                 | Ladywell nr Coombes  | 1 Present | Date              |
| TQ1906 | BTO Birdtrack data            | 20/04/2012                 | Ladywell nr Coombes  | 1 Present | Date              |
| TQ1906 | BTO Birdtrack data            | 12/05/2012                 | Ladywell nr Coombes  | 1 Present | Date              |
| TQ1906 | BTO Birdtrack data            | 25/06/2012                 | Ladywell nr Coombes  | 2 Present | Date              |
| TQ1906 | BTO Birdtrack data            | 12/07/2012 -<br>21/07/2012 | Ladywell nr Coombes  | 1 Present | Date              |
| TQ1906 | BTO Birdtrack data            | 21/07/2012                 | Ladywell nr Coombes  | 2 Present | Date              |
| TQ1906 | BTO Birdtrack data            | 03/08/2012                 | Ladywell nr Coombes  | 1 Present | Date              |
| TQ1906 | BTO Birdtrack data            | 10/08/2013                 | Ladywell nr Coombes  | 1 Present | Date              |
| TQ2004 | Sussex Ornithological Society | 27/03/1998                 | Shoreham Harbour     | 1 Present | Positive Breeding |
| TQ2004 | Sussex Ornithological Society | 26/08/2003                 | Widewater Lagoon     | 1 Present | Date              |
| TQ2004 | Sussex Ornithological Society | 25/07/2006                 | Widewater Lagoon     | 1 Present | Date              |
| TQ2005 | Sussex Ornithological Society | 24/04/1990                 | Shoreham Airport     | 1 Present | Date              |
| TQ2005 | Sussex Ornithological Society | 23/05/1994                 | Lower Adur Valley    | 1 Present | Positive Breeding |
| TQ2005 | Sussex Ornithological Society | 14/06/1994                 | Lower Adur Valley    | 1 Present | Positive Breeding |
| TQ2005 | Sussex Ornithological Society | 15/07/1994                 | Lower Adur Valley    | 1 Present | Positive Breeding |
| TQ2005 | Sussex Ornithological Society | 12/03/1998                 | Lower Adur Valley    | 1 Present | Date              |
| TQ2005 | Sussex Ornithological Society | 12/07/2001                 | Lower Adur Valley    | 1 Present | Date              |

| Sussex Ornithological Society | 01/05/2002  | Coombes Cuckoos Corner  | 2 Present   | Positive Breeding  |
|-------------------------------|---|---|---|--|
| BTO Birdtrack data            | 18/08/2012  | Lower Adur Valley   | 1 Present   | Date   |
| BTO Birdtrack data            | 21/08/2012  | Coombes Cuckoos Corner  | 1 Present   | Date   |
| Sussex Ornithological Society | 23/08/2012  | Coombes Cuckoos Corner  | 1 Present   | Date   |
| Sussex Ornithological Society | 01/05/2005  | Widewater Lagoon  | 1 Present   | Date   |
| BTO Birdtrack data            | 01/04/2007  | Shoreham Airport  | 1 Present   | Date   |
| Sussex Ornithological Society | 02/05/1996  | Shoreham-by-Sea   | 1 Present   | Date   |
| Sussex Ornithological Society | 15/07/2009  | Shoreham-by-Sea   | 1 Present   | Date   |
| Sussex Ornithological Society | 07/07/1996  | Shoreham Sanctuary  | 1 Present   | Date   |
| Sussex Ornithological Society | 08/08/1998  | Shoreham Sanctuary  | 1 Present   | Date   |
| Sussex Ornithological Society | 23/08/1998  | Shoreham Sanctuary  | 1 Present   | Date   |
| Penny Green                   | 01/04/2008  | 10 Westmoreland Walk, Shoreham-by-Sea   | 1 Flying  | Date   |
| Sussex Ornithological Society | 21/04/2012  | Mill Hill, Shoreham-by-Sea  | 1 Present   | Date   |
| Sussex Ornithological Society | 31/05/2004  | Shoreham-by-Sea   | 1 Present   | Positive Breeding  |
| Sussex Ornithological Society | 13/07/2003  | Shoreham Slonk Hill   | 1 Present   | Date   |
| Sussex Ornithological Society | 25/06/1997  | Shoreham-by-Sea   | 1 Present   | Positive Breeding  |
|                               | Sussex Ornithological Society<br>BTO Birdtrack data<br>BTO Birdtrack data<br>Sussex Ornithological Society<br>BTO Birdtrack data<br>Sussex Ornithological Society<br>Sussex Ornithological Society<br>Sussex Ornithological Society<br>Sussex Ornithological Society<br>Sussex Ornithological Society<br>Penny Green<br>Sussex Ornithological Society<br>Sussex Ornithological Society<br>Sussex Ornithological Society<br>Sussex Ornithological Society<br>Sussex Ornithological Society<br>Sussex Ornithological Society<br>Sussex Ornithological Society | Sussex Ornithological Society01/05/2002BTO Birdtrack data18/08/2012BTO Birdtrack data21/08/2012Sussex Ornithological Society23/08/2012Sussex Ornithological Society01/05/2005BTO Birdtrack data01/04/2007Sussex Ornithological Society02/05/1996Sussex Ornithological Society15/07/2009Sussex Ornithological Society07/07/1996Sussex Ornithological Society08/08/1998Sussex Ornithological Society23/08/1998Sussex Ornithological Society21/04/2008Sussex Ornithological Society21/04/2012Sussex Ornithological Society31/05/2004Sussex Ornithological Society13/07/2003Sussex Ornithological Society25/06/1997 | Sussex Ornithological Society01/05/2002Coombes Cuckoos CornerBTO Birdtrack data18/08/2012Lower Adur ValleyBTO Birdtrack data21/08/2012Coombes Cuckoos CornerSussex Ornithological Society23/08/2012Coombes Cuckoos CornerSussex Ornithological Society01/05/2005Widewater LagoonBTO Birdtrack data01/04/2007Shoreham AirportSussex Ornithological Society02/05/1996Shoreham-by-SeaSussex Ornithological Society02/05/1996Shoreham-by-SeaSussex Ornithological Society07/07/1996Shoreham SanctuarySussex Ornithological Society08/08/1998Shoreham SanctuarySussex Ornithological Society23/08/1998Shoreham SanctuarySussex Ornithological Society21/04/2012Mill Hill, Shoreham-by-SeaSussex Ornithological Society21/04/2012Mill Hill, Shoreham-by-SeaSussex Ornithological Society31/05/2004Shoreham-by-SeaSussex Ornithological Society13/07/2003Shoreham-by-Sea | Sussex Ornithological Society01/05/2002Coombes Cuckoos Corner2 PresentBTO Birdtrack data18/08/2012Lower Adur Valley1 PresentBTO Birdtrack data21/08/2012Coombes Cuckoos Corner1 PresentSussex Ornithological Society23/08/2012Coombes Cuckoos Corner1 PresentSussex Ornithological Society01/05/2005Widewater Lagoon1 PresentBTO Birdtrack data01/04/2007Shoreham Airport1 PresentSussex Ornithological Society02/05/1996Shoreham-by-Sea1 PresentSussex Ornithological Society15/07/2009Shoreham Sanctuary1 PresentSussex Ornithological Society07/07/1996Shoreham Sanctuary1 PresentSussex Ornithological Society03/08/1998Shoreham Sanctuary1 PresentSussex Ornithological Society23/08/1998Shoreham Sanctuary1 PresentSussex Ornithological Society23/08/1998Shoreham Sanctuary1 PresentSussex Ornithological Society23/08/1998Shoreham Sanctuary1 PresentSussex Ornithological Society21/04/2012Mill Hill, Shoreham-by-Sea1 PresentSussex Ornithological Society31/05/2004Shoreham-by-Sea1 PresentSussex Ornithological Society13/07/2003Shoreham-by-Sea1 PresentSussex Ornithological Society13/07/2003Shoreham-by-Sea1 PresentSussex Ornithological Society13/07/2003Shoreham-by-Sea1 PresentSussex Ornithological Society13/07/2003Shoreham |

# Falco subbuteo

### Hobby

Scarce breeding summer visitor and regular passage migrant. An agile species which feeds on insects and small birds, associated with heathlands that is now also found on farmland with pine clumps and woodland. Widely recorded in Sussex.

Bern Convention Appendix 2; Convention on Migratory Species; Appendix 2; EC CITES Annex A; Wildlife and Countryside Act 1981 (Schedule 1 Part 1)

| Grid Reference | Recorder                      | Date       | Locality             | Abundance | Selection Based On |
|----------------|-------------------------------|------------|----------------------|-----------|--------------------|
| TQ1703         | Sussex Ornithological Society | 08/05/1991 | Lancing CP           | 1 Present | Date               |
| TQ1703         | Sussex Ornithological Society | 30/04/2002 | Worthing Brooklands  | 1 Present | Positive Breeding  |
| TQ1703         | Sussex Ornithological Society | 10/04/2005 | Worthing Brooklands  | 1 Present | Positive Breeding  |
| TQ1704         | Sussex Ornithological Society | 11/07/1992 | Lancing CP           | 1 Present | Date               |
| TQ1704         | Sussex Ornithological Society | 31/05/1996 | Sompting nr Worthing | 1 Present | Positive Breeding  |
| TQ1704         | Sussex Ornithological Society | 26/06/2001 | Lancing CP           | 1 Present | Positive Breeding  |
| TQ1704         | Sussex Ornithological Society | 31/05/2002 | Lancing CP           | 1 Present | Positive Breeding  |
| TQ1704         | Sussex Ornithological Society | 14/06/2003 | Sompting nr Worthing | 1 Present | Date               |
| TQ1705         | Sussex Ornithological Society | 15/07/1998 | Lancing CP           | 1 Present | Date               |
| TQ1705         | Sussex Ornithological Society | 11/05/2007 | Sompting nr Worthing | 1 Present | Date               |
| TQ1803         | Sussex Ornithological Society | 31/05/1996 | Lancing Beach        | 1 Present | Positive Breeding  |
| TQ1804         | SOS Archived Records          | 16/06/1980 | Lancing CP           | 1 Present | Date               |
| TQ1804         | Sussex Ornithological Society | 22/05/1997 | Lancing CP           | 1 Present | Date               |
| TQ1804         | Sussex Ornithological Society | 06/08/2000 | Lancing CP           | 1 Present | Date               |
| TQ1804         | Sussex Ornithological Society | 31/05/2002 | Lancing CP           | 1 Present | Positive Breeding  |
| TQ1804         | Sussex Ornithological Society | 29/08/2008 | Lancing CP           | 1 Present | Date               |
| TQ1804         | Sussex Ornithological Society | 30/08/2010 | Lancing CP           |           | Date               |
| TQ1804         | Sussex Ornithological Society | 11/05/2012 | Lancing CP           | 1 Present | Date               |

| TQ1806   | Sussex Ornithological Society | 24/06/1990                 | Lancing Clump          | 1 Present | Date              |
|----------|-------------------------------|----------------------------|------------------------|-----------|-------------------|
| TQ1806   | Sussex Ornithological Society | 24/06/1990                 | Lancing Clump          | 1 Present | Positive Breeding |
| TQ1806   | Sussex Ornithological Society | 13/06/1991                 | Lancing Clump          | 1 Present | Positive Breeding |
| TQ1806   | Sussex Ornithological Society | 06/08/1993                 | Lancing Clump          | 1 Present | Date              |
| TQ1806   | Sussex Ornithological Society | 21/05/1995                 | Lancing Clump          | 1 Present | Date              |
| TQ1806   | Sussex Ornithological Society | 21/08/1995                 | Lancing Clump          | 1 Present | Date              |
| TQ1806   | Sussex Ornithological Society | 31/08/1996                 | Lancing Clump          | 1 Present | Date              |
| TQ1806   | Sussex Ornithological Society | 20/08/1997                 | Lancing Clump          | 1 Present | Date              |
| TQ186040 | Sussex Ornithological Society | 10/06/1998                 | Lancing CP             | 1 Present | Positive Breeding |
| TQ186040 | Sussex Ornithological Society | 13/06/1998                 | Lancing CP             | 1 Present | Positive Breeding |
| TQ186041 | Sussex Ornithological Society | 07/06/1997                 | Lancing CP             | 1 Present | Positive Breeding |
| TQ186041 | Sussex Ornithological Society | 31/08/1998                 | Lancing CP             | 1 Present | Date              |
| TQ189068 | Sussex Ornithological Society | 18/05/2005                 | Lancing Clump          | 1 Present | Positive Breeding |
| TQ1904   | Sussex Ornithological Society | 25/08/1993                 | Widewater Lagoon       | 1 Present | Date              |
| TQ1905   | SOS Archived Records          | 24/08/1982                 | Shoreham Airport       | 1 Present | Date              |
| TQ1906   | SOS Archived Records          | 29/06/1979                 | Lancing College & Farm | 1 Present | Date              |
| TQ1906   | Sussex Ornithological Society | 24/07/1999                 | Lancing College        | 1 Present | Date              |
| TQ1906   | BTO Birdtrack data            | 10/06/2007                 | Ladywells nr Coombes   | 1 Present | Date              |
| TQ1906   | BTO Birdtrack data            | 10/05/2008                 | Ladywells nr Coombes   | 1 Present | Date              |
| TQ1906   | BTO Birdtrack data            | 09/08/2008                 | Ladywells nr Coombes   | 1 Present | Date              |
| TQ1906   | BTO Birdtrack data            | 01/07/2009 -<br>20/07/2009 | Ladywells nr Coombes   | 1 Present | Date              |
| TQ1906   | BTO Birdtrack data            | 13/08/2009 -<br>21/08/2009 | Ladywells nr Coombes   | 1 Present | Date              |
| TQ1906   | BTO Birdtrack data            | 14/08/2010 -<br>27/08/2010 | Ladywells nr Coombes   | 1 Present | Date              |
| TQ1906   | BTO Birdtrack data            | 04/04/2011                 | Ladywells nr Coombes   | 1 Present | Date              |
| TQ1906   | BTO Birdtrack data            | 06/05/2011 -<br>19/05/2011 | Ladywells nr Coombes   | 1 Present | Date              |
| TQ1906   | BTO Birdtrack data            | 24/08/2011 -<br>31/08/2011 | Ladywells nr Coombes   | 1 Present | Date              |
| TQ1906   | BTO Birdtrack data            | 28/07/2013                 | Ladywell nr Coombes    | 1 Present | Date              |
| TQ195051 | Sussex Ornithological Society | 17/05/1997                 | Shoreham Airport       | 1 Present | Positive Breeding |

| TQ2004   | Sussex Ornithological Society | 25/08/1993 | Lancing New Salts Farm | 1 Present | Date              |
|----------|-------------------------------|------------|------------------------|-----------|-------------------|
| TQ2004   | Sussex Ornithological Society | 11/05/1996 | Widewater Lagoon       | 1 Present | Date              |
| TQ2004   | Sussex Ornithological Society | 09/08/1999 | Widewater Lagoon       | 1 Present | Date              |
| TQ2004   | Sussex Ornithological Society | 16/05/2001 | Widewater Lagoon       | 1 Present | Positive Breeding |
| TQ2004   | Anon @ Shoreham District O.S. | 23/05/2003 | Widewater Lagoon       | 1 Present | Positive Breeding |
| TQ2004   | Sussex Ornithological Society | 12/05/2004 | Widewater Lagoon       | 1 Present | Positive Breeding |
| TQ2004   | Sussex Ornithological Society | 31/08/2008 | Widewater Lagoon       | 1 Present | Date              |
| TQ2005   | Sussex Ornithological Society | 12/05/1990 | Shoreham Airport       | 1 Present | Date              |
| TQ2005   | Sussex Ornithological Society | 04/05/1996 | Shoreham River Adur    | 1 Present | Date              |
| TQ2005   | Sussex Ornithological Society | 23/08/1997 | Shoreham Airport       | 1 Present | Date              |
| TQ2005   | Sussex Ornithological Society | 14/08/1998 | Shoreham Airport       | 2 Present | Date              |
| TQ2005   | Sussex Ornithological Society | 07/07/1999 | Shoreham Airport       | 1 Present | Positive Breeding |
| TQ2006   | Sussex Ornithological Society | 07/06/1999 | Lower Adur Valley      | 1 Present | Positive Breeding |
| TQ2006   | Sussex Ornithological Society | 25/08/2004 | Shoreham River Adur    | 1 Present | Date              |
| TQ2006   | BTO Birdtrack data            | 31/05/2010 | Lower Adur Valley      | 1 Present | Date              |
| TQ206042 | Sussex Ornithological Society | 06/04/2003 | Widewater Lagoon       | 1 Present | Positive Breeding |
| TQ206045 | Sussex Ornithological Society | 03/04/2000 | Lancing New Salts Farm | 1 Present | Date              |
| TQ2104   | Sussex Ornithological Society | 26/05/2005 | Shoreham River Adur    | 1 Present | Date              |
| TQ2104   | Sussex Ornithological Society | 08/05/2008 | Shoreham River Adur    | 1 Present | Date              |
| TQ2105   | Sussex Ornithological Society | 08/06/1990 | Shoreham-by-Sea        | 1 Present | Date              |
| TQ2105   | Sussex Ornithological Society | 08/05/1993 | Shoreham-by-Sea        | 1 Present | Date              |
| TQ2105   | Sussex Ornithological Society | 12/08/2005 | Shoreham-by-Sea        | 1 Present | Date              |
| TQ2105   | Sussex Ornithological Society | 04/05/2006 | Shoreham-by-Sea        | 1 Present | Date              |
| TQ2105   | Sussex Ornithological Society | 20/07/2006 | Shoreham-by-Sea        | 1 Present | Date              |
| TQ2105   | Sussex Ornithological Society | 14/06/2008 | Shoreham-by-Sea        | 1 Present | Date              |
| TQ2105   | Sussex Ornithological Society | 09/07/2008 | Shoreham-by-Sea        | 1 Present | Date              |
| TQ2106   | SOS Archived Records          | 21/06/1976 | Shoreham Sanctuary     | 1 Present | Date              |
| TQ2106   | SOS Archived Records          | 14/05/1980 | Shoreham Sanctuary     | 1 Present | Date              |
| TQ2106   | SOS Archived Records          | 12/08/1984 | Shoreham Sanctuary     | 1 Present | Date              |
| TQ2106   | SOS Archived Records          | 29/08/1984 | Shoreham Sanctuary     | 1 Present | Date              |
| TQ212061 | Sussex Ornithological Society | 29/06/2003 | Shoreham-by-Sea        | 1 Present | Positive Breeding |
| TQ213068 | Sussex Ornithological Society | 08/06/1992 | Mill Hill, Shoreham-by-Sea | 1 Present | Positive Breeding |
|----------|-------------------------------|------------|----------------------------|-----------|-------------------|
| TQ215047 | SOS Archived Records          | 19/06/1982 | Shoreham Sanctuary         | 1 Present | Date              |
| TQ215064 | Sussex Ornithological Society | 20/04/2012 | Mill Hill, Shoreham-by-Sea | 1 Present | Date              |
| TQ218054 | Sussex Ornithological Society | 03/06/2005 | Shoreham-by-Sea            | 1 Present | Date              |
|          |                               |            |                            |           |                   |

## Coturnix coturnix

Quail

This small migratory gamebird is a scarce summer visitor; recorded in variable numbers from year to year. Most records are along the Downs from Beachy Head to central West Sussex in grass or cereal fields, where it feeds on insects and seeds. Quails are rarely seen, but have a distinctive call which can be heard at night. Formerly occasional in winter.

Bird Population Status - amber; Birds Directive Annex 2.2; Wildlife and Countryside Act 1981 (Schedule 1 Part 1)

| Grid Reference | Recorder                      | Date       | Locality               | Abundance | Selection Based On |
|----------------|-------------------------------|------------|------------------------|-----------|--------------------|
| TQ10Y          | BTO Birdtrack data            | 21/05/2011 | Applesham nr Coombes   | 1 Present | Date               |
| TQ1704         | Sussex Ornithological Society | 15/05/1988 | Sompting nr Worthing   | 1 Present | Date               |
| TQ1804         | Birds of Sussex (James)       | 21/03/1973 | Lancing CP             | 1 Present | Date               |
| TQ1804         | BTO Birdtrack data            | 20/05/2010 | Lancing CP             | 1 Present | Date               |
| TQ1804         | BTO Birdtrack data            | 21/07/2011 | Lancing CP             | 3 Present | Date               |
| TQ1806         | Sussex Ornithological Society | 29/06/1997 | Lancing Clump          | 1 Present | Date               |
| TQ1906         | Lancing College NHS archive   | 18/06/1886 | Lancing College & Farm | 1 Present | Date               |
| TQ2004         | Sussex Ornithological Society | 07/06/1991 | Lancing New Salts Farm | 1 Present | Date               |
| TQ2105         | Birds of Sussex (James)       | 08/03/1967 | Shoreham-by-Sea        | 1 Present | Date               |

# Perdix perdix

# **Grey Partridge**

A medium-sized gamebird with a distinctive orange face, which is a scarce resident species that has suffered a major decline nationally. It was formerly widespread on the South Downs but is now a scarce resident there; much declined but benefitting locally through conservation effort. Found in arable areas where it feeds on leaves, seeds and insects. However, it continues to be recorded in larger numbers in the far East of the county around Rye Bay.

Bird Population Status - red; Birds Directive Annex 2.1; Environmental Stewardship Target Species (High Weald); Environmental Stewardship Target Species (Low Weald); Environmental Stewardship Target Species (Pevensey Levels); Environmental Stewardship Target Species (Romney Marsh); Environmental Stewardship Target Species (South Downs); Environmental Stewardship Target Species (Wealden Greensand); Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; UK Biodiversity Action Plan priority species

| Grid Reference | Recorder                          | Date       | Locality               | Abundance     | Selection Based On |
|----------------|-----------------------------------|------------|------------------------|---------------|--------------------|
| TQ10Y          | Tetrad Atlas (2007-2011) TTV data | 07/06/2008 | Applesham nr Coombes   | 1 Present     | Positive Breeding  |
| TQ10Y          | BTO Birdtrack data                | 26/04/2009 | Applesham nr Coombes   | 2 Present     | Positive Breeding  |
| TQ10Y          | BTO Birdtrack data                | 24/07/2011 | Applesham nr Coombes   | 2 Present     | Date               |
| TQ1806         | Sussex Ornithological Society     | 20/08/1995 | Lancing Clump          | 5 Present     | Date               |
| TQ1806         | Sussex Ornithological Society     | 16/08/1996 | Lancing Clump          | 6 Present     | Date               |
| TQ1905         | Sussex Ornithological Society     | 22/04/1994 | Shoreham Airport       | 6 Present     | Date               |
| TQ1905         | Sussex Ornithological Society     | 08/06/1996 | Shoreham Airport       | 2 Present     | Date               |
| TQ1905         | Sussex Ornithological Society     | 12/06/1996 | Shoreham Airport       | 2 Present     | Date               |
| TQ1906         | Lancing College NHS archive       | 13/05/1885 | Lancing College & Farm | 1 Present     | Positive Breeding  |
| TQ1906         | Lancing College NHS archive       | 07/05/1886 | Lancing College & Farm | 1 Present     | Positive Breeding  |
| TQ1906         | Lancing College NHS archive       | 25/06/1886 | Lancing College & Farm | 1 Present     | Positive Breeding  |
| TQ1906         | Lancing College NHS archive       | 07/05/1887 | Lancing College & Farm | 1 Present     | Positive Breeding  |
| TQ1906         | Lancing College NHS archive       | 17/06/1947 | Ladywell nr Coombes    | 1 Present     | Positive Breeding  |
| TQ1906         | BTO Birdtrack data                | 20/04/2007 | Lancing College        | 1 Present     | Date               |
| TQ1906         | BTO Birdtrack data                | 25/05/2007 | Lancing College        | 1 Present     | Date               |
| TQ1906         | Sussex Ornithological Society     | 01/04/2013 | Lancing College & Farm | 17 Present    | Date               |
| TQ193052       | Kate Ryland                       | 01/06/1999 | Lancing CP             | present Taxon | Date               |
| TQ200048       | Sussex Ornithological Society     | 08/04/1998 | Lancing Old Salts Farm | 2 Present     | Date               |
| TQ2004         | Sussex Ornithological Society     | 24/03/1993 | Lancing New Salts Farm | 1 Present     | Date               |
| TQ209058       | BTO Birdtrack data                | 16/06/2013 | Shoreham Airport       | 1 Present     | Date               |
| TQ2104         | Sussex Ornithological Society     | 01/03/2010 | Shoreham River Adur    |               | Date               |

| TQ215069                                  | Sussex Ornithological Society   | 21/08/2005                | Shoreham Sanctuary                    | 12 Present                                | Date                     |  |  |  |  |
|---|---|---------------------------|---------------------------------------|---|--------------------------|--|--|--|--|
| Acrocephalu                               | is palustris  | Marsh Warbler             |                                       |   |                          |  |  |  |  |
| In Sussex very sca                        | arce summer visitor and passage migrant   | . This warbler can be fou | and in dense vegetation and scrub whe | re it feeds on insects. A species of high | gh conservation concern. |  |  |  |  |
| Bird Population Sta<br>Countryside Act 19 | Bird Population Status - red; Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; UK Biodiversity Action Plan priority species; Wildlife and Countryside Act 1981 (Schedule 1 Part 1) |                           |                                       |   |                          |  |  |  |  |
| Grid Reference                            | Recorder  | Date                      | Locality                              | Abundance                                 | Selection Based On       |  |  |  |  |
| TQ1906                                    | Lancing College NHS archive   | 01/05/1920                | Lancing College & Farm                | 1 Present                                 | Date                     |  |  |  |  |

Lower Adur Valley

1 Present

Date

10/07/1948

Lancing College NHS archive

TQ2005

# Cettia cetti

## Cetti's Warbler

A small, but loud, skulking bird that is a scarce but increasing resident; passage migrant and winter visitor. First recorded from Sussex in 1962 and slowly increasing. Most records are from coastal locations where it's favoured habitat of thick, damp overgrown vegetation is most common.

Wildlife and Countryside Act 1981 (Schedule 1 Part 1)

| Grid Reference | Recorder                          | Date                       | Locality               | Abundance | Selection Based On |
|----------------|-----------------------------------|----------------------------|------------------------|-----------|--------------------|
| TQ10X          | Tetrad Atlas (2007-2011) TTV data | 29/05/2008                 | Lancing                | 1 Present | Positive Breeding  |
| TQ1906         | BTO Birdtrack data                | 31/03/2009                 | Ladywells nr Coombes   | 1 Present | Date               |
| TQ1906         | BTO Birdtrack data                | 13/03/2010                 | Ladywells nr Coombes   |           | Date               |
| TQ1906         | BTO Birdtrack data                | 19/06/2011                 | Ladywells nr Coombes   | 1 Present | Date               |
| TQ1906         | Sussex Ornithological Society     | 19/06/2011 -<br>03/10/2011 | Ladywells nr Coombes   | 4 Present | Date               |
| TQ1906         | BTO Birdtrack data                | 01/08/2011 -<br>31/08/2011 | Ladywells nr Coombes   | 1 Present | Date               |
| TQ1906         | BTO Birdtrack data                | 19/05/2012                 | Ladywell nr Coombes    | 1 Present | Positive Breeding  |
| TQ1906         | BTO Birdtrack data                | 12/07/2012                 | Ladywell nr Coombes    | 1 Present | Date               |
| TQ1906         | BTO Birdtrack data                | 28/07/2013                 | Ladywell nr Coombes    | 1 Present | Date               |
| TQ1906         | BTO Birdtrack data                | 13/08/2013 -<br>27/08/2013 | Ladywell nr Coombes    | 1 Present | Date               |
| TQ1906         | BTO Birdtrack data                | 20/08/2013                 | Ladywell nr Coombes    | 1 Present | Date               |
| TQ2004         | SOS Archived Records              | 20/04/1985                 | Lancing New Salts Farm | 1 Present | Date               |
| TQ2004         | SOS Archived Records              | 15/07/1985                 | Lancing New Salts Farm | 1 Present | Date               |
| TQ2004         | Sussex Ornithological Society     | 20/05/2007                 | Lancing New Salts Farm | 1 Present | Date               |
| TQ2004         | Sussex Ornithological Society     | 24/05/2008                 | Lancing New Salts Farm | 1 Present | Date               |
| TQ2004         | Sussex Ornithological Society     | 07/06/2008                 | Lancing New Salts Farm | 1 Present | Date               |
| TQ2004         | Sussex Ornithological Society     | 15/03/2009                 | Lancing New Salts Farm | 1 Present | Date               |
| TQ2004         | Sussex Ornithological Society     | 13/04/2009                 | Lancing New Salts Farm | 1 Present | Date               |
| TQ2004         | Sussex Ornithological Society     | 20/04/2012                 | Lancing New Salts Farm | 1 Present | Date               |
| TQ2004         | Sussex Ornithological Society     | 10/04/2013                 | Lancing New Salts Farm | 1 Present | Date               |

| TQ2005   | SOS Archived Records              | 03/05/1982                 | Shoreham River Adur    | 1 Present     | Date              |
|----------|-----------------------------------|----------------------------|------------------------|---------------|-------------------|
| TQ2005   | SOS Archived Records              | 03/05/1982                 | Shoreham River Adur    | 1 Present     | Date              |
| TQ2005   | Sussex Ornithological Society     | 05/05/2007                 | Shoreham Airport       | 2 Present     | Date              |
| TQ2005   | Sussex Ornithological Society     | 04/04/2008                 | Shoreham Airport       | 1 Present     | Date              |
| TQ2005   | Sussex Ornithological Society     | 11/04/2008                 | Shoreham Airport       | 1 Present     | Date              |
| TQ2005   | Sussex Ornithological Society     | 15/04/2008                 | Shoreham Airport       | 2 Present     | Date              |
| TQ2005   | Sussex Ornithological Society     | 23/04/2008                 | Shoreham Airport       | 1 Present     | Date              |
| TQ2005   | Sussex Ornithological Society     | 05/06/2008                 | Shoreham Airport       | 1 Present     | Date              |
| TQ2005   | Sussex Ornithological Society     | 27/03/2010                 | Shoreham Airport       | 1 Present     | Date              |
| TQ2005   | Sussex Ornithological Society     | 02/04/2010                 | Shoreham Airport       | 1 Present     | Date              |
| TQ2005   | Sussex Ornithological Society     | 04/04/2011                 | Shoreham Airport       | 1 Present     | Date              |
| TQ2005   | Sussex Ornithological Society     | 09/04/2011                 | Shoreham Airport       | 1 Present     | Date              |
| TQ2005   | Sussex Ornithological Society     | 11/04/2011                 | Shoreham Airport       | 1 Present     | Date              |
| TQ2005   | Sussex Ornithological Society     | 28/03/2013                 | Shoreham Airport       | 1 Present     | Date              |
| TQ2006   | Sussex Ornithological Society     | 13/03/2009                 | Shoreham-by-Sea        | 1 Present     | Date              |
| TQ2006   | Sussex Ornithological Society     | 04/04/2009                 | Shoreham-by-Sea        | 1 Present     | Date              |
| TQ2006   | Sussex Ornithological Society     | 14/05/2009                 | Shoreham-by-Sea        | 1 Present     | Date              |
| TQ2006   | Sussex Ornithological Society     | 04/06/2010                 | Shoreham-by-Sea        |               | Positive Breeding |
| TQ203049 | Sussex Ornithological Society     | 30/04/2007                 | Lancing New Salts Farm | 1 Present     | Date              |
| TQ20C    | Tetrad Atlas (2007-2011) TTV data | 03/04/2008                 | Shoreham Airport       | 1 Present     | Positive Breeding |
| TQ20C    | BTO Birdtrack data                | 12/05/2008                 | Shoreham Airport       | 1 Present     | Date              |
| TQ20C    | Tetrad Atlas (2007-2011) TTV data | 21/06/2008                 | Shoreham Airport       | 1 Present     | Positive Breeding |
| TQ20C    | Tetrad Atlas (Roving records)     | 18/06/2011                 | Shoreham Airport       | 1 Present     | Date              |
| TQ20D    | Tetrad Atlas (Roving records)     | 06/04/2008 -<br>26/04/2008 | Shoreham Mill Hill     | 1 Present     | Positive Breeding |
| TQ20D    | Tetrad Atlas (2007-2011) TTV data | 11/05/2008                 | Shoreham Mill Hill     | 2 Present     | Positive Breeding |
| TQ20D    | Tetrad Atlas (Roving records)     | 26/06/2010                 | Shoreham Mill Hill     | Present Taxon | Date              |
| TQ20D    | Tetrad Atlas (Roving records)     | 14/05/2011                 | Shoreham Mill Hill     | 1 Present     | Positive Breeding |
| TQ2104   | BTO Birdtrack data                | 12/05/2013                 | Shoreham River Adur    | 2 Present     | Date              |
| TQ2105   | Anon @ Shoreham District O.S.     | 27/05/2008                 | Shoreham-by-Sea        | 1 Present     | Date              |

# Corvus corax

## Raven

This is a huge black bird with a large bill and diamond shape tail; it is a scarce and increasing breeding resident. It first bred in the modern era in 2001. It is usually recorded from the coast, especially where there are cliffs, but is sometimes seen inland too. It feeds on carrion.

| Grid Reference | Recorder                      | Date       | Locality                 | Abundance | Selection Based On |
|----------------|-------------------------------|------------|--------------------------|-----------|--------------------|
| TQ1703         | Sussex Ornithological Society | 03/03/2008 | Cement Works nr Shoreham | 1 Present | Date               |
| TQ1806         | Sussex Ornithological Society | 13/03/2013 | Lancing Clump            | 2 Present | Date               |
| TQ1906         | BTO Birdtrack data            | 20/07/2009 | Ladywells nr Coombes     | 1 Present | Date               |
| TQ1906         | BTO Birdtrack data            | 09/07/2010 | Ladywells nr Coombes     |           | Date               |
| TQ1906         | BTO Birdtrack data            | 30/03/2011 | Ladywells nr Coombes     | 1 Present | Date               |
| TQ1906         | BTO Birdtrack data            | 20/04/2013 | Ladywell nr Coombes      | 1 Present | Date               |

# Emberiza calandra

# **Corn Bunting**

A non-descript brown bunting that is a fairly common but decreasing resident with most records from the Downs and the east of East Sussex. One of the few UK bird species largely dependent on cropped land and it seems particularly to like barley. It feeds on seeds and insects. It can also be found on heathland and open countryside. Its has had a dramatic population decline in the UK.

Bird Population Status - red; Environmental Stewardship Target Species (Romney Marsh); Nerc Act 2006; UK Biodiversity Action Plan priority species

| Grid Reference | Recorder                          | Date       | Locality             | Abundance | Selection Based On |
|----------------|-----------------------------------|------------|----------------------|-----------|--------------------|
| TQ10Y          | Tetrad Atlas (2007-2011) TTV data | 10/05/2008 | Applesham nr Coombes | 2 Present | All records        |
| TQ10Y          | Tetrad Atlas (2007-2011) TTV data | 07/06/2008 | Applesham nr Coombes | 2 Present | All records        |
| TQ10Y          | BTO Birdtrack data                | 26/04/2009 | Applesham nr Coombes | 4 Present | All records        |
| TQ10Y          | BTO Birdtrack data                | 07/06/2009 | Applesham nr Coombes | 1 Present | All records        |
| TQ10Y          | BTO Birdtrack data                | 13/07/2009 | Applesham nr Coombes | 4 Present | All records        |
| TQ10Y          | BTO Birdtrack data                | 21/05/2011 | Applesham nr Coombes | 1 Present | All records        |
| TQ180067       | Sussex Ornithological Society     | 15/02/1998 | Lancing Clump        | 2 Present | All records        |

| TQ1806 | SOS Archived Records             | 29/06/1978                 | Lancing Clump             | 1 Present  | All records |
|--------|----------------------------------|----------------------------|---------------------------|------------|-------------|
| TQ1806 | SOS Archived Records             | 24/07/1980                 | Lancing Clump             | 1 Present  | All records |
| TQ1806 | Sussex Ornithological Society    | 25/06/1990                 | Lancing Clump             | 12 Present | All records |
| TQ1806 | Anon @ Corn Bunting Survey 93-94 | 01/06/1993                 | Lancing Clump             | 1 Present  | All records |
| TQ1806 | Sussex Ornithological Society    | 03/07/1994                 | South Downs (Adur to A23) | 1 Present  | All records |
| TQ1806 | Sussex Ornithological Society    | 23/09/1994                 | Lancing Clump             | 54 Present | All records |
| TQ1806 | Sussex Ornithological Society    | 20/08/1995                 | Lancing Clump             | 1 Present  | All records |
| TQ1806 | Sussex Ornithological Society    | 21/08/1995                 | Lancing Clump             | 1 Present  | All records |
| TQ1806 | Sussex Ornithological Society    | 15/01/1996                 | Lancing Clump             | 3 Present  | All records |
| TQ1806 | Sussex Ornithological Society    | 15/02/1996                 | Lancing Clump             | 6 Present  | All records |
| TQ1806 | Sussex Ornithological Society    | 09/09/1996                 | Lancing Clump             | 35 Present | All records |
| TQ1806 | Sussex Ornithological Society    | 01/01/2003                 | Lancing Clump             | 16 Present | All records |
| TQ1806 | BTO Birdtrack data               | 03/04/2005                 | Lancing Clump             | 1 Present  | All records |
| TQ1806 | BTO Birdtrack data               | 01/05/2005                 | Lancing Clump             | 1 Present  | All records |
| TQ1806 | BTO Birdtrack data               | 13/03/2013                 | Lancing Clump             | 1 Present  | All records |
| TQ1806 | BTO Birdtrack data               | 11/04/2013                 | Lancing Clump             | 1 Present  | All records |
| TQ1806 | BTO Birdtrack data               | 03/07/2013 -<br>05/07/2013 | Lancing Clump             | 1 Present  | All records |
| TQ1806 | BTO Birdtrack data               | 05/07/2013                 | Lancing Clump             | 2 Present  | All records |
| TQ1806 | BTO Birdtrack data               | 04/08/2013                 | Lancing Clump             | 1 Present  | All records |

| TQ1904 | SOS Archived Records | 28/04/1980 | Widewater Lagoon | 3 Present  | All records |
|--------|----------------------|------------|------------------|------------|-------------|
| TQ1904 | SOS Archived Records | 15/01/1982 | Widewater Lagoon | 2 Present  | All records |
| TQ1904 | SOS Archived Records | 11/02/1982 | Widewater Lagoon | 9 Present  | All records |
| TQ1904 | SOS Archived Records | 14/02/1982 | Widewater Lagoon | 2 Present  | All records |
| TQ1904 | SOS Archived Records | 20/02/1982 | Widewater Lagoon | 5 Present  | All records |
| TQ1904 | SOS Archived Records | 23/02/1982 | Widewater Lagoon | 2 Present  | All records |
| TQ1904 | SOS Archived Records | 01/03/1982 | Widewater Lagoon | 1 Present  | All records |
| TQ1904 | SOS Archived Records | 20/03/1982 | Widewater Lagoon | 6 Present  | All records |
| TQ1904 | SOS Archived Records | 13/12/1983 | Widewater Lagoon | 5 Present  | All records |
| TQ1904 | SOS Archived Records | 01/01/1984 | Widewater Lagoon | 5 Present  | All records |
| TQ1904 | SOS Archived Records | 08/01/1984 | Widewater Lagoon | 12 Present | All records |
| TQ1904 | SOS Archived Records | 07/03/1984 | Widewater Lagoon | 5 Present  | All records |
| TQ1904 | SOS Archived Records | 30/10/1984 | Widewater Lagoon | 3 Present  | All records |
| TQ1904 | SOS Archived Records | 31/12/1984 | Widewater Lagoon | 3 Present  | All records |
| TQ1904 | SOS Archived Records | 01/01/1985 | Widewater Lagoon | 9 Present  | All records |
| TQ1904 | SOS Archived Records | 29/01/1985 | Widewater Lagoon | 1 Present  | All records |
| TQ1904 | SOS Archived Records | 01/02/1985 | Widewater Lagoon | 10 Present | All records |
| TQ1904 | SOS Archived Records | 23/01/1987 | Widewater Lagoon | 6 Present  | All records |
| TQ1905 | SOS Archived Records | 25/12/1979 | Shoreham Airport | 8 Present  | All records |
| TQ1905 | SOS Archived Records | 08/09/1980 | Shoreham Airport | 50 Present | All records |
| TQ1905 | SOS Archived Records | 17/05/1981 | Shoreham Airport | 25 Present | All records |
| TQ1905 | SOS Archived Records | 23/09/1981 | Shoreham Airport | 30 Present | All records |
| TQ1905 | SOS Archived Records | 29/11/1982 | Shoreham Airport | 3 Present  | All records |
| TQ1905 | SOS Archived Records | 03/12/1982 | Shoreham Airport | 20 Present | All records |
| TQ1905 | SOS Archived Records | 10/08/1984 | Shoreham Airport | 90 Present | All records |
| TQ1905 | SOS Archived Records | 17/04/1985 | Shoreham Harbour | 13 Present | All records |
| TQ1905 | SOS Archived Records | 06/05/1986 | Shoreham Airport | 33 Present | All records |

| TQ1906   | Lancing College NHS archive      | 06/07/1885 | Lancing College & Farm | 1 Present  | All records |
|----------|----------------------------------|------------|------------------------|------------|-------------|
| TQ1906   | Lancing College NHS archive      | 23/06/1886 | Lancing College & Farm | 1 Present  | All records |
| TQ1906   | Lancing College NHS archive      | 01/07/1886 | Lancing College & Farm | 1 Present  | All records |
| TQ1906   | SOS Archived Records             | 01/06/1979 | Lancing College & Farm | 1 Present  | All records |
| TQ1906   | BTO Birdtrack data               | 20/04/2007 | Lancing College        | 1 Present  | All records |
| TQ1906   | BTO Birdtrack data               | 25/05/2007 | Lancing College        | 1 Present  | All records |
| TQ195051 | Sussex Ornithological Society    | 01/01/1997 | Shoreham Airport       | 70 Present | All records |
| TQ195051 | Sussex Ornithological Society    | 15/01/1997 | Shoreham Airport       | 70 Present | All records |
| TQ195051 | Sussex Ornithological Society    | 25/02/1997 | Shoreham Airport       | 70 Present | All records |
| TQ195059 | SOS Archived Records             | 19/04/1976 | Lancing College & Farm | 1 Present  | All records |
| TQ197052 | Sussex Ornithological Society    | 15/01/1997 | Shoreham Airport       | 50 Present | All records |
| TQ2004   | SOS Archived Records             | 03/09/1986 | Lancing New Salts Farm | 60 Present | All records |
| TQ2004   | SOS Archived Records             | 08/09/1986 | Lancing New Salts Farm | 90 Present | All records |
| TQ2004   | Sussex Ornithological Society    | 18/04/1992 | Lancing New Salts Farm | 6 Present  | All records |
| TQ2004   | Anon @ Corn Bunting Survey 93-94 | 01/06/1993 | Lancing New Salts Farm | 1 Present  | All records |
| TQ2004   | Sussex Ornithological Society    | 22/04/1994 | Lancing New Salts Farm | 1 Present  | All records |
| TQ2004   | Sussex Ornithological Society    | 23/04/1995 | Lancing New Salts Farm | 1 Present  | All records |
| TQ2004   | Sussex Ornithological Society    | 02/01/1996 | Shoreham River Adur    | 15 Present | All records |
| TQ2004   | Sussex Ornithological Society    | 02/01/1996 | Adur Recreation Ground | 15 Present | All records |
| TQ2004   | Sussex Ornithological Society    | 10/03/1996 | Lancing New Salts Farm | 17 Present | All records |
| TQ2004   | Sussex Ornithological Society    | 13/03/1996 | Widewater Lagoon       | 1 Present  | All records |
| TQ2004   | Anon @ Shoreham District O.S.    | 15/02/1998 | Lancing New Salts Farm | 8 Present  | All records |
| TQ2004   | Sussex Ornithological Society    | 23/04/2000 | Lancing New Salts Farm | 25 Present | All records |
| TQ2004   | Sussex Ornithological Society    | 30/04/2004 | Lancing New Salts Farm | 2 Present  | All records |
|          |                                  |            |                        |            |             |

| TQ2005<br>TQ2005<br>TQ2005<br>TQ2005<br>TQ2005<br>TQ2005<br>TQ2005<br>TQ2005<br>TQ2005<br>TQ2005 | SOS Alchived Recolds             | 10/08/1975 | Shoreham River Adur    | 90 Present  | All records |
|--|----------------------------------|------------|------------------------|-------------|-------------|
| TQ2005<br>TQ2005<br>TQ2005<br>TQ2005<br>TQ2005<br>TQ2005<br>TQ2005<br>TQ2005<br>TQ2005           | SOS Archived Records             | 10/08/1975 | Shoreham River Adur    | 250 Present | All records |
| TQ2005<br>TQ2005<br>TQ2005<br>TQ2005<br>TQ2005<br>TQ2005<br>TQ2005<br>TQ2005                     | SOS Archived Records             | 06/08/1976 | Shoreham River Adur    | 100 Present | All records |
| TQ2005<br>TQ2005<br>TQ2005<br>TQ2005<br>TQ2005<br>TQ2005<br>TQ2005                               | SOS Archived Records             | 09/09/1976 | Shoreham Airport       | 200 Present | All records |
| TQ2005<br>TQ2005<br>TQ2005<br>TQ2005<br>TQ2005<br>TQ2005<br>TQ2005                               | SOS Archived Records             | 26/08/1979 | Shoreham River Adur    | 150 Present | All records |
| TQ2005<br>TQ2005<br>TQ2005<br>TQ2005<br>TQ2005<br>TQ2005   | SOS Archived Records             | 15/01/1985 | Shoreham River Adur    | 12 Present  | All records |
| TQ2005<br>TQ2005<br>TQ2005<br>TQ2005<br>TQ2005   | SOS Archived Records             | 11/01/1986 | Shoreham Airport       | 37 Present  | All records |
| TQ2005<br>TQ2005<br>TQ2005<br>TQ2005   | Sussex Ornithological Society    | 08/03/1993 | Shoreham River Adur    | 12 Present  | All records |
| TQ2005<br>TQ2005<br>TQ2005   | Sussex Ornithological Society    | 25/01/1998 | Shoreham River Adur    | 14 Present  | All records |
| TQ2005<br>TQ2005   | Sussex Ornithological Society    | 23/11/1998 | Lower Adur Valley      | 8 Present   | All records |
| TQ2005   | Sussex Ornithological Society    | 10/03/1999 | Shoreham Airport       | 14 Present  | All records |
|  | Sussex Ornithological Society    | 20/10/1999 | Lower Adur Valley      | 2 Present   | All records |
| TQ2005   | Sussex Ornithological Society    | 27/03/2000 | Shoreham River Adur    | 35 Present  | All records |
| TQ2005   | Sussex Ornithological Society    | 05/01/2001 | Lower Adur Valley      | 5 Present   | All records |
| TQ2005   | Sussex Ornithological Society    | 12/07/2001 | Lower Adur Valley      | 1 Present   | All records |
| TQ2005   | Sussex Ornithological Society    | 14/11/2004 | Lower Adur Valley      | 2 Present   | All records |
| TQ2005   | Sussex Ornithological Society    | 18/12/2004 | Lower Adur Valley      | 3 Present   | All records |
| TQ2005   | Sussex Ornithological Society    | 06/02/2005 | Adur Rail - Tollbridge | 2 Present   | All records |
| TQ2005   | Sussex Ornithological Society    | 24/02/2005 | Shoreham Airport       | 1 Present   | All records |
| TQ2005   | Sussex Ornithological Society    | 04/04/2005 | Adur Rail - Tollbridge | 1 Present   | All records |
| TQ2006   | Anon @ Corn Bunting Survey 93-94 | 01/06/1993 | Shoreham River Adur    | 1 Present   | All records |
| TQ2006   | Sussex Ornithological Society    | 02/01/1997 | Coombes Cuckoos Corner | 100 Present | All records |
| TQ2006   | Sussex Ornithological Society    | 24/09/2000 | Coombes Cuckoos Corner | 6 Present   | All records |
| TQ2006   | Sussex Ornithological Society    | 08/04/2001 | Coombes Cuckoos Corner | 1 Present   | All records |
| TQ2006   | BTO Birdtrack data               | 18/08/2012 | Lower Adur Valley      | 1 Present   | All records |
| TQ202069   | Sussex Ornithological Society    | 19/12/1999 | Shoreham River Adur    | 20 Present  | All records |
| TQ204067   | Sussex Ornithological Society    | 01/03/2000 | Lower Adur Valley      | 22 Present  | All records |
| TQ204067   | Sussex Ornithological Society    | 01/01/2002 | Coombes Cuckoos Corner | 4 Present   | All records |
| TQ205047   | Sussex Ornithological Society    | 01/05/1994 | Lancing New Salts Farm | 1 Present   | All records |
| TQ205048   | Sussex Ornithological Society    | 15/01/1997 | Lancing New Salts Farm | 10 Present  | All records |
| TQ206055   | Sussex Ornithological Society    | 02/01/2000 | Shoreham Airport       | 28 Present  | All records |

| TQ207047 | SOS Archived Records          | 25/09/1982                 | Shoreham-by-Sea     | 70 Present  | All records |
|----------|-------------------------------|----------------------------|---------------------|-------------|-------------|
| TQ207047 | SOS Archived Records          | 25/09/1982                 | Shoreham Airport    | 100 Present | All records |
| TQ20D    | Tetrad Atlas (Roving records) | 12/06/2010                 | Shoreham Mill Hill  | 2 Present   | All records |
| TQ20D    | Tetrad Atlas (Roving records) | 12/06/2010 -<br>26/06/2010 | Shoreham Mill Hill  | 1 Present   | All records |
| TQ210047 | SOS Archived Records          | 10/01/1982                 | Shoreham River Adur | 10 Present  | All records |
| TQ2104   | Sussex Ornithological Society | 15/07/1991                 | Shoreham River Adur | 1 Present   | All records |
| TQ2105   | SOS Archived Records          | 24/08/1984                 | Shoreham River Adur | 200 Present | All records |
| TQ2105   | SOS Archived Records          | 29/08/1984                 | Shoreham River Adur | 120 Present | All records |
| TQ2105   | Sussex Ornithological Society | 09/02/1991                 | Shoreham-by-Sea     | 4 Present   | All records |
| TQ2105   | Sussex Ornithological Society | 13/02/1991                 | Shoreham River Adur | 10 Present  | All records |

| TQ2106   | Sussex Ornithological Society    | 25/06/1975 -<br>27/10/1975 | Shoreham Sanctuary | 18 Present  | All records |
|----------|----------------------------------|----------------------------|--------------------|-------------|-------------|
| TQ2106   | Sussex Ornithological Society    | 17/06/1976 -<br>25/08/1976 | Shoreham Sanctuary | 17 Present  | All records |
| TQ2106   | SOS Archived Records             | 15/08/1976                 | Shoreham Sanctuary | 400 Present | All records |
| TQ2106   | Sussex Ornithological Society    | 19/10/1977                 | Shoreham Sanctuary | 1 Present   | All records |
| TQ2106   | SOS Archived Records             | 08/07/1978                 | Shoreham Sanctuary | 20 Present  | All records |
| TQ2106   | SOS Archived Records             | 28/08/1978                 | Shoreham Sanctuary | 260 Present | All records |
| TQ2106   | Sussex Ornithological Society    | 30/08/1978                 | Shoreham Sanctuary | 1 Present   | All records |
| TQ2106   | SOS Archived Records             | 01/06/1979                 | Shoreham Sanctuary | 5 Present   | All records |
| TQ2106   | Sussex Ornithological Society    | 08/07/1981                 | Shoreham Sanctuary | 1 Present   | All records |
| TQ2106   | Sussex Ornithological Society    | 07/08/1982                 | Shoreham Sanctuary | 2 Present   | All records |
| TQ2106   | Sussex Ornithological Society    | 20/09/1983                 | Shoreham Sanctuary | 1 Present   | All records |
| TQ2106   | SOS Archived Records             | 23/10/1985                 | Shoreham Sanctuary | 15 Present  | All records |
| TQ2106   | SOS Archived Records             | 08/10/1986                 | Shoreham Sanctuary | 40 Present  | All records |
| TQ2106   | SOS Archived Records             | 15/08/1987                 | Shoreham Sanctuary | 40 Present  | All records |
| TQ2106   | Sussex Ornithological Society    | 02/09/1990                 | Shoreham Sanctuary | 1 Present   | All records |
| TQ2106   | Sussex Ornithological Society    | 18/04/1992                 | Shoreham Sanctuary | 1 Present   | All records |
| TQ2106   | Sussex Ornithological Society    | 03/06/1992                 | Shoreham Sanctuary | 1 Present   | All records |
| TQ2106   | Anon @ Corn Bunting Survey 93-94 | 01/06/1993                 | Shoreham Sanctuary | 4 Present   | All records |
| TQ2106   | Sussex Ornithological Society    | 02/10/1994                 | Shoreham Sanctuary | 20 Present  | All records |
| TQ2106   | Sussex Ornithological Society    | 01/07/1995                 | Shoreham Sanctuary | 2 Present   | All records |
| TQ2106   | Sussex Ornithological Society    | 11/05/1996                 | Shoreham Sanctuary | 1 Present   | All records |
| TQ2106   | Sussex Ornithological Society    | 13/10/1996                 | Shoreham Sanctuary | 20 Present  | All records |
| TQ2106   | Sussex Ornithological Society    | 02/04/1997                 | Shoreham Sanctuary | 28 Present  | All records |
| TQ2106   | Sussex Ornithological Society    | 23/08/1997                 | Shoreham Sanctuary | 26 Present  | All records |
| TQ2106   | Sussex Ornithological Society    | 20/06/1998                 | Shoreham Sanctuary | 1 Present   | All records |
| TQ2106   | Sussex Ornithological Society    | 26/10/1999                 | Shoreham Sanctuary | 10 Present  | All records |
| TQ2106   | Sussex Ornithological Society    | 15/07/2006                 | Shoreham Sanctuary | 1 Present   | All records |
| TQ211049 | Sussex Ornithological Society    | 24/05/2000                 | Shoreham-by-Sea    | 1 Present   | All records |
| TQ211069 | Sussex Ornithological Society    | 19/07/1997                 | Shoreham Sanctuary | 2 Present   | All records |
| TQ211069 | Sussex Ornithological Society    | 02/07/2000                 | Shoreham Sanctuary | 1 Present   | All records |

# Loxia curvirostra

# **Common Crossbill**

A chunky finch with a large head and bill, it is an irruptive species; usually a scarce visitor but fairly common in some years. It is a very scarce breeder in some years. Feeds almost exclusively on seeds in conifer woodlands. Breeds occasionally and can be seen flying in family groups or larger flocks.

Bern Convention Appendix 2; Wildlife and Countryside Act 1981 (Schedule 1 Part 1)

| Grid Reference | Recorder                      | Date       | Locality           | Abundance  | Selection Based On |
|----------------|-------------------------------|------------|--------------------|------------|--------------------|
| TQ2105         | Sussex Ornithological Society | 25/03/1992 | Shoreham-by-Sea    | 1 Present  | Date               |
| TQ2106         | Sussex Ornithological Society | 05/07/1997 | Shoreham Sanctuary | 18 Present | Date               |
| TQ2204         | BTO Birdtrack data            | 12/07/2011 | Shoreham-by-Sea    | 12 Present | Date               |

# Delichon urbicum

## House Martin

A distinctive hirundine with a forked tail and white rump, it is a common summer visitor and abundant passage migrant. It is more abundant in urban areas than in the countryside because of the availability of suitable nesting sites in the eaves of buildings, but it will feed on around insects that it finds on agricultural land and around water.

Bern Convention Appendix 2; Bird Population Status - amber

| Grid Reference | Recorder   | Date                       | Locality               | Abundance  | Selection Based On |
|----------------|--|----------------------------|------------------------|------------|--------------------|
| TQ10Y          | Tetrad Atlas (2007-2011) TTV data                  | 07/06/2008                 | Applesham nr Coombes   | 7 Present  | Positive Breeding  |
| TQ10Y          | BTO Birdtrack data                                 | 26/04/2009                 | Applesham nr Coombes   | 1 Present  | Positive Breeding  |
| TQ10Y          | BTO Birdtrack data                                 | 07/06/2009                 | Applesham nr Coombes   | 14 Present | Positive Breeding  |
| TQ1806         | BTO Birdtrack data                                 | 29/04/2013                 | Lancing Clump          | 2 Present  | Positive Breeding  |
| TQ1904         | Anon @ Shoreham District O.S.                      | 31/07/2009                 | Lancing Old Salts Farm | 50 Present | Positive Breeding  |
| TQ1906         | Lancing College NHS archive                        | 26/05/1885                 | Lancing College & Farm | 1 Present  | Positive Breeding  |
| TQ1906         | Lancing College NHS archive                        | 24/07/1885                 | Lancing College & Farm | 1 Present  | Positive Breeding  |
| TQ1906         | Lancing College NHS archive                        | 07/07/1886                 | Lancing College & Farm | 1 Present  | Positive Breeding  |
| TQ1906         | Lancing College NHS archive                        | 12/06/1926                 | Lancing College & Farm | 1 Present  | Positive Breeding  |
| TQ1906         | Lancing College NHS archive                        | 23/09/1947                 | Lancing College & Farm | 1 Present  | Positive Breeding  |
| TQ1906         | Anon @ SOS House Martin;Anon @ Sparrow Survey 2006 | 01/06/2006                 | Lancing College        | 17 Present | Positive Breeding  |
| TQ1906         | BTO Birdtrack data                                 | 15/05/2009 -<br>28/05/2009 | Ladywells nr Coombes   | 6 Present  | Positive Breeding  |
| TQ1906         | BTO Birdtrack data                                 | 25/05/2009                 | Ladywells nr Coombes   | 25 Present | Positive Breeding  |
| TQ203068       | Sussex Ornithological Society                      | 30/05/2005                 | Coombes Cuckoos Corner | 30 Present | Positive Breeding  |

# Hirundo rustica

# Swallow

Our familiar swallow with long tail streamers is a common summer visitor and abundant passage migrant. They are agile in flight and spend most of their time on the wing hunting. They often breed in quiet farm buildings with nearby ponds and open pasture especially near cattle where they can feed on plentiful insects. Reedbeds are used as pre-migration roosts in late summer and early autumn.

Bern Convention Appendix 2; Bird Population Status - amber

| Grid Reference | Recorder                          | Date                       | Locality               | Abundance  | Selection Based On |
|----------------|-----------------------------------|----------------------------|------------------------|------------|--------------------|
| TQ10Y          | Tetrad Atlas (2007-2011) TTV data | 10/05/2008                 | Applesham nr Coombes   | 3 Present  | Positive Breeding  |
| TQ10Y          | Tetrad Atlas (2007-2011) TTV data | 07/06/2008                 | Applesham nr Coombes   | 4 Present  | Positive Breeding  |
| TQ10Y          | BTO Birdtrack data                | 26/04/2009                 | Applesham nr Coombes   | 11 Present | Positive Breeding  |
| TQ10Y          | BTO Birdtrack data                | 07/06/2009                 | Applesham nr Coombes   | 16 Present | Positive Breeding  |
| TQ1904         | BTO Birdtrack data                | 19/04/2009                 | Lancing Old Salts Farm | 2 Present  | Positive Breeding  |
| TQ1904         | BTO Birdtrack data                | 08/06/2009                 | Lancing Old Salts Farm | 6 Present  | Positive Breeding  |
| TQ1906         | Lancing College NHS archive       | 12/06/1885                 | Lancing College & Farm | 1 Present  | Positive Breeding  |
| TQ1906         | Lancing College NHS archive       | 03/07/1885                 | Lancing College & Farm | 1 Present  | Positive Breeding  |
| TQ1906         | Lancing College NHS archive       | 09/06/1886                 | Lancing College & Farm | 1 Present  | Positive Breeding  |
| TQ1906         | Lancing College NHS archive       | 20/05/1926                 | Lancing College & Farm | 1 Present  | Positive Breeding  |
| TQ1906         | Lancing College NHS archive       | 20/05/1928                 | Lancing College & Farm | 1 Present  | Positive Breeding  |
| TQ1906         | Lancing College NHS archive       | 20/05/1947                 | Lancing College & Farm | 1 Present  | Positive Breeding  |
| TQ1906         | Lancing College NHS archive       | 23/05/1947                 | Lancing College & Farm | 1 Present  | Positive Breeding  |
| TQ1906         | BTO Birdtrack data                | 06/05/2009 -<br>28/05/2009 | Ladywells nr Coombes   | 4 Present  | Positive Breeding  |
| TQ1906         | BTO Birdtrack data                | 15/05/2009                 | Ladywells nr Coombes   | 10 Present | Positive Breeding  |
| TQ1906         | BTO Birdtrack data                | 04/06/2009 -<br>23/06/2009 | Ladywells nr Coombes   | 2 Present  | Positive Breeding  |
| TQ20C          | Tetrad Atlas (2007-2011) TTV data | 21/06/2008                 | Shoreham Airport       | 4 Present  | Positive Breeding  |
| TQ20D          | Tetrad Atlas (2007-2011) TTV data | 11/05/2008                 | Shoreham Mill Hill     | 1 Present  | Positive Breeding  |

| TQ2106 | Sussex Ornithological Society | 10/05/1976 -<br>15/10/1976 | Shoreham Sanctuary | 29 Present | Positive Breeding |
|--------|-------------------------------|----------------------------|--------------------|------------|-------------------|
| TQ2106 | Sussex Ornithological Society | 30/04/1977 -<br>03/10/1977 | Shoreham Sanctuary | 18 Present | Positive Breeding |
| TQ2106 | Sussex Ornithological Society | 19/07/1978 -<br>17/09/1978 | Shoreham Sanctuary | 12 Present | Positive Breeding |
| TQ2106 | Sussex Ornithological Society | 23/06/1979 -<br>15/09/1979 | Shoreham Sanctuary | 29 Present | Positive Breeding |
| TQ2106 | Sussex Ornithological Society | 07/05/1980 -<br>06/09/1980 | Shoreham Sanctuary | 16 Present | Positive Breeding |
| TQ2106 | Sussex Ornithological Society | 13/06/1981 -<br>13/09/1981 | Shoreham Sanctuary | 60 Present | Positive Breeding |

## Motacilla flava

# Yellow Wagtail

This small elegant yellow bird is a scarce and localised summer visitor, a scarce passage migrant in spring and fairly common in autumn. It is primarily a bird of coastal levels, mainly in East Sussex, and also areas of short grass. Its diet consists of small insects, including flies and beetles; it is often seen associating with cattle to find insects. It appears to have been in decline since at least the 1980s, most likely due to loss of habitat for nesting and feeding.

Bern Convention Appendix 2; Bird Population Status - red; Environmental Stewardship Target Species (Romney Marsh); Nerc Act 2006; UK Biodiversity Action Plan priority species

| Grid Reference | Recorder                      | Date       | Locality               | Abundance  | Selection Based On |
|----------------|-------------------------------|------------|------------------------|------------|--------------------|
| TQ1904         | SOS Archived Records          | 18/05/1986 | Widewater Lagoon       | 1 Present  | Date               |
| TQ1905         | SOS Archived Records          | 09/05/1978 | Shoreham Airport       | 3 Present  | Date               |
| TQ1906         | Lancing College NHS archive   | 12/05/1886 | Lancing College & Farm | 1 Present  | Date               |
| TQ1906         | Lancing College NHS archive   | 01/05/1887 | Lancing College & Farm | 1 Present  | Date               |
| TQ2004         | SOS Archived Records          | 12/05/1987 | Lancing New Salts Farm | 2 Present  | Positive Breeding  |
| TQ2004         | Sussex Ornithological Society | 04/05/1990 | Widewater Lagoon       | 4 Present  | Date               |
| TQ2004         | Sussex Ornithological Society | 13/05/2001 | Widewater Lagoon       | 1 Present  | Date               |
| TQ2004         | Sussex Ornithological Society | 13/05/2001 | Widewater Lagoon       | 1 Present  | Date               |
| TQ2004         | Sussex Ornithological Society | 02/05/2011 | Lancing Beach          | 3 Present  | Date               |
| TQ2005         | Lancing College NHS archive   | 06/05/1928 | Lower Adur Valley      | 1 Present  | Date               |
| TQ2005         | SOS Archived Records          | 14/05/1979 | Shoreham River Adur    | 2 Present  | Date               |
| TQ204043       | Sussex Ornithological Society | 19/09/1993 | Widewater Lagoon       | 75 Present | roost              |

# Phoenicurus ochruros

## Black Redstart

A rare resident; scarce passage migrant and very scarce winter visitor. A recent colonist of the British Isles and first recorded as breeding on the cliffs near Hastings (1923). This robin-sized bird can be found in coastal area where it feeds on insects, spiders, berries and seeds.

Bern Convention Appendix 2; Bird Population Status - amber; Wildlife and Countryside Act 1981 (Schedule 1 Part 1)

| Grid Reference | Recorder                      | Date       | Locality         | Abundance | Selection Based On |
|----------------|-------------------------------|------------|------------------|-----------|--------------------|
| TQ185040       | Sussex Ornithological Society | 02/05/1995 | Lancing CP       | 1 Present | Date               |
| TQ1904         | SOS Archived Records          | 14/05/1985 | Widewater Lagoon | 1 Present | Date               |
| TQ2104         | BTO Birdtrack data            | 30/03/2013 | Shoreham Beach   | 1 Present | Positive Breeding  |
| TQ2204         | BTO Birdtrack data            | 06/07/2011 | Shoreham-by-Sea  | 1 Present | Date               |

## Passer montanus

## **Tree Sparrow**

A bird that has had large fluctuations in population in the past but which has been in decline in the British Isles for some time. In Sussex it is a scarce and declining resident, passage migrant and winter visitor more abundant in East Sussex than in the West. It is mainly a bird of open farmland with hedgerows and free-standing trees where it feeds on insects and seeds.

Bird Population Status - red; Environmental Stewardship Target Species (High Weald); Environmental Stewardship Target Species (Low Weald); Environmental Stewardship Target Species (Pevensey Levels); Environmental Stewardship Target Species (Romney Marsh); Environmental Stewardship Target Species (South Downs); Environmental Stewardship Target Species (Wealden Greensand); Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; UK Biodiversity Action Plan priority species

| Grid Reference | Recorder                      | Date       | Locality               | Abundance   | Selection Based On |
|----------------|-------------------------------|------------|------------------------|-------------|--------------------|
| TQ1703         | SOS Archived Records          | 16/01/1987 | Worthing Brooklands    | 100 Present | All records        |
| TQ1703         | SOS Archived Records          | 17/01/1987 | Worthing Brooklands    | 30 Present  | All records        |
| TQ1703         | SOS Archived Records          | 18/01/1987 | Worthing Brooklands    | 20 Present  | All records        |
| TQ1703         | SOS Archived Records          | 18/01/1987 | Worthing Brooklands    | 2 Present   | All records        |
| TQ1703         | SOS Archived Records          | 19/01/1987 | Worthing Brooklands    | 50 Present  | All records        |
| TQ1703         | SOS Archived Records          | 19/01/1987 | Worthing Brooklands    | 50 Present  | All records        |
| TQ1703         | SOS Archived Records          | 24/01/1987 | Worthing Brooklands    | 12 Present  | All records        |
| TQ1703         | SOS Archived Records          | 28/01/1987 | Worthing Brooklands    | 2 Present   | All records        |
| TQ1806         | Sussex Ornithological Society | 09/09/1995 | Lancing Clump          | 3 Present   | All records        |
| TQ1806         | Sussex Ornithological Society | 25/09/1996 | Lancing Clump          | 2 Present   | All records        |
| TQ1904         | SOS Archived Records          | 16/10/1983 | Widewater Lagoon       | 5 Present   | All records        |
| TQ1906         | Lancing College NHS archive   | 12/05/1886 | Lancing College & Farm | 1 Present   | All records        |
| TQ1906         | SOS Archived Records          | 23/06/1977 | Lancing College & Farm | 1 Present   | All records        |
| TQ2004         | Sussex Ornithological Society | 15/01/1989 | Widewater Lagoon       | 1 Present   | All records        |
| TQ2004         | Sussex Ornithological Society | 12/02/1989 | Widewater Lagoon       | 2 Present   | All records        |
| TQ2005         | SOS Archived Records          | 03/03/1979 | Shoreham River Adur    | 70 Present  | All records        |
| TQ2005         | SOS Archived Records          | 22/12/1981 | Adur Rail - Tollbridge | 5 Present   | All records        |
| TQ2005         | Sussex Ornithological Society | 06/01/1991 | Shoreham Airport       | 8 Present   | All records        |
| TQ206060       | Sussex Ornithological Society | 09/11/1996 | Shoreham Harbour       | 2 Present   | All records        |
| TQ207047       | SOS Archived Records          | 03/03/1979 | Shoreham River Adur    | 70 Present  | All records        |
| TQ207047       | SOS Archived Records          | 14/03/1979 | Shoreham River Adur    | 20 Present  | All records        |

| TQ2105 | Sussex Ornithological Society | 04/02/1979                 | Shoreham-by-Sea     | 20 Present | All records |
|--------|-------------------------------|----------------------------|---------------------|------------|-------------|
| TQ2105 | SOS Archived Records          | 28/11/1985                 | Shoreham-by-Sea     | 40 Present | All records |
| TQ2105 | BTO Birdtrack data            | 17/11/2005                 | Shoreham River Adur | 10 Present | All records |
| TQ2106 | Sussex Ornithological Society | 07/08/1975 -<br>09/08/1975 | Shoreham Sanctuary  | 2 Present  | All records |
| TQ2106 | Sussex Ornithological Society | 19/10/1976                 | Shoreham Sanctuary  | 1 Present  | All records |
| TQ2106 | Sussex Ornithological Society | 04/11/1981                 | Shoreham Sanctuary  | 3 Present  | All records |
| TQ2106 | Sussex Ornithological Society | 19/10/1983                 | Shoreham Sanctuary  | 1 Present  | All records |

# Phylloscopus sibilatrix

# Wood Warbler

A very scarce summer resident and passage migrant. This large white and yellow leaf warbler is associated with damp oak woodland where it feeds mainly on insects and spiders. Its best locations are in the north of our area, although it has never been common in Sussex and seems to be declining.

Bird Population Status - red; Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; UK Biodiversity Action Plan priority species

| Grid Reference | Recorder                      | Date       | Locality             | Abundance | Selection Based On |
|----------------|-------------------------------|------------|----------------------|-----------|--------------------|
| TQ1705         | BTO Birdtrack data            | 27/08/2013 | Sompting nr Worthing | 1 Present | Date               |
| TQ1804         | SOS Archived Records          | 09/05/1980 | Lancing CP           | 1 Present | Date               |
| TQ1806         | Sussex Ornithological Society | 06/08/1993 | Lancing Clump        | 1 Present | Date               |
| TQ1905         | SOS Archived Records          | 22/08/1987 | Shoreham Airport     | 1 Present | Date               |
| TQ1905         | Sussex Ornithological Society | 30/07/1995 | Shoreham Airport     | 1 Present | Date               |
| TQ2106         | Sussex Ornithological Society | 29/04/1975 | Shoreham Sanctuary   | 1 Present | Date               |
| TQ2106         | SOS Archived Records          | 01/05/1977 | Shoreham Sanctuary   | 1 Present | Date               |
| TQ2106         | SOS Archived Records          | 10/04/1984 | Shoreham-by-Sea      | 1 Present | Date               |
| TQ2106         | Sussex Ornithological Society | 17/08/1986 | Shoreham Sanctuary   | 1 Present | Date               |
| TQ2106         | SOS Archived Records          | 17/08/1986 | Shoreham Sanctuary   | 1 Present | Date               |

# Regulus ignicapilla

## Firecrest

A scarce or possibly fairly common breeding resident, passage migrant and winter visitor. A bird that shows a preference for the edges of mature spruce plantations where it feeds on insects and spiders. This tiny beautiful bird is recorded from only a few scattered locations in our area.

Bern Convention Appendix 2; Bird Population Status - amber; Wildlife and Countryside Act 1981 (Schedule 1 Part 1)

| Grid Reference | Recorder                          | Date                       | Locality               | Abundance | Selection Based On |
|----------------|-----------------------------------|----------------------------|------------------------|-----------|--------------------|
| TQ1906         | Sussex Ornithological Society     | 24/03/2008 -<br>19/12/2008 | Ladywells nr Coombes   | 2 Present | Date               |
| TQ1906         | BTO Birdtrack data                | 24/03/2008                 | Ladywells nr Coombes   | 1 Present | Date               |
| TQ1906         | BTO Birdtrack data                | 02/03/2010 -<br>13/03/2010 | Ladywells nr Coombes   | 1 Present | Date               |
| TQ1906         | BTO Birdtrack data                | 20/04/2013 -<br>29/04/2013 | Ladywell nr Coombes    | 1 Present | Positive Breeding  |
| TQ1906         | Sussex Ornithological Society     | 20/04/2013 -<br>29/12/2013 | Ladywell nr Coombes    | 4 Present | Date               |
| TQ2004         | Sussex Ornithological Society     | 30/03/1989                 | Lancing New Salts Farm | 1 Present | Date               |
| TQ2004         | Sussex Ornithological Society     | 23/03/1996                 | Lancing New Salts Farm | 1 Present | Date               |
| TQ2004         | Sussex Ornithological Society     | 24/03/2005                 | Lancing New Salts Farm | 1 Present | Date               |
| TQ2004         | Sussex Ornithological Society     | 03/04/2008                 | Adur Recreation Ground | 1 Present | Date               |
| TQ2004         | Sussex Ornithological Society     | 15/03/2009                 | Lancing New Salts Farm | 1 Present | Date               |
| TQ2004         | Sussex Ornithological Society     | 10/04/2013                 | Lancing New Salts Farm | 1 Present | Date               |
| TQ2004         | Sussex Ornithological Society     | 11/04/2013                 | Lancing New Salts Farm | 2 Present | Date               |
| TQ2005         | Sussex Ornithological Society     | 25/03/2013                 | Shoreham Airport       | 1 Present | Date               |
| TQ20C          | Tetrad Atlas (2007-2011) TTV data | 03/04/2008                 | Shoreham Airport       | 1 Present | Date               |
| TQ2106         | SOS Archived Records              | 22/06/1986                 | Shoreham Sanctuary     | 1 Present | Date               |
| TQ2106         | Sussex Ornithological Society     | 22/06/1986                 | Shoreham Sanctuary     | 1 Present | Date               |
| TQ2106         | Sussex Ornithological Society     | 11/03/1990                 | Shoreham Sanctuary     | 1 Present | Date               |

# Sylvia undata

## **Dartford Warbler**

One of Britain's few resident warblers and a fairly common but localised bird breeding almost exclusively on heathland. Vulnerable to cold winters and the destruction of gorse scrub. This small, dark, long-tailed warbler has a scratchy warbling song and feeds on insects and spiders that it gleans from gorse.

Bird Population Status - amber; Birds Directive Annex 1; Wildlife and Countryside Act 1981 (Schedule 1 Part 1)

| Grid Reference | Recorder                      | Date       | Locality                     | Abundance | Selection Based On |
|----------------|-------------------------------|------------|------------------------------|-----------|--------------------|
| TQ2005         | Sussex Ornithological Society | 26/03/1996 | Shoreham River Adur          | 1 Present | Date               |
| TQ2104         | Sussex Ornithological Society | 26/03/1996 | Adur Saltings (RSPB Reserve) | 1 Present | Date               |

## Dendrocopos minor

## Lesser Spotted Woodpecker

The size of a sparrow, this is Europe's smallest woodpecker. It is a scarce, possibly now very scarce, and declining Sussex resident that favours damp, open, broad leaved woodland. It feeds on insects, especially larvae, spiders and wood-boring insects. It requires decaying wood in which it makes a new nest chamber each year. Its population is scattered across Sussex in suitable areas; the county holds a significant proportion of the national population.

Bern Convention Appendix 2; Bird Population Status - red; Nerc Act 2006; UK Biodiversity Action Plan priority species

| Grid Reference | Recorder                      | Date       | Locality               | Abundance | Selection Based On |
|----------------|-------------------------------|------------|------------------------|-----------|--------------------|
| TQ1806         | Sussex Ornithological Society | 18/07/1989 | Lancing Clump          | 1 Present | All records        |
| TQ1905         | SOS Archived Records          | 13/04/1980 | Shoreham Airport       | 1 Present | All records        |
| TQ1906         | SOS Archived Records          | 06/11/1983 | Lancing College & Farm | 1 Present | All records        |
| TQ2004         | SOS Archived Records          | 15/07/1985 | Lancing New Salts Farm | 1 Present | All records        |
| TQ2004         | Sussex Ornithological Society | 10/01/1997 | Lancing New Salts Farm | 1 Present | All records        |
| TQ2106         | Sussex Ornithological Society | 29/07/1978 | Shoreham Sanctuary     | 1 Present | All records        |

# Asio otus

# Long-eared Owl

This medium sized owl with characteristic ear-tufts and orange eyes is a very scarce resident and scarce passage migrant and winter visitor. A nocturnal bird of the Downs, coastal plains and river valleys which feeds over rough grassland and has a preference for scrub, conifer plantations, thorn thickets and dense hedges where it communally roosts in the winter and breeds in the summer. It feeds on small rodents and small birds and is probably the most under-recorded bird in Sussex.

Bern Convention Appendix 2; EC CITES Annex A

| Grid Reference | Recorder                      | Date       | Locality                   | Abundance | Selection Based On |
|----------------|-------------------------------|------------|----------------------------|-----------|--------------------|
| TQ2004         | Sussex Ornithological Society | 31/03/1990 | Lancing New Salts Farm     | 1 Present | Date               |
| TQ2106         | SOS Archived Records          | 02/04/1976 | Shoreham Sanctuary         | 1 Present | Date               |
| TQ2106         | Sussex Ornithological Society | 09/02/1992 | Mill Hill, Shoreham-by-Sea | 4 Present | roost              |
| TQ2106         | Sussex Ornithological Society | 18/04/1992 | Shoreham Sanctuary         | 1 Present | Date and roost     |

# Tyto alba

# Barn Owl

A distinctive and much loved bird of the countryside, this scarce breeding resident declined substantially during the last century mainly due to loss of habitat, particularly areas of rough grassland where it hunts for mice, voles and shrews. The position has been improving recently with many nest boxes being erected, although the conversion of barns in Sussex has had a negative impact on potential breeding sites.

Bern Convention Appendix 2; Bird Population Status - amber; EC CITES Annex A; Wildlife and Countryside Act 1981 (Schedule 1 Part 1)

| Grid Reference | Recorder                      | Date                       | Locality             | Abundance | Selection Based On |
|----------------|-------------------------------|----------------------------|----------------------|-----------|--------------------|
| TQ10Y          | Tetrad Atlas (Roving records) | 04/07/2011                 | Applesham nr Coombes | 2 Present | All records        |
| TQ1703         | Sussex Ornithological Society | 03/03/2006                 | Shoreham Airport     | 1 Present | All records        |
| TQ1703         | Sussex Ornithological Society | 04/03/2006                 | Shoreham Airport     | 1 Present | All records        |
| TQ1704         | SOS Archived Records          | 01/11/1978                 | Sompting nr Worthing | 1 Present | All records        |
| TQ1704         | SOS Archived Records          | 30/01/1983                 | Sompting nr Worthing | 1 Present | All records        |
| TQ1704         | SOS Archived Records          | 07/04/1983                 | Sompting nr Worthing | 1 Present | All records        |
| TQ1804         | Sussex Ornithological Society | 23/03/1995                 | Lancing CP           | 2 Present | All records        |
| TQ1806         | SOS Archived Records          | 30/05/1978                 | Lancing Clump        | 1 Present | All records        |
| TQ188050       | Recorder @ WildCall           | 23/09/2011 -<br>20/11/2011 | West Sussex (VC13)   | 1 Present | All records        |

| TQ1905 | SOS Archived Records          | 03/01/1977                 | Shoreham-by-Sea  | 1 Present | All records |
|--------|-------------------------------|----------------------------|------------------|-----------|-------------|
| TQ1905 | SOS Archived Records          | 05/01/1977                 | Shoreham Airport | 1 Present | All records |
| TQ1905 | SOS Archived Records          | 31/05/1978                 | Shoreham Airport | 1 Present | All records |
| TQ1905 | SOS Archived Records          | 28/11/1981                 | Shoreham Airport | 1 Present | All records |
| TQ1905 | SOS Archived Records          | 14/09/1985                 | Shoreham Airport | 1 Present | All records |
| TQ1905 | SOS Archived Records          | 27/04/1986                 | Shoreham Airport | 1 Present | All records |
| TQ1905 | Sussex Ornithological Society | 18/11/1996                 | Shoreham Airport | 2 Present | All records |
| TQ1905 | Sussex Ornithological Society | 23/11/1996                 | Shoreham Airport | 2 Present | All records |
| TQ1905 | Sussex Ornithological Society | 25/11/1996                 | Shoreham Airport | 2 Present | All records |
| TQ1905 | Sussex Ornithological Society | 25/11/1996                 | Shoreham Airport | 2 Present | All records |
| TQ1905 | Sussex Ornithological Society | 30/11/1996                 | Shoreham Airport | 1 Present | All records |
| TQ1905 | Sussex Ornithological Society | 06/12/1996                 | Shoreham Airport | 2 Present | All records |
| TQ1905 | Sussex Ornithological Society | 27/12/1996                 | Shoreham Airport | 2 Present | All records |
| TQ1905 | Sussex Ornithological Society | 19/01/1997                 | Shoreham Airport | 1 Present | All records |
| TQ1905 | Sussex Ornithological Society | 29/01/1997                 | Shoreham Airport | 1 Present | All records |
| TQ1905 | Sussex Ornithological Society | 05/03/1997                 | Shoreham Airport | 1 Present | All records |
| TQ1905 | Sussex Ornithological Society | 20/12/1997 -<br>31/12/1997 | Shoreham Airport | 1 Present | All records |
| TQ1905 | Sussex Ornithological Society | 31/12/1997                 | Shoreham Airport | 1 Present | All records |
| TQ1905 | Sussex Ornithological Society | 10/02/2000                 | Shoreham Airport | 1 Present | All records |
| TQ1905 | Sussex Ornithological Society | 12/02/2000                 | Shoreham Airport | 1 Present | All records |
| TQ1905 | Sussex Ornithological Society | 11/03/2000                 | Shoreham Airport | 1 Present | All records |
| TQ1905 | Anon @ Shoreham District O.S. | 11/01/2003                 | Shoreham Airport | 1 Present | All records |
| TQ1905 | Sussex Ornithological Society | 08/04/2004                 | Shoreham Airport | 1 Present | All records |
| TQ1905 | Sussex Ornithological Society | 02/01/2007                 | Shoreham Airport | 1 Present | All records |
| TQ1905 | Sussex Ornithological Society | 27/01/2007                 | Shoreham Airport | 2 Present | All records |
| TQ1905 | Sussex Ornithological Society | 05/03/2007                 | Shoreham Airport | 1 Present | All records |

| TQ1906   | Lancing College NHS archive   | 11/04/1884 | Lancing College & Farm | 1 Present | All records |
|----------|-------------------------------|------------|------------------------|-----------|-------------|
| TQ1906   | Lancing College NHS archive   | 25/03/1885 | Lancing College & Farm | 1 Present | All records |
| TQ1906   | Lancing College NHS archive   | 09/12/1886 | Lancing College & Farm | 1 Present | All records |
| TQ1906   | Lancing College NHS archive   | 01/05/1921 | Lancing College & Farm | 1 Present | All records |
| TQ1906   | Lancing College NHS archive   | 10/10/1946 | Lancing College & Farm | 1 Present | All records |
| TQ1906   | SOS Archived Records          | 22/01/1984 | Lancing College & Farm | 1 Present | All records |
| TQ195051 | Sussex Ornithological Society | 15/01/1997 | Shoreham Airport       | 2 Present | All records |
| TQ195051 | Sussex Ornithological Society | 25/02/1997 | Shoreham Airport       | 1 Present | All records |
| TQ197052 | Sussex Ornithological Society | 15/01/1997 | Shoreham Airport       | 2 Present | All records |
| TQ2004   | Sussex Ornithological Society | 02/03/1997 | Lancing New Salts Farm | 1 Present | All records |
| TQ2004   | Sussex Ornithological Society | 03/03/2006 | Lancing New Salts Farm | 1 Present | All records |
| TQ2004   | Sussex Ornithological Society | 03/03/2006 | Lancing New Salts Farm | 1 Present | All records |
| TQ2004   | Sussex Ornithological Society | 05/03/2006 | Lancing New Salts Farm | 1 Present | All records |
| TQ2004   | Sussex Ornithological Society | 12/03/2006 | Lancing New Salts Farm | 1 Present | All records |
| TQ2004   | BTO Birdtrack data            | 04/01/2007 | Lower Adur Valley      | 1 Present | All records |

| TQ2005 | SOS Archived Records          | 25/09/1977 | Shoreham River Adur | 1 Present | All records |
|--------|-------------------------------|------------|---------------------|-----------|-------------|
| TQ2005 | SOS Archived Records          | 16/11/1979 | Shoreham Airport    | 1 Present | All records |
| TQ2005 | SOS Archived Records          | 18/11/1982 | Shoreham Airport    | 1 Present | All records |
| TQ2005 | Sussex Ornithological Society | 14/12/1996 | Shoreham Airport    | 1 Present | All records |
| TQ2005 | Sussex Ornithological Society | 05/01/1997 | Lower Adur Valley   | 1 Present | All records |
| TQ2005 | Sussex Ornithological Society | 06/01/1997 | Shoreham River Adur | 1 Present | All records |
| TQ2005 | Sussex Ornithological Society | 06/01/1997 | Shoreham Airport    | 1 Present | All records |
| TQ2005 | Sussex Ornithological Society | 01/02/1997 | Shoreham Airport    | 1 Present | All records |
| TQ2005 | Sussex Ornithological Society | 25/03/1997 | Shoreham Airport    | 1 Present | All records |
| TQ2005 | Sussex Ornithological Society | 25/03/1997 | Shoreham Airport    | 1 Present | All records |
| TQ2005 | Sussex Ornithological Society | 09/01/1998 | Shoreham Airport    | 1 Present | All records |
| TQ2005 | Sussex Ornithological Society | 10/01/1998 | Shoreham Airport    | 1 Present | All records |
| TQ2005 | Sussex Ornithological Society | 23/02/1998 | Shoreham Airport    | 1 Present | All records |
| TQ2005 | Sussex Ornithological Society | 23/12/1998 | Shoreham Airport    | 1 Present | All records |
| TQ2005 | Sussex Ornithological Society | 29/01/1999 | Shoreham Airport    | 1 Present | All records |
| TQ2005 | Sussex Ornithological Society | 08/02/1999 | Shoreham Airport    | 1 Present | All records |
| TQ2005 | Sussex Ornithological Society | 08/02/1999 | Shoreham Airport    | 1 Present | All records |
| TQ2005 | Sussex Ornithological Society | 04/07/1999 | Shoreham Airport    | 1 Present | All records |
| TQ2005 | Sussex Ornithological Society | 10/02/2000 | Shoreham Airport    | 1 Present | All records |
| TQ2005 | Sussex Ornithological Society | 12/02/2000 | Shoreham River Adur | 1 Present | All records |
| TQ2005 | Sussex Ornithological Society | 14/02/2000 | Shoreham Airport    | 1 Present | All records |
| TQ2005 | Sussex Ornithological Society | 19/02/2000 | Shoreham River Adur | 1 Present | All records |
| TQ2005 | Sussex Ornithological Society | 20/02/2000 | Shoreham Airport    | 1 Present | All records |
| TQ2005 | Sussex Ornithological Society | 06/03/2000 | Shoreham Airport    | 1 Present | All records |
| TQ2005 | Sussex Ornithological Society | 07/03/2000 | Shoreham Airport    | 1 Present | All records |
| TQ2005 | Sussex Ornithological Society | 21/03/2000 | Shoreham Airport    | 1 Present | All records |
| TQ2005 | Sussex Ornithological Society | 22/06/2000 | Shoreham Airport    | 1 Present | All records |
| TQ2005 | Sussex Ornithological Society | 21/02/2002 | Shoreham Airport    | 2 Present | All records |
| TQ2005 | Sussex Ornithological Society | 12/03/2002 | Shoreham Airport    | 1 Present | All records |
| TQ2005 | Sussex Ornithological Society | 08/12/2003 | Shoreham Airport    | 1 Present | All records |
| TQ2005 | Sussex Ornithological Society | 29/01/2004 | Shoreham Airport    | 1 Present | All records |

| TQ2005       | Sussex Ornithological Society | 09/02/2004 | Shoreham Airport       | 1 Present     | All records |
|--------------|-------------------------------|------------|------------------------|---------------|-------------|
| TQ2005       | Sussex Ornithological Society | 13/02/2004 | Shoreham Airport       | 1 Present     | All records |
| TQ2005       | Sussex Ornithological Society | 31/03/2004 | Shoreham Airport       | 2 Present     | All records |
| TQ2005       | Sussex Ornithological Society | 27/02/2006 | Shoreham Airport       | 1 Present     | All records |
| TQ2005       | Sussex Ornithological Society | 04/03/2006 | Shoreham Airport       | 1 Present     | All records |
| TQ2005       | Sussex Ornithological Society | 05/03/2006 | Shoreham Airport       | 1 Present     | All records |
| TQ2005       | Sussex Ornithological Society | 12/12/2006 | Shoreham Airport       | 1 Present     | All records |
| TQ2005       | Sussex Ornithological Society | 13/12/2006 | Shoreham Airport       | 1 Present     | All records |
| TQ2005       | Sussex Ornithological Society | 13/12/2006 | Shoreham Airport       | 1 Present     | All records |
| TQ2005       | Sussex Ornithological Society | 01/01/2007 | Shoreham Airport       | 2 Present     | All records |
| TQ2005       | Sussex Ornithological Society | 27/01/2007 | Shoreham Airport       | 2 Present     | All records |
| TQ2005       | Sussex Ornithological Society | 11/02/2007 | Shoreham Airport       | 1 Present     | All records |
| TQ2005       | Sussex Ornithological Society | 13/02/2007 | Shoreham Airport       | 1 Present     | All records |
| TQ2005       | Sussex Ornithological Society | 16/02/2007 | Shoreham Airport       | 1 Present     | All records |
| TQ2005       | Sussex Ornithological Society | 17/02/2007 | Shoreham Airport       | 1 Present     | All records |
| TQ2005       | Sussex Ornithological Society | 20/02/2007 | Shoreham Airport       | 1 Present     | All records |
| TQ2005       | Sussex Ornithological Society | 21/02/2007 | Shoreham Airport       | 1 Present     | All records |
| TQ2006       | Sussex Ornithological Society | 25/09/2007 | Shoreham Sussex Pad    | 1 Present     | All records |
| TQ203047     | Sussex Ornithological Society | 31/08/2009 | Lancing New Salts Farm | 1 Present     | All records |
| TQ203049     | Sussex Ornithological Society | 01/03/2006 | Shoreham Airport       | 2 Present     | All records |
| TQ2034204833 | Recorder @ WildCall           | 12/02/2013 | West Sussex (VC13)     | 1 Present     | All records |
| TQ206057     | Sussex Ornithological Society | 03/04/1996 | Shoreham River Adur    | 2 Present     | All records |
| TQ20D        | Tetrad Atlas (Roving records) | 16/02/2008 | Shoreham Mill Hill     | 1 Present     | All records |
| TQ20D        | Tetrad Atlas (Roving records) | 26/07/2008 | Shoreham Mill Hill     | Present Taxon | All records |
| TQ2106       | SOS Archived Records          | 21/03/1982 | Shoreham Sanctuary     | 1 Present     | All records |
| TQ2106       | Sussex Ornithological Society | 31/01/2003 | Shoreham Sanctuary     | 1 Present     | All records |
| TQ2106       | Sussex Ornithological Society | 17/04/2006 | Shoreham Sanctuary     | 1 Present     | All records |
| TQ211067     | Sussex Ornithological Society | 30/01/2002 | Shoreham Sanctuary     | 1 Present     | All records |
| TQ211068     | SOS Archived Records          | 17/10/1979 | Shoreham Sanctuary     | 1 Present     | All records |

## The BAP Species Inventory does not include bat, bird or otter records.

Bat and bird records are included in separate inventories, while otter records are not included in SxBRC reports.

The UK Biodiversity Action Plan (BAP), published in 1994, was the UK Government's response to signing the Convention on Biological Diversity (CBD) at the 1992 Rio Earth Summit. The new **UK post-2010 Biodiversity Framework** replaces the previous UK level BAP, though the lists of priority species agreed under the UK BAP still form the basis of much biodiversity work in the UK. The current strategy for England is 'Biodiversity 2020: A Strategy for England's wildlife and ecosystem services'. Although the UK BAP has been succeeded, Species Action Plans (SAPs) developed under the UK BAP still remain important and valuable reference sources for background information on Priority Species under the UK Post-2010 Biodiversity Framework.

The new framework includes five internationally agreed strategic goals and supporting targets to be achieved by 2020. The five strategic goals agreed were:

- Strategic Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society
- Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use
- Strategic Goal C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity
- Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services
- Strategic Goal E: Enhance implementation through participatory planning, knowledge management and capacity building.

Further information on the UK BAP and details of the species and habitat action plans can be found on the <u>JNCC</u> website.

### **BAP** species within this report

- BAP records are labelled so that only one record per species per grid reference is included in a SxBRC report. This will usually be the most up to date record.
- Species which appear in the 'England Biodiversity List' to meet the requirements of Section 41 of the NERC Act (2006)\* are labelled with the symbol N.

### \* Natural Environment & Rural Communities (NERC) Act

The NERC Act (2006) was established with the intention to help ensure that biodiversity becomes an integral consideration in the development of policies, and that decisions of public bodies work with nature and not against it.

The England Biodiversity List has been drawn up to meet the requirements of Section 41 of the Act. The S41 list consists of **943 species** and **56 habitats** of principal importance in England and will be used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under Section 40 of the NERC Act.

Further details of the NERC Act can be found on the Natural England website.

# Sussex Biodiversity Record Centre

# UK BIODIVERSITY ACTION PLAN SPECIES INVENTORY REPORT

Please note that bat, bird and otter records are not included in this report

Land at New Salts Farm, Shoreham + 2km buffer

23 June 2015 ESD/15/443 Search Area: TQ1704 toTQ2205; TQ1703 to TQ1903; TQ1806 to TQ2106

Vicky Hale (PJC Ecology)

### Lucanus cervus

## Stag Beetle

Ν

#### Insect - beetle (Coleoptera)

A beetle of broadleaved woodland, parks, other pasture woodland and gardens. The larvae live in the decaying wood of deciduous trees, often in roots and stumps. Widely recorded from West Sussex but rare in East Sussex and apparently absent from much of the vice-county.

### Designations

Habitats Directive Annex 2 - non-priority species, Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, Sussex Rare Species Inventory, UK Biodiversity Action Plan priority species, Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5a), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5b)

| Grid Reference | Recorder            | Date       | Locality   |
|----------------|---------------------|------------|--|
| TQ1705         | Peter Hodge         | 30/06/2000 | Upper Cokeham  |
| TQ173051       | Recorder @ WildCall | 04/07/2011 | Abbey road, Sompting, West Sussex (VC13)   |
| TQ175057       | Recorder @ WildCall | 02/06/2011 | Grass verge on the corner of<br>Meadowview Road and Halewick Lane,<br>West Sussex (VC13) |
| TQ179052       | Anon Bioblitz Card  | 2010       | Pratton Avenue   |
| TQ180046       | Roger Sutton        | 2009       | Lancing CP   |
| TQ184048       | Recorder @ WildCall | 29/06/2011 | Grinstead Lane, Lancing, West Sussex (VC13)  |
| TQ185043       | Roberta Rickard     | 23/06/2007 | Kings Close, Lancing, Lancing CP   |
| TQ190061       | Recorder @ WildCall | 17/06/2012 | Hoe Court, Lancing, West Sussex (VC13)   |
| TQ207062       | John Knight         | 15/09/2005 | Coastal Link   |
| TQ209061       | Gordon Tickler      | 22/08/2003 | Adur Avenue, Shoreham, West Sussex (VC13)  |
| TQ212060       | Gordon Tickler      | 30/06/2007 | Adur Avenue, Shoreham-by-Sea, West<br>Sussex (VC13)                                      |
| TQ212061       | Anon                | 21/06/2001 | Garden of 15,Adur Avenue,Shoreham,<br>West Sussex (VC13)                                 |
| TQ212062       | Anon                | July 2002  | Shoreham, West Sussex (VC13)   |
| TQ2127306042   | Gordon Tickler      | 05/07/2008 | Adur Avenue, Shoreham CP   |
| TQ2129406200   | Gordon Tickler      | 03/06/2008 | Erringham Road, Shoreham CP  |
| TQ214053       | Nadine Russell      | 15/06/2001 | Railway Bridge, Shoreham, West Sussex (VC13)   |
| TQ214058       | Anon                | 25/06/2001 | Shoreham, West Sussex (VC13)   |
| TQ215053       | Helen Swyer         | 02/07/2007 | Shoreham Community Centre, Shoreham-<br>by-sea, Shoreham-by-Sea                          |
| TQ215061       | Mr Briddle          | 25/05/2007 | The Avenue, in garden, on lawn,<br>Shoreham-by-Sea                                       |
| TQ216057       | Anon                | 30/06/2001 | Shoreham, West Sussex (VC13)   |
| TQ217050       | Nick Lamb           | 05/06/2004 | Shoreham-by-Sea, Shoreham CP   |
| TQ217054       | Mrs Clamp           | June 2002  | 27 Queens's Place, Shoreham, West<br>Sussex (VC13)                                       |
| TQ218062       | Clive Oxley         | 13/07/2000 | Edburton Gardens, Shoreham, West<br>Sussex (VC13)  |

| TQ219062 | Dorothy Coleman | 14/06/2007 | 19 Ravensbourne Avenue, Shoreham CP                           |
|----------|-----------------|------------|---|
| TQ220058 | Chloe Preece    | June 2006  | Buckingham Middle School near Dean's<br>Wood, Shoreham-by-Sea |
| TQ222056 | Anon            | 30/06/2001 | Shoreham, West Sussex (VC13)                                  |
| TQ222059 | Gordon Tickler  | 10/05/2007 | 117 Upper Shoreham Road, Shoreham<br>CP                       |
| TQ223057 | Helen Swyer     | 01/06/2007 | 104 Eastern Avenue, Shoreham-by-sea,<br>Shoreham-by-Sea       |

## Arctia caja

# Garden Tiger

Ν

### Insect - moth

A dramatically coloured large moth with woolly bear larvae that eat a wide variety of plants. Widespread across Suusex, though often absent from some areas.

### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality   |
|----------------|------------------------|------------|--|
| TQ186058       | James Weston           | 08/08/2010 | 20 Norbury Drive, North Lancing                              |
| TQ1905         | Mark Elliott           | 06/05/2003 | New Monks Farm, Lancing, Monks Farm, Lancing                 |
| TQ200042       | John Knight            | 27/08/2010 | Widewater Lagoon LNR   |
| TQ214064       | Dave Green;Penny Green | 22/08/2011 | Shoreham-by-Sea, 10 Westmoreland<br>Walk, West Sussex (VC13) |
| TQ21490643     | Dave Green;Penny Green | 08/08/2010 | 10 Westmoreland Walk, Shoreham-by-<br>Sea                    |
| TQ215044       | Dave Green;Penny Green | 08/08/2012 | Shoreham Beach, on the shingle, West<br>Sussex (VC13)        |
| TQ215064       | Dave Green;Penny Green | 28/08/2012 | 10 Westmoreland Walk, Shoreham-by-<br>Sea                    |

## Spilosoma lubricipeda

White Ermine

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### Insect - moth

A white moth with black speckles. Flies in the summer months and 'woolly bear' larvae feed on low-growing plants. Widespread across Sussex.

### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality                              |
|----------------|------------------------|------------|---------------------------------------|
| TQ186058       | James Weston           | 29/05/2011 | 20 Norbury Drive, North Lancing       |
| TQ21490643     | Dave Green;Penny Green | 01/06/2010 | 10 Westmoreland Walk, Shoreham-by-Sea |

## Spilosoma luteum

## **Buff Ermine**

### Insect - moth

A yellowish-buff summer-flying moth normally with black speckles. Larvae feed on low-growing plants as well as trees and shrubs. Widespread and often common in Sussex.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality  |
|----------------|------------------------|------------|---|
| TQ186058       | James Weston           | 29/08/2013 | 20 Norbury Drive, North Lancing                           |
| TQ214064       | Dave Green;Penny Green | 22/08/2011 | Shoreham-by-Sea, 10 Westmoreland Walk, West Sussex (VC13) |
| TQ21490643     | Dave Green;Penny Green | 14/08/2010 | 10 Westmoreland Walk, Shoreham-by-<br>Sea                 |
| TQ215064       | Dave Green;Penny Green | 26/08/2012 | 10 Westmoreland Walk, Shoreham-by-<br>Sea                 |

| Tyria jacobaeae | Cinnabar |
|-----------------|----------|
|                 |          |

#### Insect - moth

A red and black day-flying moth whose orange and black ringed larvae feed on ragwort and related plants. Common across Sussex.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality  |
|----------------|------------------------|------------|---|
| TQ21490643     | Dave Green;Penny Green | 08/07/2010 | 10 Westmoreland Walk, Shoreham-by-Sea                         |
| TQ215064       | Dave Green;Penny Green | 26/06/2004 | 10 Westmoreland Walk, Shoreham-by-<br>Sea, West Sussex (VC13) |

### Chiasmia clathrata

# Latticed Heath

### Insect - moth

A moth that flies both by day and by night on downland, commons, open woodland and similar habitats. Widespread but local in Sussex. Some records of this species are under the nominate subspecies Semiothisa clathrata clathrata.

### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality                                  |
|----------------|------------------------|------------|---|
| TQ215064       | Dave Green;Penny Green | 17/08/2012 | 10 Westmoreland Walk, Shoreham-by-<br>Sea |

### Ennomos fuscantaria

## Dusky Thorn

### Insect - moth

A moth of woods and parks flying from late July to October. Larvae live on ash (Fraxinus excelsior). Scattered across Sussex.

### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality                           |
|----------------|------------------------|------------|------------------------------------|
| TQ21490643     | Dave Green;Penny Green | 28/08/2008 | 10 Westmoreland Walk, Shoreham-by- |

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# Epirrhoe galiata

## Galium Carpet

### Insect - moth

A geometrid moth found on a range of coastal habitats including sandhills, shingle beaches and cliffs, inland being found on chalk downland, limestone hills and sometimes open moorland, the larva feeding on various species of Galium. Found over much of GB. Mainly along the coast and on the Downs in our area.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality                                  |
|----------------|------------------------|------------|---|
| TQ21490643     | Dave Green;Penny Green | 08/09/2008 | 10 Westmoreland Walk, Shoreham-by-<br>Sea |

### Hemistola chrysoprasaria

Small Emerald

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#### Insect - moth

A moth of downland, hedgerows and edges of woods, mainly found on chalk. Larva on Clematis. Widely distributed in the southern half of Britain, less frequent from the Midlands northwards to Lincolnshire and Westmorland. Widespread in Sussex, mainly from the caost and the Downs.

### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality  |
|----------------|------------------------|------------|---|
| TQ186058       | James Weston           | 17/07/2010 | 20 Norbury Drive, North Lancing                           |
| TQ214064       | Dave Green;Penny Green | 25/07/2011 | Shoreham-by-Sea, 10 Westmoreland Walk, West Sussex (VC13) |
| TQ21490643     | Dave Green;Penny Green | 03/07/2009 | 10 Westmoreland Walk, Shoreham-by-Sea                     |
| TQ215064       | Dave Green;Penny Green | 26/07/2012 | 10 Westmoreland Walk, Shoreham-by-<br>Sea                 |

### Perizoma albulata

# Grass Rivulet

#### Insect - moth

A nationally local species of chalk grassland, sand dunes and shingle over much of lowland UK. In Sussex it is found on much of the downs, but is very scarce except between Brighton and Eastbourne in East Sussex and the downs above Storrington in West Sussex. Caterpillars feed on the ripening seeds of Yellow Rattle.

#### Designations

Sussex Biodiversity Action Plan, Sussex Rare Species Inventory, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality                                  |
|----------------|------------------------|------------|---|
| TQ21490643     | Dave Green;Penny Green | 04/06/2009 | 10 Westmoreland Walk, Shoreham-by-<br>Sea |

## Scopula marginepunctata

### **Mullein Wave**

### Insect - moth

A mostly coastal moth, the larva feeding on low plants. Southern England and Wales, also noted from Cumbria, Yorkshire and a few localities in Scotland. Most Sussex records are from the Rye Harbour area in East Sussex, or Pagham Harbour in West Sussex.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality                                  |
|----------------|------------------------|------------|---|
| TQ21490643     | Dave Green;Penny Green | 14/09/2010 | 10 Westmoreland Walk, Shoreham-by-<br>Sea |
| TQ215064       | Dave Green;Penny Green | 28/08/2012 | 10 Westmoreland Walk, Shoreham-by-<br>Sea |
| TQ22930451     | Tim Freed              | 20/06/2013 | 139 Old Fort Road - Trap B                |

### Scotopteryx bipunctaria

Chalk Carpet

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### Insect - moth

This nationally scarce (b) species occurs on calcareous grassland in southern England and parts of Wales and Yorkshire. In Sussex it is decreasing and is now only regularly seen on the downs between Eastbourne and Shoreham. Caterpillars feed on Clovers and Vetches. Record both as Scotopteryx bipunctaria and S. bipunctaria cretata.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality                           |
|----------------|------------------------|------------|------------------------------------|
| TQ215064       | Dave Green;Penny Green | 17/08/2012 | 10 Westmoreland Walk, Shoreham-by- |

### Scotopteryx chenopodiata

Shaded Broad-bar

### Insect - moth

Adults in a wide range of habitats including sand dunes, downland, waste ground and grassy embankments where they can be found visiting flowers from dusk onwards. Larvae on vetches and clovers. Widespread and moderately common throughout Britain. Widespread and often frequent in Sussex.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality  |
|----------------|------------------------|------------|---|
| TQ214064       | Dave Green;Penny Green | 25/07/2011 | Shoreham-by-Sea, 10 Westmoreland Walk, West Sussex (VC13) |
| TQ21490643     | Dave Green;Penny Green | 22/08/2008 | 10 Westmoreland Walk, Shoreham-by-Sea                     |

### Timandra comae

### Blood-Vein

### Insect - moth

A widespread and moderately common moth in southern Britain with records from across Sussex. It is regarded as being in rapid decline.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality  |
|----------------|------------------------|------------|---|
| TQ186058       | James Weston           | 29/08/2012 | 20 Norbury Drive, North Lancing                           |
| TQ214064       | Dave Green;Penny Green | 03/09/2011 | Shoreham-by-Sea, 10 Westmoreland Walk, West Sussex (VC13) |
| TQ21490643     | Dave Green;Penny Green | 21/09/2010 | 10 Westmoreland Walk, Shoreham-by-<br>Sea                 |

## Hepialus humuli

# Ghost Moth

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#### Insect - moth

A large moth that is a member of a primitive suborder of the Lepidoptera. Frequenting hillsides, waste ground and other grassy places, this species is widespread over the whole of the British Isles. The larvae feed at the roots of grasses and a wide variety of wild and cultivated plants. Widely recorded in Sussex both at specific (Hepialus humuli) and subspecific (H. humuli humuli) level.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality                              |
|----------------|------------------------|------------|---------------------------------------|
| TQ215064       | Dave Green;Penny Green | 26/07/2012 | 10 Westmoreland Walk, Shoreham-by-Sea |

### Erynnis tages

**Dingy Skipper** 

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### Insect - butterfly

The butterfly occurs in discrete colonies, frequenting downland, dunes, heaths, embankments, woodland rides and occasionally damper areas. The larva feeds on birdsfoot trefoils, Lotus corniculatus and L. uliginosus. Southern Britain and Wales, being more local further north. Widespread but declining in Sussex Weald. More stable on the South Downs. Recorded under both Erynnis tages and as the nominate subspecies Erynnis tages tages.

#### Designations

IUCN (2001) - Vulnerable, Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder                     | Date       | Locality   |
|----------------|------------------------------|------------|--|
| TQ2006         | Jim Steedman;Judith Steedman | 25/04/2002 | Mill Hill LNR, Shoreham  |
| TQ2106         | Dan Danahar                  | 31/05/2013 | TQ2106 North Shoreham (1km sq)                                   |
| TQ211065       | Laurie Keen                  | 11/05/2004 | Mill Hill, Mill Hill, Shoreham-by-Sea                            |
| TQ211067       | Julian Clarke                | 19/05/2012 | Shoreham Bank & Mill Hill Shoreham<br>Sussex, West Sussex (VC13) |
| TQ211069       | Neil Hulme                   | 26/05/2005 | Mill Hill, Shoreham-by-Sea                                       |
| TQ213068       | Marion Biggs                 | 19/05/1997 | Mill Hill, Shoreham-by-Sea                                       |
### Pyrgus malvae

### **Grizzled Skipper**

#### Insect - butterfly

A butterfly of sheltered meadows, downland and open woodland rides. Larva on Potentilla, Fragaria vesca and Agrimonia eupatoria. Commonest in central southern England, Wales and the Midlands up to Yorkshire. Still widespread on the Downs but less common than it was in the Weald.

#### Designations

IUCN (2001) - Vulnerable, Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder                     | Date       | Locality  |
|----------------|------------------------------|------------|---|
| TQ2006         | Jim Steedman;Judith Steedman | 25/04/2002 | Mill Hill LNR, Shoreham                             |
| TQ211065       | Laurie Keen                  | 23/04/2004 | Mill Hill, Mill Hill, Shoreham-by-Sea               |
| TQ211069       | Neil Hulme                   | 23/05/2007 | Mill Hill, Shoreham-by-Sea                          |
| TQ213068       | M. Biggs                     | 02/05/1995 | Mill Hill, Shoreham, Mill Hill, Shoreham-<br>by-Sea |

### Malacosoma neustria

Lackey

#### Insect - moth

The larvae of this moth feed on a variety of trees and shrubs, living in a communal tent. Distributed throughout the southern half of England becoming very local further north. The species is vulnerable to flail cutting of hedges in winter and may be declining.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality  |
|----------------|------------------------|------------|---|
| TQ186058       | James Weston           | 02/07/2011 | 20 Norbury Drive, North Lancing                           |
| TQ214064       | Dave Green;Penny Green | 05/07/2011 | Shoreham-by-Sea, 10 Westmoreland Walk, West Sussex (VC13) |
| TQ21490643     | Dave Green;Penny Green | 31/07/2010 | 10 Westmoreland Walk, Shoreham-by-<br>Sea                 |
| TQ215064       | Dave Green;Penny Green | 26/07/2012 | 10 Westmoreland Walk, Shoreham-by-<br>Sea                 |

### Cupido minimus

### Small Blue

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### Insect - butterfly

Britain's smallest butterfly. Found in discrete colonies in a number of places along the Downs from East to West Sussex.

### Designations

IUCN (2001) - Lower risk - near threatened, Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species, Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5a), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5b)

| Grid Reference | Recorder       | Date       | Locality                         |
|----------------|----------------|------------|----------------------------------|
| TQ180064       | Mark Senior    | 25/06/2013 | Lancing Ring                     |
| TQ180065       | Dean Vince     | 16/06/1996 | Lancing Ring, North Lancing      |
| TQ182063       | Bert Laker     | 23/07/2006 | Lancing Ring                     |
| TQ182064       | Dean Vince     | 16/06/1996 | Lancing Ring                     |
| TQ182065       | Bert Laker     | 04/08/2008 | Lancing Clump                    |
| TQ2106         | Ian Cunningham | 04/06/1997 | Shoreham-by-Sea                  |
| TQ211053       | Betty Bishop   | 25/06/1996 | Coast Link, Shoreham-by-Sea      |
| TQ215066       | Andy Horton    | 14/06/2013 | Shoreham, A27 Buckingham Cutting |

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### Satyrium w-album

### White-letter Hairstreak

#### Insect - butterfly

A butterfly with elm-feeding larvae that declined dramatically after Dutch elm disease. Recorded from 17 1km squares since 2000, mostly near the Downs in East and West Sussex.

#### Designations

IUCN (2001) - Endangered, Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species, Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5a), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5b)

| Grid Reference | Recorder                         | Date        | Locality           |
|----------------|----------------------------------|-------------|--------------------|
| TQ182063       | Bert Laker                       | 17/07/2005  | Lancing Clump      |
| TQ182065       | Bert Laker                       | 04/08/2008  | Lancing Clump      |
| TQ20D          | BBCS British Butterfly Con. Soc. | 1996 - 2000 | West Sussex (VC13) |

### Thecla betulae

### Brown Hairstreak

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#### Insect - butterfly

A butterfly requiring sloe scrub in which to breed. Widely, but very thinly, distributed in West Sussex, but gone from the east and generally in decline nationally.

#### Designations

IUCN (2001) - Vulnerable, Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, Sussex Rare Species Inventory, UK Biodiversity Action Plan priority species, Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5a), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5b)

| Grid Reference | Recorder    | Date       | Locality  |
|----------------|-------------|------------|---|
| TQ2106         | Ellie Blows | 30/08/2010 | North Shoreham (1km sq), West Sussex (VC13)             |
| TQ215066       | Andy Horton | 18/08/2010 | Shoreham, A27 Buckingham Cutting,<br>West Sussex (VC13) |

### Acronicta rumicis

Knot Grass

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#### Insect - moth

A widely distributed moth in in the southern half of the British Isles, but one that is marked decline. Widely recorded in Sussex.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality                              |
|----------------|------------------------|------------|---------------------------------------|
| TQ21490643     | Dave Green;Penny Green | 10/08/2009 | 10 Westmoreland Walk, Shoreham-by-Sea |
| TQ215064       | Dave Green;Penny Green | 20/08/2012 | 10 Westmoreland Walk, Shoreham-by-Sea |

### Agrochola lychnidis

### **Beaded Chestnut**

#### Insect - moth

A brown noctuid moth flying in September and October. Larvae feed on low plants and later on the leaves of trees and shrubs. Widespread in Sussex.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality  |
|----------------|------------------------|------------|---|
| TQ214064       | Dave Green;Penny Green | 29/10/2011 | Shoreham-by-Sea, 10 Westmoreland Walk, West Sussex (VC13) |
| TQ21490643     | Dave Green;Penny Green | 09/10/2010 | 10 Westmoreland Walk, Shoreham-by-<br>Sea                 |
| TQ215064       | Dave Green;Penny Green | 02/11/2012 | 10 Westmoreland Walk, Shoreham-by-<br>Sea                 |

### Allophyes oxyacanthae

Green-brindled Crescent

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#### Insect - moth

An autumn-flying noctuid moth with a metallic sheen. Frequents woodlands, hedgerows and gardens. Larvae on a variety of trees and bushes. Widespread in Sussex.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality  |
|----------------|------------------------|------------|---|
| TQ214064       | Dave Green;Penny Green | 14/10/2011 | Shoreham-by-Sea, 10 Westmoreland Walk, West Sussex (VC13) |

### Amphipoea oculea

Ear Moth

#### Insect - moth

A widespread moth in the British Isles that prefers marshy and damp places. It is in marked decline. Widely recorded in Sussex.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality                                  |
|----------------|------------------------|------------|---|
| TQ186058       | James Weston           | 29/08/2012 | 20 Norbury Drive, North Lancing           |
| TQ21490643     | Dave Green;Penny Green | 26/07/2009 | 10 Westmoreland Walk, Shoreham-by-<br>Sea |

### Amphipyra tragopoginis

Mouse Moth

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#### Insect - moth

A widespread moth in the British Isles, but one that is in marked decline. Very widely recorded in Sussex.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder     | Date       | Locality        |
|----------------|--------------|------------|-----------------|
| TQ222053       | Bob Antonini | 21/08/1996 | Shoreham-by-Sea |

### Apamea remissa

### **Dusky Brocade**

#### Insect - moth

A generally distributed moth of open woodland, marshes, downland, commons and other grassy places that is in marked decline. Larvae live on grasses. Widely recorded in Sussex.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality   |
|----------------|------------------------|------------|--|
| TQ186058       | James Weston           | 08/08/2010 | 20 Norbury Drive, North Lancing                              |
| TQ214064       | Dave Green;Penny Green | 14/06/2011 | Shoreham-by-Sea, 10 Westmoreland<br>Walk, West Sussex (VC13) |
| TQ222053       | Bob Antonini           | 14/06/1996 | Shoreham-by-Sea  |

### Aporophyla lutulenta

Deep-brown Dart

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#### Insect - moth

A brown, autumn-flying noctuid moth. Larvae feed on grasses and various shrubs including heather. Widespread but uncommon in Sussex.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality   |
|----------------|------------------------|------------|--|
| TQ214064       | Dave Green;Penny Green | 25/09/2006 | 10 Westmoreland Walk, 10<br>Westmoreland Walk, Shoreham-by-Sea |
| TQ21490643     | Dave Green;Penny Green | 04/10/2008 | 10 Westmoreland Walk, Shoreham-by-<br>Sea                      |

### Caradrina morpheus

Mottled Rustic

#### Insect - moth

A common noctuid moth whose larvae feed on nettle, dandelion and other low-growing plants. It is in marked decline in the UK, bu has been very widely recorded in Sussex.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality   |
|----------------|------------------------|------------|--|
| TQ186058       | James Weston           | 02/07/2011 | 20 Norbury Drive, North Lancing                              |
| TQ214064       | Dave Green;Penny Green | 05/07/2011 | Shoreham-by-Sea, 10 Westmoreland<br>Walk, West Sussex (VC13) |
| TQ21490643     | Dave Green;Penny Green | 31/07/2010 | 10 Westmoreland Walk, Shoreham-by-<br>Sea                    |

### Celaena leucostigma

Crescent

Insect - moth

A local species of wetlands throughout Britain. In Sussex it is widespread in wetlands near the coast and a few areas inland. Caterpillars feed on Yellow Flag Iris and Great Fen Sedge.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, Sussex Rare Species Inventory, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality                              |
|----------------|------------------------|------------|---------------------------------------|
| TQ215064       | Dave Green;Penny Green | 26/08/2012 | 10 Westmoreland Walk, Shoreham-by-Sea |

### Diarsia rubi

### Small Square-spot

#### Insect - moth

A brown noctuid moth which flies in early and again in late summer. Larvae eat a wide variety of low-growing plants. Widespread and often abundant in Sussex.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality                                  |
|----------------|------------------------|------------|---|
| TQ21490643     | Dave Green;Penny Green | 20/09/2008 | 10 Westmoreland Walk, Shoreham-by-<br>Sea |
|                |                        |            |   |

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### Hoplodrina blanda

#### Insect - moth

A noctuid moth of gardens, grasslands and heath with larvae that feed on a variety of low-growing plants. Very widely recorded in Sussex, but in marked decline in the UK generally.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality   |
|----------------|------------------------|------------|--|
| TQ186058       | James Weston           | 31/08/2013 | 20 Norbury Drive, North Lancing                              |
| TQ214064       | Dave Green;Penny Green | 03/08/2011 | Shoreham-by-Sea, 10 Westmoreland<br>Walk, West Sussex (VC13) |
| TQ21490643     | Dave Green;Penny Green | 31/07/2010 | 10 Westmoreland Walk, Shoreham-by-<br>Sea                    |
| TQ215064       | Dave Green;Penny Green | 30/06/2012 | 10 Westmoreland Walk, Shoreham-by-<br>Sea                    |

### Melanchra persicariae

Dot Moth

#### Insect - moth

A dark noctuid moth with a distinctive white wing spot. Larvae feed on a wide variety of low-growing plants and trees. Widely recorded in Sussex.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality                                  |
|----------------|------------------------|------------|---|
| TQ21490643     | Dave Green;Penny Green | 23/07/2010 | 10 Westmoreland Walk, Shoreham-by-<br>Sea |

### Mesoligia literosa

**Rosy Minor** 

#### Insect - moth

A noctuid moth with its strongholds on or near the coast, but also widely distributed inland in Sussex, though now in marked decline in the UK. The caterpillars feed on grasses.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder    | Date       | Locality             |
|----------------|-------------|------------|----------------------|
| TQ200042       | John Knight | 27/08/2010 | Widewater Lagoon LNR |

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### Orthosia gracilis

### **Powdered Quaker**

**Feathered Gothic** 

#### Insect - moth

An early-flying noctuid moth attracted to sallow blossom and other flowers in April and May. Larvae usually on sallow in southern Britain. Widespread in Sussex.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| TQ21490643 Dave Green;Penny Green 06/04/2010 10 Westmoreland Walk, Shoreham-by-Sea | Grid Reference | Recorder               | Date       | Locality                                  |
|--|----------------|------------------------|------------|---|
|  | TQ21490643     | Dave Green;Penny Green | 06/04/2010 | 10 Westmoreland Walk, Shoreham-by-<br>Sea |

### Tholera decimalis

#### Insect - moth

A brown noctuid moth or rough grasslands in late summer and autumn with white feathering on the forewings. Larvae on grass. Widespread in Sussex.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality  |
|----------------|------------------------|------------|---|
| TQ186058       | James Weston           | 04/09/2011 | 20 Norbury Drive, North Lancing                           |
| TQ200042       | John Knight            | 27/08/2010 | Widewater Lagoon LNR                                      |
| TQ214064       | Dave Green;Penny Green | 03/09/2011 | Shoreham-by-Sea, 10 Westmoreland Walk, West Sussex (VC13) |
| TQ21490643     | Dave Green;Penny Green | 11/09/2010 | 10 Westmoreland Walk, Shoreham-by-<br>Sea                 |

### Xanthia icteritia

Sallow

Insect - moth

An attractive yellow and brown autumn-flying noctuid. The larvae feed first on sallow catkins then on low-growing plants. Widespread in Sussex.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality   |
|----------------|------------------------|------------|--|
| TQ214064       | Dave Green;Penny Green | 27/09/2011 | Shoreham-by-Sea, 10 Westmoreland<br>Walk, West Sussex (VC13) |
| TQ21490643     | Dave Green;Penny Green | 08/10/2009 | 10 Westmoreland Walk, Shoreham-by-Sea                        |

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### Coenonympha pamphilus

### Small Heath

### Insect - butterfly

A small grassland butterfly that is fairly widespread in Sussex, especially on the Downs. The species has become much less common than it used to be in many areas in recent decades.

#### Designations

IUCN (2001) - Lower risk - near threatened, Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder                       | Date       | Locality   |
|----------------|--------------------------------|------------|--|
| TQ177044       | Anon @ M&S Big Butterfly Count | 01/08/2010 | Lancing, West Sussex (VC13)                                      |
| TQ178038       | Anon @ M&S Big Butterfly Count | 01/07/2010 | Lancing, West Sussex (VC13)                                      |
| TQ180064       | Mark Senior                    | 03/08/2011 | Lancing Ring, West Sussex (VC13)                                 |
| TQ180065       | Neil Hulme                     | 14/07/2005 | Lancing Circle   |
| TQ1803         | L. Clarke                      | 01/06/2000 | 54 Chester Avenue, Lancing                                       |
| TQ182063       | Bert Laker                     | 15/09/2007 | Lancing Clump  |
| TQ182064       | Dean Vince                     | 15/08/1996 | Lancing Ring   |
| TQ182065       | Bert Laker                     | 28/09/2008 | Lancing Clump  |
| TQ185062       | Joan Finch                     | 12/07/1999 | Lancing Chalk Pit  |
| TQ2006         | Jim Steedman; Judith Steedman  | 29/05/2001 | Mill Hill, Mill Hill, Shoreham-by-Sea                            |
| TQ2106         | Ian Cunningham                 | 19/08/1997 | Shoreham-by-Sea  |
| TQ211067       | Julian Clarke                  | 19/05/2012 | Shoreham Bank & Mill Hill Shoreham<br>Sussex, West Sussex (VC13) |
| TQ211069       | Neil Hulme                     | 13/07/2005 | Mill Hill, Shoreham-by-Sea                                       |
| TQ212068       | Jenny Kelsey;Michael Kelsey    | 14/08/1997 | Mill Hill, Shoreham-by-Sea                                       |
| TQ213068       | Marion Biggs                   | 07/09/1998 | Mill Hill, Shoreham-by-Sea                                       |
| TQ222045       | Joy Daintree                   | 29/06/2011 | Shoreham Beach, Section number 1,<br>West Sussex (VC13)          |

### Lasiommata megera

Wall

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### Insect - butterfly

A grassland butterfly that has undergone a severe decline and now is normally only found near the coast and on the eastern part of the South Downs.

#### Designations

IUCN (2001) - Lower risk - near threatened, Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder                      | Date       | Locality                              |
|----------------|-------------------------------|------------|---------------------------------------|
| TQ180064       | Mark Senior                   | 25/06/2013 | Lancing Ring                          |
| TQ180065       | Dean Vince                    | 15/08/1996 | Lancing Ring, North Lancing           |
| TQ180066       | Martin Ford                   | 28/09/2003 | Lancing Ring                          |
| TQ1805         | P.C. Finch;J. Finch           | 1998       | Lancing, Lancing CP                   |
| TQ182057       | P.C. Finch;J. Finch           | 03/10/1998 | Church Close, Lancing                 |
| TQ182063       | Bert Laker                    | 02/11/2007 | Lancing Clump                         |
| TQ182064       | Dean Vince                    | 15/08/1996 | Lancing Ring                          |
| TQ182065       | Bert Laker                    | 12/10/2008 | Lancing Clump                         |
| TQ184062       | Joan Finch                    | 20/09/1997 | Chalk Pit, Lancing                    |
| TQ1906         | T. Pawsey                     | 09/08/2012 | Lancing College                       |
| TQ2006         | Jim Steedman; Judith Steedman | 25/05/2001 | Mill Hill, Mill Hill, Shoreham-by-Sea |
| TQ2105         | Betty Bishop                  | 21/09/1997 | Shoreham-by-Sea                       |
| TQ2106         | Dan Danahar                   | 31/05/2013 | TQ2106 North Shoreham (1km sq)        |
| TQ211065       | Laurie Keen                   | 11/05/2004 | Mill Hill, Mill Hill, Shoreham-by-Sea |
| TQ211069       | Neil Hulme                    | 05/10/2007 | Mill Hill, Shoreham-by-Sea            |
| TQ212067       | Laurie Keen                   | 12/08/2003 | Mill Hill, Shoreham-by-Sea            |

### Limenitis camilla

### White Admiral

#### Insect - butterfly

A fairly widespread woodland butterfly that has increased a little in numbers and range in Sussex in recent decades. The larvae are found on honeysuckle.

#### Designations

IUCN (2001) - Vulnerable, Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder        | Date       | Locality                |
|----------------|-----------------|------------|-------------------------|
| TQ2006         | Graham Champion | 23/09/2004 | Cuckoo Corner, Shoreham |

Lagoon Sand-shrimp

### Gammarus insensibilis

#### Crustacean

A widespread but rare sand shrimp of coastal saline lagoons. Recorded in our area from Thorney Great Deep, Birdham Pool and Widewater all in West Sussex.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, Sussex Protected Species Register, Sussex Rare Species Inventory, UK Biodiversity Action Plan priority species, Wildlife and Countryside Act 1981 (Schedule 5 Section 9.1 (killing/injuring)), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.2), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.4, subdivision a), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.4), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.4), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.4), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.4), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5)

| Grid Reference | Recorder    | Date       | Locality                                 |
|----------------|-------------|------------|--|
| TQ19840413     | Ben Rainbow | 25/07/2013 | Widewater Lagoon LNR, West Sussex (VC13) |
| TQ19980418     | Ben Rainbow | 25/07/2013 | Widewater Lagoon LNR, West Sussex (VC13) |

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### Bufo bufo

### Common Toad

#### Amphibian

Still a widespread species in Sussex but declining due to loss of habitat and other factors. Toads tend to have large populations centred on particular breeding sites and they may become locally extinct if these are damaged or destroyed. Common toads are legally protected against sale.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species, Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5a), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5b)

| Grid Reference | Recorder                               | Date       | Locality  |
|----------------|--|------------|---|
| TQ170050       | SARG Sussex Amphibian & Reptile<br>Grp | 01/03/1994 | 5 Griffiths Avenue Lancing, West Sussex (VC13)                |
| TQ1705         | SARG 2002 Leaflet                      | 2002       | 39 Berriedale Drive, Sompting, Lancing,<br>West Sussex (VC13) |
| TQ173051       | SARG 2002 Leaflet                      | 2002       | West Sussex, West Sussex (VC13)                               |
| TQ176052       | Mrs Emanuelle                          | 2002       | VC13 West Sussex, West Sussex (VC13)                          |
| TQ176057       | SARG 2002 Leaflet                      | 2002       | West Sussex, West Sussex (VC13)                               |
| TQ180050       | SARG Sussex Amphibian & Reptile<br>Grp | 01/03/1994 | 5 Church Close Lancing, West Sussex (VC13)                    |
| TQ182061       | SARG Sussex Amphibian & Reptile<br>Grp | 01/01/1990 | 26 Fairview Road, North Lancing, West<br>Sussex (VC13)        |
| TQ185046       | SARG Sussex Amphibian & Reptile<br>Grp | 01/01/1988 | 65 Monks Close, Lancing, West Sussex (VC13)                   |
| TQ186044       | SARG 2002 Leaflet                      | 2002       | West Sussex (VC13)  |
| TQ1904         | SARG Sussex Amphibian & Reptile<br>Grp | 01/01/1991 | 9 Boundaary Road, Lancing, West<br>Sussex (VC13)              |
| TQ210050       | SARG Sussex Amphibian & Reptile<br>Grp | 01/01/1993 | 18 Church Street Shoreham, West<br>Sussex (VC13)              |
| TQ2105         | SARG Sussex Amphibian & Reptile<br>Grp | 01/01/1993 | 18 Church Street, Shoreham, West<br>Sussex (VC13)             |
| TQ215064       | Penny Green                            | 01/04/2008 | 10 Westmoreland WalkShoreham-by-Sea                           |
| TQ218058       | Barrie Watson                          | 28/01/2005 | Buckingham Road, Shoreham, Shoreham CP                        |
| TQ219047       | Anon @ RAUK website                    | 26/08/2010 | Cheal Close, Shoreham CP                                      |
| TQ220050       | SARG Sussex Amphibian & Reptile<br>Grp | 01/03/1994 | 87 Mansell Road Shoreham, West<br>Sussex (VC13)               |
| TQ2204         | SARG Sussex Amphibian & Reptile<br>Grp | 01/01/1988 | 230 Harbour Way Shoreham, West<br>Sussex (VC13)               |

### Triturus cristatus

### **Great Crested Newt**

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#### Amphibian

The largest British newt. It is black or dark brown and the males have a crest along the back and an orange underside spotted with black. Frequently confused with male smooth newts, which also have a crest. The great crested newt prefers larger, open ponds that are free of fish and waterfowl and has declined substantially in Britain and across Europe, mainly due to habitat loss. The species is fully legally protected and Britain has special responsibility for its conservation as some of the best European populations occur here. Scattered across East and Central Sussex but scarce in the west.

#### Designations

Bern Convention Appendix 2, European Protected Species, Habitats Directive Annex 2 - non-priority species, Habitats Directive Annex 4, Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, Sussex Protected Species Register, UK Biodiversity Action Plan priority species, Wildlife and Countryside Act 1981 (Schedule 5 Section 9.4b), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5b), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5b), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5b), Wildlife and Countryside Act 1981 (Schedule 5)

| Grid Reference | Recorder                               | Date       | Locality  |
|----------------|--|------------|---|
| TQ213055       | SARG Sussex Amphibian & Reptile<br>Grp | 01/01/1993 | The Meads, Victoria Road, Shoreham,<br>West Sussex (VC13) |

### Anguilla anguilla

### European Eel

### Bony fish (Actinopterygii)

Eels breed in the sea and migrate to freshwater to grow before returning to the sea to spawn. This unusual fish is in sharp decline, though the reasons are not fully understood. However, it is generally thought that habitat degradation is a major factor. It has been found across the British Isles and very widely in Sussex.

#### Designations

IUCN (2001) - Critically endangered, Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder      | Date                       | Locality         |
|----------------|---------------|----------------------------|------------------|
| TQ200042       | Robert Irving | 16/09/1997 -<br>17/09/1997 | Widewater Lagoon |

### Delphinus delphis

# Common Dolphin

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#### Marine mammal

Widely distributed in temperate marine waters of the Atlantic and Pacific Oceans. Although it remains abundant globally, several regional populations are thought to be in serious trouble. In Atlantic waters off western Europe there has been large-scale and recurrent mortality in trawl nets, tuna driftnets, and sink gillnets. Not infrequent in Sussex waters and sometimes stranded on our beaches.

#### Designations

Bern Convention Appendix 2, Convention on Migratory Species, Appendix 2, EC CITES Annex A, European Protected Species, Habitats Directive Annex 4, Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, Sussex Protected Species Register, UK Biodiversity Action Plan priority species, Wildlife and Countryside Act 1981 (Schedule 5 Section 9.4, subdivision a), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.4b), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5a), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5b), Wildlife and Countryside Act 1981 (Schedule 5)

| Grid Reference | Recorder     | Date       | Locality            |
|----------------|--------------|------------|---------------------|
| TQ188036       | Trevor Weeks | 21/03/2005 | Lancing, Lancing CP |

### Tursiops truncatus

**Bottle-Nosed Dolphin** 

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#### Marine mammal

A large dolphin up to 4 m long, with a dark to light grey back that fades to white on its underside. May be found from deep coastal waters to the shallower areas off river entrances. Resident populations are known from Wales, Scotland and the west coast of Ireland. Recorded from time to time off the south west and south coasts of England, including Sussex.

A legally protected species

#### Designations

Bern Convention Appendix 2, Convention on Migratory Species, Appendix 2, EC CITES Annex A, European Protected Species, Habitats Directive Annex 2 - non-priority species, Habitats Directive Annex 4, Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, Sussex Protected Species Register, UK Biodiversity Action Plan priority species, Wildlife and Countryside Act 1981 (Schedule 5 Section 9.4, subdivision a), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.4b), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5a), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5b), Wildlife and Countryside Act 1981 (Schedule 5)

| Grid Reference | Recorder              | Date       | Locality                         |
|----------------|-----------------------|------------|----------------------------------|
| TQ189034       | Russel Wilson         | 03/04/2002 | Lancing, Lancing Sea             |
| TQ193036       | Brian Street          | 29/01/2004 | Lancing Beach, Lancing Sea       |
| TQ197038       | Anon                  | 03/05/2007 | Lancing Beach                    |
| TQ2104         | Sussex Mammal Records | 08/07/1921 | Shoreham                         |
| TQ218042       | Stephen Savage        | 27/05/1999 | Shoreham sea, West Sussex (VC13) |
| TQ225042       | Joy Hall              | 26/03/2002 | Shoreham-by-Sea, Shoreham Sea    |
| TQ226042       | Paul Willis           | 11/07/2006 | Shoreham, Shoreham Sea           |

### Erinaceus europaeus

### West European Hedgehog

#### Terrestrial mammal

The hedgehog is one of our most familiar and endearing small mammals and it is still widespread in Sussex and Britain. However, hedgehog numbers have been adversely affected by changes in agriculture with less permanent pasture and fewer hedgerows. Climate change may also affect the availability of earthworms, one of their main foods, during hot, dry summers. There is some survey evidence that hedgehogs are most common where badgers are rarer and badgers do, of course, prey on them.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality  |
|----------------|------------------------|------------|---|
| TQ172054       | Anon Bioblitz Card     | 2010       | Busticle Lane   |
| TQ173047       | Anon Bioblitz Card     | 2010       | Grafton Gardens   |
| TQ179039       | Recorder @ WildCall    | 10/05/2013 | Garden of 13 The Crescent, Lancing,<br>West Sussex (VC13)       |
| TQ182057       | Anon Bioblitz Card     | 2010       | Church Close  |
| TQ184041       | Recorder @ WildCall    | 29/11/2012 | Garden of 37 Ingleside Crescent,<br>Lancing, West Sussex (VC13) |
| TQ2004         | W G Teagle             | 03/07/1969 | Near Shoreham, West Sussex (VC13)                               |
| TQ212063       | Stanley Allen          | 14/04/2008 | Mill Hill, Shoreham-by-Sea                                      |
| TQ21250602     | Recorder @ WildCall    | 29/05/2013 | Garden of 15 Adur Avenue, Shoreham,<br>West Sussex (VC13)       |
| TQ21400640     | Penny Green            | 13/08/2014 | Mill Hill Close, Shoreham-by-Sea                                |
| TQ214063       | David James            | 18/09/2014 | Shoreham by sea   |
| TQ214064       | Dave Green;Penny Green | 04/09/2011 | Shoreham-by-Sea, 10 Westmoreland<br>Walk, West Sussex (VC13)    |
| TQ21490643     | Dave Green;Penny Green | 10/04/2009 | 10 Westmoreland WalkShoreham-by-Sea                             |
| TQ215055       | J. Harbidge            | 12/08/2014 | Shoreham-by-Sea   |
| TQ215064       | Dave Green;Penny Green | 04/09/2006 | 10 Westmoreland Walk, 10<br>Westmoreland Walk, Shoreham-by-Sea  |
| TQ2155006144   | Rachel Pointon         | 09/09/2014 | Shoreham by Sea   |
| TQ216055       | Hazel Doyle            | 25/09/2014 | Shoreham-by-Sea   |
| TQ22640467     | Recorder @ WildCall    | 30/05/2013 | Garden of 4 Feversham close,<br>Shoreham, West Sussex (VC13)    |

### Arvicola amphibius

### European Water Vole

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#### Terrestrial mammal

The fastest declining native British mammal, the water vole was 'Ratty' in Wind in the Willows. Water voles prefer slow flowing streams, rivers and dykes with steep earth banks and luxuriant emergent vegetation. They have been in decline for over a century mainly due to loss of habitat while the presence of American mink has greatly hastened this decline. In many areas of mainland Britain water voles are already extinct but there are still some strong populations in Sussex. A legally protected species, listed on the Sussex Rare Species Inventory and the subject of a Sussex Species Action Programme.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, Sussex Protected Species Register, Sussex Rare Species Inventory, UK Biodiversity Action Plan priority species, Wildlife and Countryside Act 1981 (Schedule 5 Section 9.1 (killing/injuring)), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.2), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.4, subdivision a), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.4), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.4), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.4), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.4), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5)

| Grid Reference | Recorder | Date        | Locality                                 |
|----------------|----------|-------------|--|
| TQ207048       | Anon     | 1989 - 1990 | Shoreham backwater, West Sussex (VC13)   |
| TQ208068       | Unknown  | 1989 - 1990 | Adur meadows, Mill Hill, Shoreham-by-Sea |

### Anguis fragilis

### Slow-worm

### Reptile

A legally protected legless lizard resembling a small snake. Slow-worms are widespread in southern England and found in open habitats such as rough grassland, heath and on road and railway embankments. They are often common in urban and suburban areas. Like most reptiles and amphibians they have declined considerably and need protection wherever they occur.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, Sussex Protected Species Register, UK Biodiversity Action Plan priority species, Wildlife and Countryside Act 1981 (Schedule 5 Section 9.1 (killing/injuring)), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5a), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5b)

| Grid Reference | Recorder  | Date                        | Locality  |
|----------------|---|-----------------------------|---|
| TQ1704         | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 15/05/1995                  | 89, Wembley Avenue, Lancing, West<br>Sussex (VC13)                  |
| TQ1705         | SARG 2002 Leaflet                                 | 2002                        | 39 Berriedale Drive, Sompting, Lancing,<br>West Sussex (VC13)       |
| TQ172054       | Anon Bioblitz Card                                | 2010                        | Busticle Lane   |
| TQ173047       | Anon Bioblitz Card                                | 2010                        | Grafton Gardens   |
| TQ176057       | SARG 2002 Leaflet                                 | 2002                        | West Sussex, West Sussex (VC13)                                     |
| TQ178046       | SARG 2002 Leaflet                                 | 2002                        | West Sussex, West Sussex (VC13)                                     |
| TQ179052       | Anon Bioblitz Card                                | 2010                        | Pratton Avenue  |
| TQ1804         | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 11/03/1998                  | Monks Close, Lancing, West Sussex (VC13)                            |
| TQ1805         | SARG Sussex Amphibian & Reptile<br>Grp            | 29/05/1996                  | First Avenue, Lancing, West Sussex<br>(VC13)                        |
| TQ1806         | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/03/1991                  | 19 Firle Road, Lancing, West Sussex (VC13)                          |
| TQ182057       | Anon Bioblitz Card                                | 2010                        | Church Close  |
| TQ182061       | SARG Sussex Amphibian & Reptile<br>Grp            | 01/07/1990                  | 26 Fairview Road, North Lancing, West<br>Sussex (VC13)              |
| TQ18250602     | A.J. Quelch                                       | 03/06/2013                  | North Lancing   |
| TQ183057       | SARG 2002 Leaflet                                 | 2002                        | West Sussex (VC13)  |
| TQ184057       | SARG recorder                                     | 02/07/2001                  | Mill Rd, Lancing, Lancing CP  |
| TQ185059       | Anon Bioblitz Card                                | 2010                        | Norbury Drive   |
| TQ186044       | SARG 2002 Leaflet                                 | 2002                        | West Sussex (VC13)  |
| TQ188044       | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/01/1992                  | Lancing, West Sussex (VC13)   |
| TQ188045       | SARG recorder                                     | 22/09/1999                  | The Paddocks, Lancing, Lancing CP                                   |
| TQ195065       | Barry Kemp  | 30/07/2007                  | Lancing College   |
| TQ19810572     | Simon Colenutt                                    | 08/05/2001                  | Shoreham Airport, West Sussex (VC13)                                |
| TQ199050       | recorder@EcologyConsultancyLtd                    | May 2011 - June<br>2011     | Shoreham Airport  |
| TQ200059       | Simon Colenutt                                    | July 2001 -<br>October 2001 | Shoreham Airport,NW corner, West<br>Sussex (VC13)                   |
| TQ2004         | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 17/02/1999                  | Shoreham, West Sussex (VC13)  |
| TQ2005         | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/01/1993                  | 269 Old Shoreham Road, Southwick,<br>West Sussex (VC13)             |
| TQ209058       | SARG Sussex Amphibian & Reptile<br>Grp            | 17/06/1998                  | 92, Connaught Avenue, Shoreham, West Sussex (VC13)                  |
| TQ2099905488   | Recorder @ WildCall                               | 21/09/2012                  | Downs Way link, Shoreham by Sea,<br>West Sussex (VC13)              |
| TQ2105         | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/01/1991                  | The Mead Allotments, Victoria Road,<br>Shoreham, West Sussex (VC13) |
| TQ2106         | SARG Sussex Amphibian & Reptile<br>Grp            | 30/07/1998                  | Adur Avenue, Shoreham, West Sussex (VC13)                           |
| TQ211047       | SARG Sussex Amphibian & Reptile<br>Grp            | 01/08/1988                  | Shoreham Beach, West Sussex (VC13)                                  |
| TQ212067       | Mark Elliott;Penny Green                          | 13/09/2005                  | Mill Hill Nature Reserve  |
| TQ21480454     | Jacqueline Woolcock                               | 24/04/2014                  | Shoreham Beach  |
| TQ215058       | SARG 2002 Leaflet                                 | 2002                        | West Sussex, West Sussex (VC13)                                     |

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| TQ215065 | SARG Sussex Amphibian & Reptile<br>Grp            | 22/04/1990 | Shoreham Allotment, West Sussex (VC13)              |
|----------|---|------------|---|
| TQ217058 | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/01/1994 | 16 Windlesham Road, Shoreham, West<br>Sussex (VC13) |
| TQ218058 | Barrie Watson                                     | 22/03/2011 | 83 Buckingham Road, Shoreham-by-Sea                 |
| TQ219059 | Anon Bioblitz Card                                | 2010       | Upper Shoreham Road                                 |
| TQ2205   | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/01/1993 | 87 Mansell Road, Shoreham, West<br>Sussex (VC13)    |
| TQ221055 | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 10/05/1993 | Nicolson Road, Shoreham, West Sussex (VC13)         |
| TQ223047 | Anon Bioblitz Card                                | 2010       | Harbour Way   |
| TQ223055 | SARG 2002 Leaflet                                 | 2002       | West Sussex, West Sussex (VC13)                     |
| TQ223056 | Helen Swyer                                       | 07/08/2007 | Allotments, Eastern Avenue, Shoreham-<br>by-Sea     |
| TQ225044 | SARG Sussex Amphibian & Reptile<br>Grp            | - 2002     | Shoreham Beach, West Sussex (VC13)                  |

### Natrix natrix

### Grass Snake

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### Reptile

A widespread, but legally protected, snake with a normally olive body flecked with black and a distinctive yellow collar. Frequent in Sussex near places where its food, largely frogs, is readily available. Like most reptiles and amphibians, grass snakes have declined considerably and need protection wherever they occur.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, Sussex Protected Species Register, UK Biodiversity Action Plan priority species, Wildlife and Countryside Act 1981 (Schedule 5 Section 9.1 (killing/injuring)), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5a), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5b)

| Grid Reference | Recorder  | Date       | Locality  |
|----------------|---|------------|---|
| TQ176057       | SARG 2002 Leaflet                                 | 2002       | West Sussex, West Sussex (VC13)                             |
| TQ178056       | Mrs Waller  | 08/08/2007 | 13 Lynchmere Avenue, North Lancing,<br>BN15 0PD, Lancing CP |
| TQ1804         | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 27/07/1994 | 15, Larkfield Close, Lancing, West<br>Sussex (VC13)         |
| TQ1805         | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 09/08/1997 | 18, Norbury Drive, Lancing, West Sussex (VC13)              |
| TQ1806         | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 19/05/1991 | Lancing Ring, West Sussex (VC13)                            |
| TQ182061       | SARG Sussex Amphibian & Reptile<br>Grp            | 30/07/1990 | 26, Fairview Road, North Lancing, West<br>Sussex (VC13)     |
| TQ18250602     | A.J. Quelch                                       | 03/06/2013 | North Lancing   |
| TQ184057       | SARG recorder                                     | 02/07/2001 | Mill Rd, Lancing, Lancing CP                                |
| TQ185047       | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 13/06/1994 | 3, Monks Avenue, Lancing, West Sussex (VC13)                |
| TQ188044       | SARG Sussex Amphibian & Reptile<br>Grp            | - 2002     | 10 The Paddocks, Lancing, West Sussex (VC13)                |
| TQ19810572     | Simon Colenutt                                    | 08/05/2001 | Shoreham Airport, West Sussex (VC13)                        |
| TQ200059       | Simon Colenutt                                    | 26/08/2001 | Shoreham Airport,NW corner, West<br>Sussex (VC13)           |
| TQ2006         | SARG Sussex Amphibian & Reptile<br>Grp            | 01/01/1990 | Shoreham, West Sussex (VC13)                                |
| TQ2104         | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 26/09/1996 | Shoreham Beach nr Pumping Station,<br>West Sussex (VC13)    |

### Zootoca vivipara

### **Common Lizard**

### Reptile

The most abundant British lizard and widespread in Sussex in the Weald and along the coast. Probably under-recorded and increasingly confined to small areas of open sunny habitat. A legally protected species due to concern about its overall decline.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, Sussex Protected Species Register, UK Biodiversity Action Plan priority species, Wildlife and Countryside Act 1981 (Schedule 5 Section 9.1 (killing/injuring)), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5a), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5b)

| Grid Reference | Recorder  | Date                        | Locality  |
|----------------|---|-----------------------------|---|
| TQ1804         | SARG Sussex Amphibian & Reptile<br>Grp            | 01/01/1992                  | Field Adj. To 10 The Paddocks, Lancing, West Sussex (VC13)              |
| TQ1805         | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 29/05/1996                  | Fisrt Avenue, Lancing, West Sussex (VC13)                               |
| TQ182061       | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/09/1990                  | 26 Fairview Road, North Lancing, West<br>Sussex (VC13)                  |
| TQ187057       | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/01/1993                  | Lancing, West Sussex (VC13)   |
| TQ188044       | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/01/1992                  | Lancing, West Sussex (VC13)   |
| TQ188045       | SARG recorder                                     | 22/09/1999                  | The Paddocks, Lancing, Lancing CP                                       |
| TQ190040       | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/08/1991                  | South Lancing, West Sussex (VC13)                                       |
| TQ198041       | Betty Bishop                                      | 1995                        | Shingle around Widewater Lagoon   |
| TQ19810572     | Simon Colenutt                                    | 08/05/2001                  | Shoreham Airport, West Sussex (VC13)                                    |
| TQ199043       | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/01/1995                  | Widewater, West Sussex (VC13)   |
| TQ199049       | recorder@EcologyConsultancyLtd                    | May 2011 - June<br>2011     | Shoreham Airport  |
| TQ200059       | Simon Colenutt                                    | July 2001 -<br>October 2001 | Shoreham Airport,NW corner, West<br>Sussex (VC13)                       |
| TQ2005         | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 12/06/1990                  | Bank Of River Adur By A283 Opp.<br>Shoreham Airport, West Sussex (VC13) |
| TQ206056       | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/01/1992                  | Old Shoreham, West Sussex (VC13)  |
| TQ207059       | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/01/1995                  | Coast Link, West Sussex (VC13)  |
| TQ2104         | SARG Sussex Amphibian & Reptile<br>Grp            | 01/01/1988                  | Shoreham - By Draw-Bridge, West<br>Sussex (VC13)                        |
| TQ211047       | SARG Sussex Amphibian & Reptile<br>Grp            | 01/08/1988                  | Shoreham Beach, West Sussex (VC13)                                      |
| TQ215058       | SARG 2002 Leaflet                                 | 2002                        | West Sussex, West Sussex (VC13)   |
| TQ217058       | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/01/1994                  | 16 Windlesham Road, Shoreham, West<br>Sussex (VC13)                     |
| TQ222057       | SARG Sussex Amphibian & Reptile<br>Grp            | 01/01/1988                  | 9 The Curlews, Nicolson Drive,<br>Shoreham, West Sussex (VC13)          |
| TQ223045       | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/01/1995                  | The Beach, Shoreham, West Sussex (VC13)                                 |

### Vipera berus

### Adder

#### Reptile

Britain's only venomous snake, though incidences of snakebite involving man or domestic animals are relatively uncommon. Adders have a distinctive zig zag pattern of black or brown and white. They occur in open areas on downs, heaths and in heathy woods. Grass snakes and slow-worms are often misidentified as adders. Though widespread in Britain and found in suitable areas across Sussex, the adder, like all our native reptiles has declined substantially through habitat loss and other factors. The adder is a protected species and it is illegal to intentionally kill or injure them.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, Sussex Protected Species Register, UK Biodiversity Action Plan priority species, Wildlife and Countryside Act 1981 (Schedule 5 Section 9.1 (killing/injuring)), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5a), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5b)

| Grid Reference | Recorder  | Date        | Locality   |
|----------------|---|-------------|--|
| TQ185064       | SARG Sussex Amphibian & Reptile<br>Grp            | 01/08/1991  | Lancing Ring, West Sussex (VC13)                   |
| TQ188061       | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 01/03/1994  | Base Of Lancing Hill, West Sussex (VC13)           |
| TQ189067       | SARG Sussex Amphibian & Reptile<br>Grp            | 22/04/1990  | North Lancing Hill, West Sussex (VC13)             |
| TQ1906         | SARG Sussex Amphibian & Reptile<br>Grp;Dennis Dey | 05/07/1999  | Lancing College, West Sussex (VC13)                |
| TQ19810572     | Simon Colenutt                                    | 08/05/2001  | Shoreham Airport, West Sussex (VC13)               |
| TQ200059       | Simon Colenutt                                    | August 2001 | Shoreham Airport, NW corner, West<br>Sussex (VC13) |

### Edwardsia ivelli

### Ivell's Sea Anemone

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#### Coelenterate (=cnidarian)

Ivell's sea anemone is known from only one location in the world - Widewater Lagoon near Shoreham by Sea in West Sussex. It was last seen in 1983 and is now possibly extinct. It is a globally threatened species listed by IUCN/WCMC and is protected under Schedule 5 of the WCA 1981. 1973-1983

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, Sussex Protected Species Register, Sussex Rare Species Inventory, UK Biodiversity Action Plan priority species, Wildlife and Countryside Act 1981 (Schedule 5 Section 9.1 (killing/injuring)), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.1 (taking)), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.2), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.4, subdivision a), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.4), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5)

| Grid Reference | Recorder      | Date | Locality         |
|----------------|---------------|------|------------------|
| TQ200060       | Richard Ivell | 1973 | Widewater Lagoon |

### Pachycordyle navis

### **Brackish Hydroid**

#### Coelenterate (=cnidarian)

A brackish water hydroid which grows to a height of 30 mm and is predominantly found attached to algae. In the UK it is known only from Widewater Lagoon, West Sussex. It was first reported in 1973 attached to Chaetomorpha algae, and was recorded again in 1983, 1985 and 1987 surveys. In 1990 it was abundant and individuals were also recorded in a 1993 survey. Fieldwork in 1997 failed to record it but subsequent laboratory analysis of samples collected during the survey revealed one individual hydroid, thought to be C. navis, attached to an Ulva lactuca plant. Known from very few sites outside the British Isles.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, Sussex Protected Species Register, Sussex Rare Species Inventory, UK Biodiversity Action Plan priority species, Wildlife and Countryside Act 1981 (Schedule 5 Section 9.1 (killing/injuring)), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.2), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.4), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.4), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.4), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.4), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.4), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5 Section 9.5), Wildlife and Countryside Act 1981 (Schedule 5)

| Grid Reference | Recorder      | Date                       | Locality         |
|----------------|---------------|----------------------------|------------------|
| TQ200042       | Robert Irving | 16/09/1997 -<br>17/09/1997 | Widewater Lagoon |

### Centaurea calcitrapa

### **Red Star-thistle**

#### Flowering plant

Although included as a Red Data species, the native status of C. calcitrapa nationally is disputed. It is considered native in Sussex on dry banks on the chalk. Widely recorded from the Downs in East and West Sussex.

#### Designations

IUCN (2001) - Critically endangered, Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, Sussex Rare Species Inventory, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder                           | Date               | Locality           |
|----------------|------------------------------------|--------------------|--------------------|
| TQ20D          | Anon @ Sussex Bot. Rec. Soc.;SPASU | 1993<br>13/00/2005 | West Sussex (VC13) |
| 10212007       | Mark Lillou, Ferliny Green         | 13/09/2003         |                    |

### Juniperus communis

Juniper

#### Conifer

An evergreen conifer found on basic and acidic soils in a wide range of habitats, including chalk downland and heath. In Sussex it is now confined to the Downs where it is still widespread, but very scarce in West Sussex but found in only one area in East Sussex.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, Sussex Rare Species Inventory, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder             | Date | Locality                                       |
|----------------|----------------------|------|--|
| TQ20D          | E Bishop             | 2006 | Mill Hill, West Sussex (VC13)                  |
| TQ211064       | I Gauld and L K Ward | 1970 | Mill Hill Shoreham, Mill Hill, Shoreham-by-Sea |

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### Galeopsis angustifolia

### **Red Hemp-nettle**

#### Flowering plant

A steadily decreasing annual of arable land, waste places and open ground. Now very rare in Sussex with only two post-1986 records from Rye Harbour in East Sussex and Pagham in West Sussex.

#### Designations

IUCN (2001) - Critically endangered, Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, Sussex Rare Species Inventory, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder | Date | Locality           |
|----------------|----------|------|--------------------|
| TQ20D          | SPASU    | 1979 | West Sussex (VC13) |
| TQ20H          | SPASU    | 1979 | West Sussex (VC13) |
|                |          |      |                    |

Eyebright

### Euphrasia pseudokerneri

#### Flowering plant

An annual of herb-rich downland turf on chalk and soft limestones. Recent records from our area are from a few chalk grassland sites in both East and West Sussex. Thought to be in decline.

#### Designations

IUCN (2001) - Endangered, Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, Sussex Rare Species Inventory, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder  | Date       | Locality           |
|----------------|-----------|------------|--------------------|
| TQ10Y          | SPASU     | 1979       | West Sussex (VC13) |
| TQ1847306235   | A. Spiers | 30/09/2010 | Lancing Ring       |
| TQ20D          | SPASU     | 1979       | West Sussex (VC13) |

### Carex divisa

### **Divided Sedge**

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#### Flowering plant

Native. This sedge of brackish meadows and tidal river banks can be locally frequent in Sussex. It appears to be surviving well.

#### Designations

IUCN (2001) - Vulnerable, Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, Sussex Rare Species Inventory, UK Biodiversity Action Plan priority species

| Grid Reference        | Recorder                       | Date               | Locality  |
|-----------------------|--------------------------------|--------------------|---|
| TQ199069              | Ben Benatt                     | 06/05/2012         | Streamside, Coombes, West Sussex (VC13)                     |
| TQ2066406660<br>TQ20C | Alan Knapp;K.A. Knapp<br>SPASU | 19/05/2009<br>1978 | N of Old Shoreham, West Sussex (VC13)<br>West Sussex (VC13) |

### Hordeum marinum

### Sea Barley

N

#### Flowering plant

An annual grass of barish places by the sea, tidal river banks and saltmarsh margins. Not seen in West Sussex since 1958 and confined to the Ouse Valley and the Rye Bay area in East Sussex.

#### Designations

IUCN (2001) - Vulnerable, Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec, Sussex Biodiversity Action Plan, Sussex Rare Species Inventory, UK Biodiversity Action Plan priority species

| Grid Reference | Recorder          | Date | Locality                             |
|----------------|-------------------|------|--------------------------------------|
| TQ20D          | SPASU             | 1978 | West Sussex (VC13)                   |
| TQ222048       | Anon @ Monks Wood | 1971 | Shoreham Harbour, West Sussex (VC13) |

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### The Rare Species Inventory does not include bat, bird or otter records.

Bat and bird records are included in separate inventories, while otter records are not included in SxBRC reports.

The Sussex Rare Species Inventory (RSI) contains over 3,400 species. These species are selected according to strict criteria of rarity associated with their occurrence in Sussex.

### The criteria for selection of species are listed below:

- All species in the British Red Data Books including all Notable fauna and Nationally Scarce flora and British endemic taxa which have ever occurred in Sussex whether extinct or not.
- Species included in the UK Biodiversity Action Plan (BAP species).
- Internationally rare taxa cited in the Bern Convention, IUCN Red Data lists, or EU Habitats Directive which are not covered by any of the above.

The RSI has been designed to be comprehensive for species but representative for records. This is managed in several ways:

- RSI records are labelled so that only one record per species per grid reference gets flagged up. This will usually be the most up to date record.
- SxBRC does not hold marine information other than coastal species and cetaceans.
- The following species are relatively common in Sussex but are in the RSI because they are Notable or Nationally Scarce. Only *one* record of these species is labelled per 2km tetrad:

| Round-headed Rampion<br>Frogbit | Phyteuma orbiculare<br>Hydrocharis morus-ranae |
|---------------------------------|--|
| Adonis Blue                     | Lysandra bellargus                             |
| Long-winged Conehead            | Conocephalus discolor (syn. C. fuscus)         |
| Variable Damselfly              | Coenagrion pulchellum                          |
| Downy Emerald                   | Cordulea aenea                                 |

For records of rare vascular plants, bryophytes and lichens the Record Centre recommends the Sussex Rare Plant Register, compiled by the Sussex Botanical Recording Society. This gives information on the distribution and status of over 400 Sussex Rare Plants, putting data from RSI reports into a Sussex-wide context. Please see <u>our website</u> for more information.

### **IUCN Categories of Rarity**

The following is a summary of the IUCN categories of rarity. For further information visit the IUCN website.

### Extinct (EX)

A taxon is Extinct when there is no reasonable doubt that the last individual has died.

### Extinct in the Wild (EW)

A taxon is Extinct in the Wild when it is known only to survive in cultivation, in captivity or as a naturalized population (or populations) well outside the past range.

### **Critically Endangered (CR)**

A taxon is Critically Endangered when it is considered to be facing an extremely high risk of extinction in the wild.

### Endangered (EN)

A taxon is Endangered when it is considered to be facing a very high risk of extinction in the wild.

### Vulnerable (VU)

A taxon is Vulnerable when it is considered to be facing a high risk of extinction in the wild.

#### Near Threatened (NT)

A taxon is Near Threatened when it is close to qualifying for or is likely to qualify for a threatened category in the near future.

### Least Concern (LC)

A taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened.

### Data Deficient (DD)

A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status.

### Not Evaluated (NE)

A taxon is Not Evaluated when it is has not yet been evaluated against the criteria.

### **Regionally Scarce (NR)**

Occurs in 5 or fewer 10km squares in a particular region of Britain. Locally determined.



### SUSSEX RARE SPECIES INVENTORY REPORT

Please note that bat, bird and otter records are not included in this report

Land at New Salts Farm, Shoreham + 2km buffer

23 June 2015 ESD/15/443 Search Area: TO Vicky Hale (PJC Ecology)

Search Area: TQ1704 toTQ2205; TQ1703 to TQ1903; TQ1806 to TQ2106

| Argiope bruennichi<br>Spider (Araneae)   |                 | Wasp Spider |                    |
|--|-----------------|-------------|--------------------|
| <b>Designations</b><br>Sussex Rare Speci | es Inventory    |             |                    |
| Grid Reference                           | Recorder        | Date        | Locality           |
| TQ2005                                   | Keith Noble     | August 1998 | West Sussex (VC13) |
| TQ213055                                 | Victoria Benson | 24/09/2013  | Shoreham-by-Sea    |

### Bembidion (Lymnaeum) nigropiceum

Ground beetle

### Insect - beetle (Coleoptera)

A ground beetle of the intertidal zone of beaches. Very local, but abundant where found. Recorded in our area from two coastal sites in East Sussex and two in West Sussex

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder    | Date       | Locality         |
|----------------|-------------|------------|------------------|
| TQ1703         | John Paul   | 28/06/2008 | Worthing Borough |
| TQ204043       | Peter Hodge | 01/04/1973 | Widewater Lagoon |

# Bembidion (Notaphemphanes) ephippium

#### Insect - beetle (Coleoptera)

#### Designations

| Grid Reference | Recorder    | Date       | Locality         |
|----------------|-------------|------------|------------------|
| TQ204043       | Peter Hodge | 01/04/1973 | Widewater Lagoon |

### Dicheirotrichus obsoletus

#### Insect - beetle (Coleoptera)

A local, but sometimes abundant ground beetle of salt marshes and other saline habitats. Recorded from suitable areas in both East and West Sussex. Widespread along the coasts of southern England and Wales.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder  | Date       | Locality         |
|----------------|-----------|------------|------------------|
| TQ2004         | John Paul | 12/06/2001 | Widewater Lagoon |

### Dyschirius (Dyschiriodes) extensus

#### Insect - beetle (Coleoptera)

An 'endangered' RDB1 ground beetle associated with the burrows of Bledius rove beetles, though the larvae have been recorded as "devouring ants" (Fowler, 1887). Recorded in our area only from Lancing and Shoreham-by-Sea, West Sussex, over 100years ago. Elsewhere in Britain only from Kent, Essex and North Wales but not recorded since 1940.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder | Date | Locality           |
|----------------|----------|------|--------------------|
| TQ10X          | Anon     | 1905 | West Sussex (VC13) |

### Pogonus littoralis

#### Insect - beetle (Coleoptera)

A ground beetle of salt marshes and other coastal habitats. In Sussex there are records from the 19th century to the present day (2009) from Rye Harbour, Bulverhythe, Newhaven and Shoreham by Sea. Elsewhere along the British coastline from Norfolk to south Wales.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder  | Date       | Locality         |
|----------------|-----------|------------|------------------|
| TQ2004         | John Paul | 07/07/2001 | Widewater Lagoon |

### Liparus coronatus

#### Insect - beetle (Coleoptera)

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder     | Date       | Locality |
|----------------|--------------|------------|----------|
| TQ17160556     | Graeme Lyons | 24/04/2012 | Sompting |

### Gyrinus urinator

#### Insect - beetle (Coleoptera)

A whirligig water beetle found in running water. Found at scattered sites in East Sussex and near Littlehampton in West Sussex. Elsewhere widespread mainly in England and Wales.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder                | Date       | Locality           |
|----------------|-------------------------|------------|--------------------|
| TQ1905         | EA - Environment Agency | 25/06/2003 | West Sussex (VC13) |

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### Enochrus bicolor

#### Insect - beetle (Coleoptera)

A scavenger water beetle mainly of brackish ponds and ditches. Recorded quite widely in suitable habitats in the east of East Sussex and around Chichester Harbour in West Sussex. Mainly coastal elsewhere. Formerly confused with E. melanocephalus.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder    | Date       | Locality           |
|----------------|-------------|------------|--------------------|
| TQ19630407     | Ben Rainbow | 25/07/2013 | West Sussex (VC13) |
| TQ19980418     | Ben Rainbow | 25/07/2013 | West Sussex (VC13) |

#### Lucanus cervus

### **Stag Beetle**

#### Insect - beetle (Coleoptera)

A beetle of broadleaved woodland, parks, other pasture woodland and gardens. The larvae live in the decaying wood of deciduous trees, often in roots and stumps. Widely recorded from West Sussex but rare in East Sussex and apparently absent from much of the vice-county.

#### Designations

Habitats Directive Annex 2 - non-priority species; Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; Sussex Biodiversity Action Plan; Sussex Rare Species Inventory; UK Biodiversity Action Plan priority species; Wildlife and Countryside Act 1981 Schedule 5 Sections (9.5a; 9.5b)

| Grid Reference | Recorder            | Date       | Locality           |
|----------------|---------------------|------------|--------------------|
| TQ1705         | Peter Hodge         | 30/06/2000 | Upper Cokeham      |
| TQ173051       | Recorder @ WildCall | 04/07/2011 | West Sussex (VC13) |
| TQ175057       | Recorder @ WildCall | 02/06/2011 | West Sussex (VC13) |
| TQ179052       | Anon Bioblitz Card  | 2010       | Pratton Avenue     |
| TQ180046       | Roger Sutton        | 2009       | Lancing CP         |
| TQ184048       | Recorder @ WildCall | 29/06/2011 | West Sussex (VC13) |
| TQ185043       | Roberta Rickard     | 23/06/2007 | Lancing CP         |
| TQ190061       | Recorder @ WildCall | 17/06/2012 | West Sussex (VC13) |
| TQ207062       | John Knight         | 15/09/2005 | Coastal Link       |
| TQ209061       | Gordon Tickler      | 22/08/2003 | West Sussex (VC13) |
| TQ212060       | Gordon Tickler      | 30/06/2007 | West Sussex (VC13) |
| TQ212061       | Anon                | 21/06/2001 | West Sussex (VC13) |
| TQ212062       | Anon                | July 2002  | West Sussex (VC13) |
| TQ2127306042   | Gordon Tickler      | 05/07/2008 | Shoreham CP        |
| TQ2129406200   | Gordon Tickler      | 03/06/2008 | Shoreham CP        |
| TQ214053       | Nadine Russell      | 15/06/2001 | West Sussex (VC13) |
| TQ214058       | Anon                | 25/06/2001 | West Sussex (VC13) |
| TQ215053       | Helen Swyer         | 02/07/2007 | Shoreham-by-Sea    |
| TQ215061       | Mr Briddle          | 25/05/2007 | Shoreham-by-Sea    |
| TQ216057       | Anon                | 30/06/2001 | West Sussex (VC13) |
| TQ217050       | Nick Lamb           | 05/06/2004 | Shoreham CP        |
| TQ217054       | Mrs Clamp           | June 2002  | West Sussex (VC13) |
| TQ218062       | Clive Oxley         | 13/07/2000 | West Sussex (VC13) |
| TQ219062       | Dorothy Coleman     | 14/06/2007 | Shoreham CP        |
| TQ220058       | Chloe Preece        | June 2006  | Shoreham-by-Sea    |
| TQ222056       | Anon                | 30/06/2001 | West Sussex (VC13) |
| TQ222059       | Gordon Tickler      | 10/05/2007 | Shoreham CP        |
| TQ223057       | Helen Swyer         | 01/06/2007 | Shoreham-by-Sea    |

| Forficula lesne   | ei   | Lesne's Earwig             |  |  |
|---|--|----------------------------|--|--|
| Insect - earwig (Dermaptera)  |  |                            |  |  |
| <b>Designations</b><br>Sussex Rare Species  | Inventory  |                            |  |  |
| Grid Reference<br>TQ1904<br>TQ2004  | Recorder<br>John Paul<br>John Paul                       | Date<br>2000<br>12/08/2000 | Locality<br>West Sussex (VC13)<br>Widewater Lagoon |  |
| Stratiomys pot  | amida<br>era)  | Banded Genera              | al   |  |
| Designations<br>Nationally Notable; Su<br>Grid Reference<br>TQ186044  | ussex Rare Species Inventory<br>Recorder<br>Ray Hamblett | Date<br>11/07/2004         | Locality<br>Lancing CP                             |  |
| Volucella inanis<br>Insect - true fly (Diptera)   |  |                            |  |  |
| <b>Designations</b><br>Nationally Notable; Su   | ussex Rare Species Inventory                             |                            |  |  |
| Grid Reference<br>TQ198041  | Recorder<br>Betty Bishop                                 | Date<br>1995               | Locality<br>Shingle around Widewater Lagoon        |  |
| Nomada fucata   | a  |                            |  |  |
| Insect - hymenoptera  | an   |                            |  |  |
| Designations<br>Sussex Rare Species   | Inventory  |                            |  |  |
| Grid Reference<br>TQ188049  | Recorder<br>Recorder @ BWARS                             | Date<br>07/05/2005         | Locality<br>Mash Barn Lane                         |  |
| Eilema sororcu  | ıla  | Orange Footma              | an   |  |
| Insect - moth<br>A pretty nationally local species found in woods in southern UK. It has recently expanded its range. In Sussex it is now scattered<br>over the county and can be quite common in woods. Caterpillars feed on lichens growing on trees. |  |                            |  |  |
| <b>Designations</b><br>Sussex Rare Species  | Inventory  |                            |  |  |
| Grid Reference<br>TQ21490643  | Recorder<br>Dave Green;Penny Green                       | Date<br>29/05/2010         | Locality<br>10 Westmoreland Walk, Shoreham-by-Sea  |  |

# Dolicharthria punctalis

# Long-legged China-mark

#### Insect - moth

### Designations

| Grid Reference<br>TQ21490643<br>TQ22930451  | Recorder<br>Dave Green;John Maskell;Penny<br>Green;Shena Maskell<br>Tim Freed                    | Date<br>27/06/2009<br>20/06/2013  | Locality<br>10 Westmoreland Walk, Shoreham-by-Sea<br>139 Old Fort Road - Trap B      |
|---|--|---|--|
| Ethmia dodece   | 98   | Dotted Ermel  |  |
| <b>Designations</b><br>Sussex Rare Species<br>Grid Reference<br>TQ21490643  | Inventory<br>Recorder<br>Dave Green;Penny Green  | Date<br>10/07/2010  | Locality<br>10 Westmoreland Walk, Shoreham-by-Sea                                    |
| <i>Ethmia quadril</i><br>Insect - moth  | lella  | Comfrey Ermel   |  |
| Designations<br>Sussex Rare Species   | Inventory  |   |  |
|   |  |   |  |
| Grid Reference<br>TQ200042  | Recorder<br>George Bishop;Betty Bishop   | Date<br>1980 - 1981   | Locality<br>Widewater Lagoon LNR   |
| Grid Reference<br>TQ200042<br>Ethmia termine<br>Insect - moth   | Recorder<br>George Bishop;Betty Bishop   | Date<br>1980 - 1981<br>Five-spot Erme   | Locality<br>Widewater Lagoon LNR   |
| Grid Reference<br>TQ200042<br>Ethmia termine<br>Insect - moth<br>Designations<br>Sussex Rare Species  | Recorder<br>George Bishop;Betty Bishop<br>ella<br>Inventory                                      | Date<br>1980 - 1981<br>Five-spot Erme   | Locality<br>Widewater Lagoon LNR   |
| Grid Reference<br>TQ200042<br>Ethmia termine<br>Insect - moth<br>Designations<br>Sussex Rare Species<br>Grid Reference<br>TQ22930451  | Recorder<br>George Bishop;Betty Bishop<br>ella<br>Inventory<br>Recorder<br>Tim Freed             | Date<br>1980 - 1981<br>Five-spot Erme<br>Date<br>20/06/2013                   | Locality<br>Widewater Lagoon LNR   |
| Grid Reference<br>TQ200042<br>Ethmia termine<br>Insect - moth<br>Designations<br>Sussex Rare Species<br>Grid Reference<br>TQ22930451<br>Scrobipalpa sa<br>Insect - moth   | Recorder<br>George Bishop;Betty Bishop<br>ella<br>Inventory<br>Recorder<br>Tim Freed             | Date<br>1980 - 1981<br>Five-spot Erme<br>Date<br>20/06/2013<br>Sea-aster Grou | Locality<br>Widewater Lagoon LNR<br>Locality<br>139 Old Fort Road - Trap B<br>ndling |
| Grid Reference<br>TQ200042<br>Ethmia termine<br>Insect - moth<br>Designations<br>Sussex Rare Species<br>Grid Reference<br>TQ22930451<br>Scrobipalpa sa<br>Insect - moth<br>Designations<br>Nationally Notable; Su | Recorder<br>George Bishop;Betty Bishop<br>ella<br>Inventory<br>Recorder<br>Tim Freed<br>Alinella | Date<br>1980 - 1981<br>Five-spot Erme<br>Date<br>20/06/2013<br>Sea-aster Grou | Locality<br>Widewater Lagoon LNR<br>Locality<br>139 Old Fort Road - Trap B<br>ndling |

### Scrobipalpa suaedella

### Sea-blite Groundling

Insect - moth

### Designations

Nationally Notable; Sussex Rare Species Inventory

| Grid Reference | Recorder                | Date | Locality           |
|----------------|-------------------------|------|--------------------|
| TQ1803         | Ballet-Fletcher coll W. | 1886 | West Sussex (VC13) |

### Chloroclysta siterata

### **Red-green Carpet**

#### Insect - moth

This woodland species is common in the north and west of Britain and scarce, but increasing elsewhere. In Sussex it is now widespread in the Wealden and greensand woodlands. Caterpillars feed on the leaves of various trees.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder               | Date       | Locality                              |
|----------------|------------------------|------------|---------------------------------------|
| TQ21490643     | Dave Green;Penny Green | 05/10/2010 | 10 Westmoreland Walk, Shoreham-by-Sea |
| TQ215064       | Dave Green;Penny Green | 23/10/2012 | 10 Westmoreland Walk, Shoreham-by-Sea |

### Ennomos autumnaria

### Large Thorn

#### Insect - moth

This nationally scarce (b) species occurs in woods and scrub in south east England. In Sussex it occurs on the wooded downs between Newhaven and Arundel, at Pagham, Chichester, Bognor and the area around Rye and Beckley Woods. Caterpillars feed on various trees.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder               | Date       | Locality                              |
|----------------|------------------------|------------|---------------------------------------|
| TQ21490643     | Dave Green;Penny Green | 19/09/2010 | 10 Westmoreland Walk, Shoreham-by-Sea |
| 1Q215064       | Dave Green;Penny Green | 16/09/2012 | 10 Westmoreland Walk, Shorenam-by-Sea |

### Perizoma albulata

### Grass Rivulet

#### Insect - moth

A nationally local species of chalk grassland, sand dunes and shingle over much of lowland UK. In Sussex it is found on much of the downs, but is very scarce except between Brighton and Eastbourne in East Sussex and the downs above Storrington in West Sussex. Caterpillars feed on the ripening seeds of Yellow Rattle.

#### Designations

Sussex Biodiversity Action Plan; Sussex Rare Species Inventory; UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality                              |
|----------------|------------------------|------------|---------------------------------------|
| TQ21490643     | Dave Green;Penny Green | 04/06/2009 | 10 Westmoreland Walk, Shoreham-by-Sea |

### Thera cupressata

### **Cypress Carpet**

#### Insect - moth

A nationally scarce species that only colonised UK in 1984. It occurs on the south coast from Cornwall to Kent in urban areas. In Sussex it has a colony around Arundel, but may be spreading eastwards. Caterpillars feed on Cypresses.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder               | Date       | Locality                              |
|----------------|------------------------|------------|---------------------------------------|
| TQ214064       | Dave Green;Penny Green | 22/10/2011 | West Sussex (VC13)                    |
| TQ21490643     | Dave Green;Penny Green | 05/10/2010 | 10 Westmoreland Walk, Shoreham-by-Sea |
| TQ215064       | Dave Green;Penny Green | 23/10/2012 | 10 Westmoreland Walk, Shoreham-by-Sea |

### Polyommatus (Lysandra) bellargus

Adonis Blue

#### Insect - butterfly

A downland species, widespread, but declining, mainly in East Sussex and the east of West Sussex.

#### Designations

IUCN (2001) - Lower risk - near threatened; Sussex Rare Species Inventory; Wildlife and Countryside Act 1981 Schedule 5 Sections (9.5a)

| Grid Reference | Recorder                         | Date        | Locality                       |
|----------------|----------------------------------|-------------|--------------------------------|
| TQ182063       | Bert Laker                       | 15/09/2007  | Lancing Clump                  |
| TQ2006         | Jim Steedman;Judith Steedman     | 29/05/2001  | Mill Hill, Shoreham-by-Sea     |
| TQ20D          | BBCS British Butterfly Con. Soc. | 1996 - 2000 | West Sussex (VC13)             |
| TQ2106         | Marion Biggs                     | 07/08/1999  | Mill Hill LNR, Shoreham-by-Sea |
| TQ211065       | Laurie Keen                      | 17/05/2004  | Mill Hill, Shoreham-by-Sea     |
| TQ211067       | Julian Clarke                    | 19/05/2012  | West Sussex (VC13)             |
| TQ211069       | Neil Hulme                       | 05/10/2007  | Mill Hill, Shoreham-by-Sea     |
| TQ212068       | J. Kelsey;M. Kelsey              | 05/10/2002  | Mill Hill, Shoreham-by-Sea     |
| TQ213068       | Marion Biggs                     | 07/09/1998  | Mill Hill, Shoreham-by-Sea     |
| TQ214067       | Laurie Keen                      | 16/06/2003  | Mill Hill, Shoreham-by-Sea     |

### Thecla betulae

### **Brown Hairstreak**

#### Insect - butterfly

A butterfly requiring sloe scrub in which to breed. Widely, but very thinly, distributed in West Sussex, but gone from the east and generally in decline nationally.

#### Designations

IUCN (2001) - Vulnerable; Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; Sussex Biodiversity Action Plan; Sussex Rare Species Inventory; UK Biodiversity Action Plan priority species; Wildlife and Countryside Act 1981 Schedule 5 Sections (9.5a; 9.5b)

| Grid Reference | Recorder    | Date       | Locality           |
|----------------|-------------|------------|--------------------|
| TQ2106         | Ellie Blows | 30/08/2010 | West Sussex (VC13) |
| TQ215066       | Andy Horton | 18/08/2010 | West Sussex (VC13) |

### Calophasia lunula

### Toadflax Brocade

#### Insect - moth

This Red Data Book species breeds on vegetated shingle of Sussex and Kent. In Sussex it occurs on most of the vegetated shingle sites in both halves of the county. Caterpillars feed on Common and Purple Toadflax.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder               | Date       | Locality                              |
|----------------|------------------------|------------|---------------------------------------|
| TQ21490643     | Dave Green;Penny Green | 24/07/2009 | 10 Westmoreland Walk, Shoreham-by-Sea |
| TQ218058       | Barrie Watson          | 20/07/2010 | Buckingham Road, Shoreham-by-Sea      |
| TQ228045       | Tim Freeth             | 01/06/2007 | Shoreham Beach                        |

### Celaena leucostigma

Crescent

#### Insect - moth

A local species of wetlands throughout Britain. In Sussex it is widespread in wetlands near the coast and a few areas inland. Caterpillars feed on Yellow Flag Iris and Great Fen Sedge.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; Sussex Biodiversity Action Plan; Sussex Rare Species Inventory; UK Biodiversity Action Plan priority species

| Grid Reference | Recorder               | Date       | Locality                              |
|----------------|------------------------|------------|---------------------------------------|
| TQ215064       | Dave Green;Penny Green | 26/08/2012 | 10 Westmoreland Walk, Shoreham-by-Sea |

Lyme Grass

### Chortodes elymi

#### Insect - moth

A nationally scarce (b) species of sand dunes and sandy beaches on the east coast of England and Scotland. In Sussex it is found regularly only at Camber Sands in East Sussex, where it was probably introduced with the larval foodplant. Caterpillars feed on Lyme Grass.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder                   | Date        | Locality             |
|----------------|----------------------------|-------------|----------------------|
| TQ200042       | George Bishop;Betty Bishop | 1980 - 1981 | Widewater Lagoon LNR |

### Cucullia asteris

Star-wort

#### Insect - moth

A nationally scarce (b) species of woods and salt marshes in south and east England. In Sussex it is widespread in East Sussex and the west of West Sussex with regular records coming from Rye Harbour, Plashett and Vert Woods and around Pagham Harbour. Caterpillars feed on Sea Aster in salt marshes and Goldenrod in woods.

#### Designations

| Grid Reference | Recorder     | Date       | Locality            |
|----------------|--------------|------------|---------------------|
| TQ1905         | Mark Elliott | 06/05/2003 | Monks Farm, Lancing |

### Hadena confusa

### Marbled Coronet

#### Insect - moth

A nationally local species found all over UK in open area on calcareous soils. In Sussex it is currently only regularly found in urban areas and on the Downs between Brighton and Eastbourne. It is found irregularly on the Downs of West Sussex. Caterpillars feed on the ripening seeds of Bladder and Sea Campion and Sweet William.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder               | Date       | Locality                              |
|----------------|------------------------|------------|---------------------------------------|
| TQ21490643     | Dave Green;Penny Green | 13/06/2009 | 10 Westmoreland Walk, Shoreham-by-Sea |

Dog's Tooth

### Lacanobia suasa

#### Insect - moth

This nationally local species occurs mostly in damp grassy places in southern England. In Sussex it is found along all of the coast, but mostly in the area between Worthing and Chichester Harbour. Caterpillars feed on various low growing plants.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder     | Date       | Locality                        |
|----------------|--------------|------------|---------------------------------|
| TQ186058       | James Weston | 02/07/2011 | 20 Norbury Drive, North Lancing |

### Mythimna I-album

### L-album Wainscot

#### Insect - moth

This nationally scarce (b) species breeds in rough grassland by the sea along the south coast. In Sussex it has colonised since 1980 and is now found in most open grassland areas at and near the whole coast. Caterpillars feed on Marram and other grasses.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder               | Date       | Locality                              |
|----------------|------------------------|------------|---------------------------------------|
| TQ186058       | James Weston           | 02/07/2011 | 20 Norbury Drive, North Lancing       |
| TQ214064       | Dave Green;Penny Green | 22/10/2011 | West Sussex (VC13)                    |
| TQ21490643     | Dave Green;Penny Green | 09/10/2010 | 10 Westmoreland Walk, Shoreham-by-Sea |
| TQ215064       | Dave Green;Penny Green | 23/10/2012 | 10 Westmoreland Walk, Shoreham-by-Sea |

### Meganola albula

### Kent Black Arches

#### Insect - moth

This nationally scarce (b) species occurs in open habitats on and near the coast in the southern half of England. In Sussex it is fairly widespread within 5 or 6 miles of the coast. Caterpillars feed on Dewberry.

#### Designations

| Grid Reference | Recorder               | Date       | Locality                              |
|----------------|------------------------|------------|---------------------------------------|
| TQ21490643     | Dave Green;Penny Green | 20/07/2010 | 10 Westmoreland Walk, Shoreham-by-Sea |
| TQ215064       | Dave Green;Penny Green | 05/07/2012 | 10 Westmoreland Walk, Shoreham-by-Sea |

### Nymphalis polychloros

### Large Tortoiseshell

#### Insect - butterfly

Currently not recorded in Sussex as a breeding species, and always rather scarce. Occasionally recorded as an immigrant, or possibly deliberately released.

#### Designations

IUCN (2001) - Regionally Extinct; Sussex Rare Species Inventory; Wildlife and Countryside Act 1981 Schedule 5 Sections (9.5a)

| Grid Reference         | Recorder                   | Date                 | Locality                              |
|------------------------|----------------------------|----------------------|---------------------------------------|
| TQ180064               | Bert Laker                 | 28/06/2007           | Lancing Clump                         |
| TQ182063               | Bert Laker                 | 28/06/2007           | Lancing Clump                         |
| TQ188038               | Jane Potter; David Burrows | 27/02/2008           | Lancing                               |
| TQ2105                 | Barry Collins              | 03/07/2005           | Shoreham-by-Sea                       |
| Gynnidomorpha alismana |                            | Water-plantain Conch |                                       |
|                        |                            |                      |                                       |
| Designations           |                            |                      |                                       |
| Sussex Rare Species    | Inventory                  |                      |                                       |
| Grid Reference         | Recorder                   | Date                 | Locality                              |
| TQ10X                  | Mark Parsons               | 1970                 | West Sussex (VC13)                    |
| Ynonomeuta s           | edella                     | Grev Ermine          |                                       |
| i portornouta o        | odolia                     |                      |                                       |
| Insect - moth          |                            |                      |                                       |
| Designations           |                            |                      |                                       |
| Sussex Rare Species    | Inventory                  |                      |                                       |
| Grid Reference         | Recorder                   | Date                 | Locality                              |
| TQ21490643             | Dave Green;Penny Green     | 26/06/2009           | 10 Westmoreland Walk, Shoreham-by-Sea |

### Coenagrion pulchellum

Variable Damselfly

#### Insect - dragonfly (Odonata)

A damselfly of fens, water meadows, marshes and shallow ponds as well as dykes and canals with slow-moving water. A scarce species in Sussex with strongholds on the Pevensey Levels, East Sussex, and to a lesser extent Amberley Wildbrooks, West Sussex. Scattered records from other sites. Widespread elsewhere in England and Wales, and the southern-central lowlands of Scotland.

#### Designations

IUCN (2001) - Lower risk - near threatened; Sussex Rare Species Inventory

| Grid Reference | Recorder     | Date       | Locality                          |
|----------------|--------------|------------|-----------------------------------|
| TQ173044       | Naomi Forbes | 22/05/2013 | Former Brickworks, Brokhurst Wood |

### Erythromma viridulum

### Small Red-eyed Damselfly

#### Insect - dragonfly (Odonata)

A damselfly mainly of lakes and ponds with floating vegetation. Following an unconfirmed record at Pett Level in 2000, the species was found in some numbers at Icklesham and in the Cuckmere Valley, all in East Sussex and is now regarded as resident. First recorded as a breeding species in the British Isles in 1999 in Essex.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder    | Date       | Locality               |
|----------------|-------------|------------|------------------------|
| TQ188046       | Dave Sadler | 25/08/2007 | Paddocks Pond, Lancing |

**Keeled Skimmer** 

**Red-veined Darter** 

### Orthetrum coerulescens

#### Insect - dragonfly (Odonata)

A dragonfly of acid pools, streams and ditches. In Sussex it is rare and mainly recorded from Ashdown Forest though occasionally reported in other places. Elsewhere in the British Isles it is locally common in suitable areas mainly in the west.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder    | Date                       | Locality   |
|----------------|-------------|----------------------------|------------|
| TQ188046       | Dave Sadler | 07/08/2006 -<br>09/08/2006 | Lancing CP |

### Sympetrum fonscolombii

### Insect - dragonfly (Odonata)

A migrant dragonfly that breeds in a wide range of fresh and brackish lakes and other water bodies. Recorded sporadically in south east England and has occasionally bred here. Most records in our area are from coastal sites in East Sussex.

#### Designations

Sussex Rare Species Inventory

| Grid Reference<br>TQ188046          | Recorder<br>Dave Sadler | Date<br>03/06/2007 | Locality<br>Paddocks Pond, Lancing |
|-------------------------------------|-------------------------|--------------------|------------------------------------|
| Conocephalus                        | s fuscus                | Long-winged Co     | one-head                           |
| Designations<br>Sussex Rare Species | s Inventory             |                    |                                    |
| Grid Reference<br>TQ1904            | Recorder<br>John Paul   | Date<br>18/10/1997 | Locality<br>Widewater Lagoon       |
| Metrioptera ro                      | eselii                  | Roesel's Bush-c    | ricket                             |

# Metrioptera roeselii

#### Insect - orthopteran

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder      | Date       | Locality        |
|----------------|---------------|------------|-----------------|
| TQ2073604779   | Bob Antonini  | 02/10/2008 | Shoreham-by-Sea |
| TQ218058       | Barrie Watson | 22/07/2011 | Shoreham-by-Sea |

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### Platycleis albopunctata

### Grey Bush-cricket

Insect - orthopteran

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder     | Date | Locality                        |
|----------------|--------------|------|---------------------------------|
| TQ198041       | Betty Bishop | 1995 | Shingle around Widewater Lagoon |

### Gammarus insensibilis

### Lagoon Sand-shrimp

#### Crustacean

A widespread but rare sand shrimp of coastal saline lagoons. Recorded in our area from Thorney Great Deep, Birdham Pool and Widewater all in West Sussex.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; Sussex Biodiversity Action Plan; Sussex Protected Species Register; Sussex Rare Species Inventory; UK Biodiversity Action Plan priority species; Wildlife and Countryside Act 1981 Schedule 5 Sections (9.1 killing/injuring; 9.1 taking; 9.2; 9.4; subdivision a; 9.4b; 9.5a; 9.5b; Schedule 5)

| Grid Reference | Recorder    | Date       | Locality           |
|----------------|-------------|------------|--------------------|
| TQ19840413     | Ben Rainbow | 25/07/2013 | West Sussex (VC13) |
| TQ19980418     | Ben Rainbow | 25/07/2013 | West Sussex (VC13) |

### Arvicola amphibius

### European Water Vole

#### **Terrestrial mammal**

The fastest declining native British mammal, the water vole was 'Ratty' in Wind in the Willows. Water voles prefer slow flowing streams, rivers and dykes with steep earth banks and luxuriant emergent vegetation. They have been in decline for over a century mainly due to loss of habitat while the presence of American mink has greatly hastened this decline. In many areas of mainland Britain water voles are already extinct but there are still some strong populations in Sussex. A legally protected species, listed on the Sussex Rare Species Inventory and the subject of a Sussex Species Action Programme.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; Sussex Biodiversity Action Plan; Sussex Protected Species Register; Sussex Rare Species Inventory; UK Biodiversity Action Plan priority species; Wildlife and Countryside Act 1981 Schedule 5 Sections (9.1 killing/injuring; 9.1 taking; 9.2; 9.4; subdivision a; 9.4b; 9.5a; 9.5b; Schedule 5)

| Grid Reference | Recorder | Date        | Locality                   |
|----------------|----------|-------------|----------------------------|
| TQ207048       | Anon     | 1989 - 1990 | West Sussex (VC13)         |
| TQ208068       | Unknown  | 1989 - 1990 | Mill Hill, Shoreham-by-Sea |

### Edwardsia ivelli

### Ivell's Sea Anemone

#### Coelenterate (=cnidarian)

Ivell's sea anemone is known from only one location in the world - Widewater Lagoon near Shoreham by Sea in West Sussex. It was last seen in 1983 and is now possibly extinct. It is a globally threatened species listed by IUCN/WCMC and is protected under Schedule 5 of the WCA 1981. 1973-1983

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; Sussex Biodiversity Action Plan; Sussex Protected Species Register; Sussex Rare Species Inventory; UK Biodiversity Action Plan priority species; Wildlife and Countryside Act 1981 Schedule 5 Sections (9.1 killing/injuring; 9.1 taking; 9.2; 9.4; subdivision a; 9.4b; 9.5a; 9.5b; Schedule 5)

| Grid Reference | Recorder      | Date | Locality         |
|----------------|---------------|------|------------------|
| TQ200060       | Richard Ivell | 1973 | Widewater Lagoon |

### Pachycordyle navis

## Brackish Hydroid

#### Coelenterate (=cnidarian)

A brackish water hydroid which grows to a height of 30 mm and is predominantly found attached to algae. In the UK it is known only from Widewater Lagoon, West Sussex. It was first reported in 1973 attached to Chaetomorpha algae, and was recorded again in 1983, 1985 and 1987 surveys. In 1990 it was abundant and individuals were also recorded in a 1993 survey. Fieldwork in 1997 failed to record it but subsequent laboratory analysis of samples collected during the survey revealed one individual hydroid, thought to be C. navis, attached to an Ulva lactuca plant. Known from very few sites outside the British Isles.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; Sussex Biodiversity Action Plan; Sussex Protected Species Register; Sussex Rare Species Inventory; UK Biodiversity Action Plan priority species; Wildlife and Countryside Act 1981 Schedule 5 Sections (9.1 killing/injuring; 9.1 taking; 9.2; 9.4; subdivision a; 9.4b; 9.5a; 9.5b; Schedule 5)

| Grid Reference | Recorder      | Date                       | Locality         |
|----------------|---------------|----------------------------|------------------|
| TQ200042       | Robert Irving | 16/09/1997 -<br>17/09/1997 | Widewater Lagoon |

| Cerastoderma glaucum<br><sup>Mollusc</sup>   |                                       | Lagoon Cockle      |  |
|--|---------------------------------------|--------------------|--|
| <b>Designations</b><br>Sussex Rare Species I | nventory                              |                    |  |
| Grid Reference                               | Recorder                              | Date               | Locality                                 |
| TQ200042<br>TQ200060                         | Darren Sanders<br>A Sheader;M Sheader | 06/05/2006<br>1989 | Widewater Lagoon LNR<br>Widewater Lagoon |
|  |                                       |                    |  |

### Collemopsidium monense

#### Lichen

A lichen that occurs on chalk stones and flints in banks and woodland clearings and on the mortar of shaded walls. England and the Isle of Man (hence the specific name). ? Endemic. Recorded in our area from North Marden Down, East Dean Park Wood, Kithurst Hill, Kingly Vale, Didling Down and Lancing College in West Sussex and Streat Downs in East Sussex. 1971-2005.

#### Designations

| Grid Reference | Recorder                                  | Date       | Locality        |
|----------------|---|------------|-----------------|
| TQ19610661     | Sussex Lichen Recording Group;Simon Davey | 13/11/2004 | Lancing College |

| Tulostoma brumale<br>Fungus                  |                          | Winter Stalkball |   |
|--|--------------------------|------------------|---|
| <b>Designations</b><br>Sussex Rare Species I | nventory                 |                  |   |
| Grid Reference<br>TQ198041                   | Recorder<br>Betty Bishop | Date<br>1993     | Locality<br>Shingle around Widewater Lagoon |

### Hennediella heimii

### Heim's Pottia

Starke's Pottia

#### Moss

An ephemeral coastal moss of earth-covered rocks, bare patches of soil and the upper reaches of salt marshes. Frequent in coastal locations in the British Isles but very rare inland. Recorded from several places fairly recently in both East and West Sussex.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder                     | Date | Locality                        |
|----------------|------------------------------|------|---------------------------------|
| TQ198041       | Betty Bishop                 | 1993 | Shingle around Widewater Lagoon |
| TQ200042       | Anon @ Sussex Bot. Rec. Soc. | 1998 | Widewater Lagoon LNR            |

### Microbryum starckeanum

#### Moss

A very small gregarious ephemeral moss of disturbed shallow soil in a variety of situations. Occasional in coastal locations in England and Wales, rare elsewhere in the British Isles. Formerly often known as Pottia starkeana ssp. starkeana var. starkeana. Recorded from two sites in East Sussex and one in West Sussex.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder                     | Date | Locality                        |
|----------------|------------------------------|------|---------------------------------|
| TQ198041       | Betty Bishop                 | 1994 | Shingle around Widewater Lagoon |
| TQ200042       | Anon @ Sussex Bot. Rec. Soc. | 1998 | Widewater Lagoon LNR            |

### Tortula protobryoides

## Tall Pottia

#### Moss

A small moss of seasonal appearance formerly known as Pottia bryoides. It grows on exposed basic soil in grassland, quarries, gravel pits, banks, tracksides and cliffs. A lowland species occasional in England, rare elsewhere in the British Isles. In our area recorded from a few sites in both East and West Sussex since 1950 but possibly overlooked because of its small size and ephemeral nature.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder     | Date | Locality                        |
|----------------|--------------|------|---------------------------------|
| TQ198041       | Betty Bishop | 1991 | Shingle around Widewater Lagoon |

### Tortula viridifolia

### **Bristly Pottia**

### Moss

A coastal moss that grows on soil on banks, cliffs, stream sides and hills and by paths. Formerly known as Pottia crinita. Recorded from East and West Sussex prior to 1908 but now apparently extinct in our area.

### Designations

| Grid Reference | Recorder | Date | Locality           |
|----------------|----------|------|--------------------|
| TQ10X          | SAMLL    | 1908 | West Sussex (VC13) |

### Tortula wilsonii

### Wilson's Pottia

### Moss

A moss that is considered endangered in the Red List of British Mosses and a species that has decreased markedly. It grows on soil on cliffs, wall tops, banks and similar situations and is now confined to the coast mainly in England. Formerly known as Pottia wilsonii. Recorded from one site in West Sussex and one in East Sussex prior to 1908 but now thought to be extinct in our area.

### Designations

IUCN (2001) - Endangered; Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; Sussex Rare Species Inventory; UK Biodiversity Action Plan priority species

| Grid Reference | Recorder | Date | Locality           |
|----------------|----------|------|--------------------|
| TQ10X          | SAMLL    | 1908 | West Sussex (VC13) |

### Chara globularis

# Fragile Stonewort

**Corn Parsley** 

#### Stonewort

Since 1989 this species has only been noted in the Arun Valley from South Stoke to Amberley Wild Brooks, where it occurs in several species-rich ditches.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder        | Date       | Locality           |
|----------------|-----------------|------------|--------------------|
| TQ198062       | Frances Abraham | 05/09/2001 | West Sussex (VC13) |

### Petroselinum segetum

#### Flowering plant

#### Designations

Farm Environment Plan Guidance 007- Table 3; Sussex Rare Species Inventory

| Grid Reference | Recorder | Date | Locality     |
|----------------|----------|------|--------------|
| TQ20C          | E Bishop | 2004 | Shoreham Sea |

### Centaurea calcitrapa

### Red Star-thistle

#### Flowering plant

Although included as a Red Data species, the native status of C. calcitrapa nationally is disputed. It is considered native in Sussex on dry banks on the chalk. Widely recorded from the Downs in East and West Sussex.

#### Designations

IUCN (2001) - Critically endangered; Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; Sussex Biodiversity Action Plan; Sussex Rare Species Inventory; UK Biodiversity Action Plan priority species

| Grid Reference | Recorder                           | Date       | Locality                 |
|----------------|------------------------------------|------------|--------------------------|
| TQ20D          | Anon @ Sussex Bot. Rec. Soc.;SPASU | 1993       | West Sussex (VC13)       |
| TQ212067       | Mark Elliott;Penny Green           | 13/09/2005 | Mill Hill Nature Reserve |

### Phyteuma orbiculare

### Round-headed Rampion

#### Flowering plant

A perennial of species-rich chalk grassland, open scrub, earthworks and verges in southern England. The vernacular name 'Pride of Sussex' signals the county as the headquarters of this gem of the chalk turf. Widespread in suitable downland habitats in East and West Sussex.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder | Date | Locality           |
|----------------|----------|------|--------------------|
| TQ10Y          | SPASU    | 1978 | West Sussex (VC13) |

### Lathyrus aphaca

### Yellow Vetchling

#### Flowering plant

A rare annual and decreasing annual of open grassy habitats on chalk, limestone and calcareous clay soils, especially near the coast. Possibly a long-established introduction in England. Currently known in our area from only two sites in West Sussex near Brighton, and six in East Sussex, three of which are also in Brighton.

#### Designations

Farm Environment Plan Guidance 007- Table 3; IUCN (2001) - Vulnerable; Sussex Rare Species Inventory

| Grid Reference | Recorder | Date | Locality           |
|----------------|----------|------|--------------------|
| TQ20H          | SPASU    | 1979 | West Sussex (VC13) |

### Medicago minima

### **Bur Medick**

#### Flowering plant

An annual of dry, open, sandy or gravelly places, also occasionally found as a casual. Always confined to the Rye-Camber area in Sussex, we have only a single locality where this species has been seen recently, on sandy ground near the sea. This represents the western limit of Medicago minima along the South Coast.

#### Designations

IUCN (2001) - Vulnerable; Sussex Rare Species Inventory

| Grid Reference | Recorder          | Date | Locality           |
|----------------|-------------------|------|--------------------|
| TQ20C          | Anon @ Monks Wood | 1937 | West Sussex (VC13) |

### Medicago polymorpha

### **Toothed Medick**

#### Flowering plant

An annual found in open sandy and gravelly habitats by the coast. Also recorded as a casual. Scattered in suitable places along the coasts of East and West Sussex from Camber to Pagham.

#### Designations

| Grid Reference | Recorder   | Date                       | Locality           |
|----------------|--|----------------------------|--------------------|
| TQ215044       | Anon @ Monks Wood  | 1953                       | West Sussex (VC13) |
| TQ217045       | Anon @ Sussex Bot. Rec. Soc.;George<br>Bishop;Betty Bishop | 1996                       | West Sussex (VC13) |
| TQ2171804528   | A. Spiers  | 01/06/2007                 | Shoreham Beach     |
| TQ2204         | Kate Ryland  | 13/05/2009 -<br>08/06/2009 | Shoreham Beach     |

| Medicago sativa subsp. falcata<br>Flowering plant  |                     | Sickle Medick              |                                     |  |
|--|---------------------|----------------------------|-------------------------------------|--|
| <b>Designations</b><br>Sussex Rare Species   | Inventory           |                            |                                     |  |
| Grid Reference   | Recorder            | Date                       | Locality                            |  |
| TQ20C  | SPASU               | 1986                       | West Sussex (VC13)                  |  |
| Trifolium stellatum<br>Flowering plant   |                     | Starry Clover              |                                     |  |
| An alien long-established on shingle at Shoreham Harbour, West Sussex. Some scattered casual records elsewhere have not persisted. |                     |                            |                                     |  |
| Designations   |                     |                            |                                     |  |
| Sussex Rare Species Inventory  |                     |                            |                                     |  |
| Grid Reference   | Recorder            | Date                       | Locality                            |  |
| TQ21020441   | Jacqueline Woolcock | 06/06/2014                 | Shoreham Beach Local Nature Reserve |  |
| TQ2204   | Kate Ryland         | 13/05/2009 -<br>08/06/2009 | Shoreham Beach                      |  |

# TQ22870454 Jacqueline Woolcock

Jacqueline Woolcock

Jacqueline Woolcock

M. Berry

Recorder @ Friends of Shoreham Beach

### Suffocated Clover

07/06/2014

07/06/2014

02/06/2010

26/07/2011

14/06/2014

Shoreham Beach Local Nature Reserve

Shoreham Beach Local Nature Reserve

Shoreham Beach

Shoreham Beach

Shoreham Beach

### Flowering plant

TQ22270453

TQ22580456 TQ2258104574

TQ22870453

An annual of compacted sand and gravel in a number of places along the Sussex coast which appears to have become significantly more common in the last 25 years. Currently recorded from several sites in East and West Sussex.

#### Designations

Sussex Rare Species Inventory

Trifolium suffocatum

| Grid Reference | Recorder                     | Date       | Locality           |
|----------------|------------------------------|------------|--------------------|
| TQ176033       | Anon @ Sussex Bot. Rec. Soc. | 26/03/2000 | West Sussex (VC13) |
## Vicia lutea

## **Flowering plant**

## Yellow-vetch

An annual found as a native in a variety of coastal habitats, including scrubby grassland and cliffs, and on open yet consolidated shingle. Widely introduced inland. Recently recorded from several sites in East and West Sussex, mostly near the coast.

#### Designations

IUCN (2001) - Lower risk - near threatened; Sussex Rare Species Inventory

| Grid Reference | Recorder   | Date                       | Locality                        |
|----------------|--|----------------------------|---------------------------------|
| TQ197044       | Anon @ Sussex Bot. Rec. Soc.;George<br>Bishop;Betty Bishop | 1993                       | West Sussex (VC13)              |
| TQ19770409     | Frances Abraham  | 05/07/2003                 | Lancing CP                      |
| TQ19770411     | Alan Knapp;K.A. Knapp;Beryl Clough                         | 18/05/2005                 | West Sussex (VC13)              |
| TQ1977604091   | Frances Abraham  | 05/07/2003                 | West Sussex (VC13)              |
| TQ198041       | Betty Bishop   | 1991                       | Shingle around Widewater Lagoon |
| TQ198042       | Anon @ Sussex Bot. Rec. Soc.;George<br>Bishop;Betty Bishop | 1990                       | West Sussex (VC13)              |
| TQ200042       | Anon @ Sussex Bot. Rec. Soc.                               | 1998                       | Widewater Lagoon LNR            |
| TQ212045       | Anon @ Monks Wood  | 1964                       | West Sussex (VC13)              |
| TQ2204         | Kate Ryland  | 13/05/2009 -<br>08/06/2009 | Shoreham Beach                  |
| TQ225045       | Anon @ Sussex Bot. Rec. Soc.;George<br>Bishop;Betty Bishop | 1994                       | West Sussex (VC13)              |
| TQ228044       | Anon @ Sussex Bot. Rec. Soc.;George<br>Bishop;Betty Bishop | 1996                       | West Sussex (VC13)              |

## Polygala calcarea

## **Chalk Milkwort**

#### Flowering plant

A perennial of closely-grazed chalk and limestone grassland, usually on warm south-facing slopes. In Sussex there is an isolated population on the far west of the West Sussex Downs, and in East Sussex from Cuckmere valley and a few other places on the Downs.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder               | Date                       | Locality                                   |
|----------------|------------------------|----------------------------|--|
| TQ184066       | Dave Whelan;Andy Swash | 08/07/1986 -<br>14/07/1986 | Near Lancing Hill, Applesham Farm, Coombes |

## Erodium moschatum

# Musk Stork's-bill

#### Flowering plant

An introduced plant of grassy places, usually near the sea, at one time considered to be very rare. It has been found in recent years in several urban locations in West Sussex. Long extinct in East Sussex.

#### Designations

Farm Environment Plan Guidance 007- Table 3; Sussex Rare Species Inventory

| Grid Reference | Recorder                     | Date       | Locality           |
|----------------|------------------------------|------------|--------------------|
| TQ17040364     | A. Spiers                    | 01/04/2005 | West Sussex (VC13) |
| TQ172037       | J M Clark;Beryl Clough       | 13/04/2005 | West Sussex (VC13) |
| TQ17230354     | A. Spiers                    | 01/04/2005 | West Sussex (VC13) |
| TQ185066       | E Bishop;P.C. Finch;J. Finch | 2005       | Lancing CP         |
| TQ188056       | E Bishop;P.C. Finch;J. Finch | 2005       | Lancing CP         |

## Fumaria densiflora

# Dense-flowered Fumitory

## **Flowering plant**

A long-established scrambling annual of arable land. Regularly recorded from the Brighton and Hove area where it survives in cultivated fields, as well as in allotments and on cultivated ground.

## Designations

Farm Environment Plan Guidance 007- Table 3; Sussex Rare Species Inventory

| Grid Reference<br>TQ1866006207<br>TQ212045     | Recorder<br>Anon @ Sussex Bot. Rec. Soc.<br>Tony Spiers   | Date<br>16/06/2006<br>2000                                | Locality<br>West Sussex (VC13)<br>West Sussex (VC13)                   |  |
|--|---|---|--|--|
| <i>Meconopsis ca</i><br>Flowering plant        | mbrica  | Welsh Poppy   |  |  |
| Designations<br>Sussex Rare Species Inventory  |   |   |  |  |
| Grid Reference<br>TQ2004<br>TQ208059<br>TQ2204 | Recorder<br>Anon;Anon @ Sussex Bot. Rec. Soc.<br>Anon;Anon @ Sussex Bot. Rec. Soc.<br>Kate Ryland | Date<br>1988<br>1986 - 2001<br>13/05/2009 -<br>08/06/2009 | Locality<br>West Sussex (VC13)<br>West Sussex (VC13)<br>Shoreham Beach |  |

## Helleborus foetidus

## Stinking Hellebore

#### Flowering plant

A short-lived perennial of shallow calcareous soils often in woodland glades or open scrub. Always rare in East Sussex, where it is doubtfully native; the only recent records are of garden escapes. In West Sussex most recent records are also of garden origin, but it still occurs as a presumed native in a few chalky woodland areas especially around Arundel and Houghton.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder          | Date | Locality           |
|----------------|-------------------|------|--------------------|
| TQ188066       | Anon @ Monks Wood | 1987 | West Sussex (VC13) |

## Thesium humifusum

## Bastard-toadflax

## Flowering plant

A hemiparasitic on other plants in short, usually grazed, species-rich calcareous grassland, chiefly on chalk. Its distribution along the Downs of Sussex is patchy with relatively few records in West Sussex, but more from the open downland in East Sussex.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder | Date | Locality           |
|----------------|----------|------|--------------------|
| TQ20D          | SPASU    | 1979 | West Sussex (VC13) |

## Calystegia soldanella

## Sea Bindweed

## **Flowering plant**

Found on mobile dunes and also sandy foreshores, shingle and disturbed ground by the sea. Now lost from many of its former locations but still occurs in East and West Sussex.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder   | Date       | Locality                 |
|----------------|------------|------------|--------------------------|
| TQ2204         | Anon       | 04/07/1979 | Shoreham Beach           |
| TQ228045       | E J Clunes | 1979       | Shoreham Vegetated Beach |

## Juniperus communis

Juniper

#### Conifer

An evergreen conifer found on basic and acidic soils in a wide range of habitats, including chalk downland and heath. In Sussex it is now confined to the Downs where it is still widespread. In West Sussex there are several locations, but found in only one area in East Sussex.

#### Designations

Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; Sussex Biodiversity Action Plan; Sussex Rare Species Inventory; UK Biodiversity Action Plan priority species

| Grid Reference | Recorder             | Date | Locality                   |
|----------------|----------------------|------|----------------------------|
| TQ20D          | E Bishop             | 2006 | West Sussex (VC13)         |
| TQ211064       | I Gauld and L K Ward | 1970 | Mill Hill, Shoreham-by-Sea |

## Arum italicum subsp. neglectum

Arum

#### Flowering plant

#### Designations

IUCN (2001) - Lower risk - near threatened; Sussex Rare Species Inventory

| Grid Reference | Recorder  | Date | Locality           |
|----------------|---|------|--------------------|
| TQ10X          | E Bishop;P.C. Finch;J. Finch                            | 2005 | Lancing CP         |
| TQ10Y          | E Bishop;P.C. Finch;J. Finch                            | 2006 | West Sussex (VC13) |
| TQ223059       | Anon @ Sussex Bot. Rec. Soc.;Ron<br>Clough;Beryl Clough | 1999 | West Sussex (VC13) |

## Hydrocharis morsus-ranae

Frogbit

#### Flowering plant

An aquatic plant with floating rosettes that is decreasing nationally. In Sussex it is still locally common especially in the ditches of the Brooks in the Arun Valley in West Sussex, those of Pevensey Levels in East Sussex and some other areas.

#### Designations

IUCN (2001) - Vulnerable; Sussex Rare Species Inventory

| Grid Reference | Recorder                          | Date | Locality           |
|----------------|-----------------------------------|------|--------------------|
| TQ202062       | Anon;Anon @ Sussex Bot. Rec. Soc. | 1993 | West Sussex (VC13) |

## Groenlandia densa

# **Opposite-leaved Pondweed**

#### Flowering plant

A perennial which may grow in lakes and rivers, but is more frequent in smaller water bodies such as streams, canals, ditches and ponds. There are widespread records from West Sussex but only three in East Sussex, where it is significantly less common than it was in the past.

#### Designations

IUCN (2001) - Vulnerable; Sussex Rare Species Inventory

| Grid Reference | Recorder   | Date       | Locality            |
|----------------|--|------------|---------------------|
| TQ1905         | Mark Elliott   | 06/05/2003 | Monks Farm, Lancing |
| TQ198062       | Frances Abraham  | 05/09/2001 | West Sussex (VC13)  |
| TQ202062       | Anon @ Sussex Bot. Rec. Soc.;George<br>Bishop;Betty Bishop | 1993       | West Sussex (VC13)  |

## Potamogeton acutifolius

Sharp-leaved Pondweed

## Flowering plant

An aquatic plant confined to shallow, species-rich drainage ditches in lowland grazing marshes. Although very rare nationally, it is the most abundant pondweed in numerous ditches between Arundel and Pulborough, and Amberley Wild Brooks is considered to be its UK headquarters. It is also common in parts of Pevensey Levels, but has been lost from some of its former localities.

#### Designations

IUCN (2001) - Critically endangered; Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; Sussex Rare Species Inventory; UK Biodiversity Action Plan priority species

| Grid Reference | Recorder   | Date        | Locality           |
|----------------|--|-------------|--------------------|
| TQ201062       | Anon @ Sussex Bot. Rec. Soc.;George<br>Bishop;Betty Bishop | 1986 - 2001 | West Sussex (VC13) |
| TQ202064       | George Bishop;Betty Bishop                                 | 1980        | West Sussex (VC13) |

## Potamogeton trichoides

Hairlike Pondweed

Flowering plant Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder | Date | Locality           |
|----------------|----------|------|--------------------|
| TQ10Y          | SPASU    | 1978 | West Sussex (VC13) |

Wild Cabbage

Flowering plant

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder | Date | Locality           |
|----------------|----------|------|--------------------|
| TQ20H          | SPASU    | 1955 | West Sussex (VC13) |

## Cakile maritima

## Sea Rocket

## **Flowering plant**

Usually found on the sand of foredunes and the upper shore, the plant occurs occasionally on gravel and shingle. Still reasonably frequent along the coast of West Sussex, but rare and decreasing in East Sussex.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder  | Date       | Locality            |
|----------------|---|------------|---------------------|
| TQ181036       | E Bishop;Beryl Clough                                   | 26/06/2003 | Lancing CP          |
| TQ188037       | Anon @ Sussex Bot. Rec. Soc.;Ron<br>Clough;Beryl Clough | 1989       | West Sussex (VC13)  |
| TQ2003104142   | J M Clark;Beryl Clough                                  | 29/10/2009 | Shoreham, Widewater |

## Rorippa austriaca

Austrian Yellow-cress

Nettle-leaved Goosefoot

## Flowering plant

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder   | Date       | Locality           |
|----------------|------------|------------|--------------------|
| TQ10X          | SPASU      | 1984       | West Sussex (VC13) |
| TQ19150573     | A. Spiers  | 17/06/2005 | West Sussex (VC13) |
| TQ192056       | Alan Knapp | 14/06/2000 | West Sussex (VC13) |

## Chenopodium murale

## Flowering plant

## An inconspicuous plant which has always been rare in Sussex appears to be getting scarcer although it may be overlooked. While it is casual in most sites it has persisted for many years in bare chalky soil, heavily disturbed by rabbits, on the very edge of the cliffs at Seven Sisters.

#### Designations

IUCN (2001) - Vulnerable; Sussex Rare Species Inventory

| Grid Reference | Recorder                                     | Date       | Locality           |
|----------------|--|------------|--------------------|
| TQ20790631     | M M Shaw                                     | 02/10/2005 | West Sussex (VC13) |
| TQ208063       | Alan Knapp                                   | 19/09/2003 | Shoreham Sea       |
| TQ223052       | Anon @ Sussex Bot. Rec. Soc.;Betty<br>Bishop | 1999       | West Sussex (VC13) |

## Salicornia dolichostachya

# Long-spiked Glasswort

#### Flowering plant

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder   | Date       | Locality           |
|----------------|--|------------|--------------------|
| TQ197044       | Anon @ Sussex Bot. Rec. Soc.;George<br>Bishop;Betty Bishop | 1993       | West Sussex (VC13) |
| TQ20610568     | A. Spiers  | 25/09/2003 | Shoreham Sea       |
| TQ21570475     | A. Spiers  | 25/09/2003 | Shoreham Sea       |

# Salicornia fragilis

## Yellow Glasswort

## **Flowering plant**

An annual largely restricted to open mud and muddy sand on intertidal flats and in the lowest parts of saltmarshes. Often treated as part of S. procumbens agg. Current records are all from the lower zone of saltmarsh in Chichester Harbour.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder   | Date       | Locality           |
|----------------|------------|------------|--------------------|
| TQ207066       | Alan Knapp | 29/09/2001 | West Sussex (VC13) |
| TQ212049       | Alan Knapp | 14/09/2001 | West Sussex (VC13) |

## Sarcocornia perennis

## Perennial Glasswort

#### **Flowering plant**

A subshrub of saltmarshes, especially in bare or sparsely vegetated areas on firm, muddy sand and gravel. Locally frequent around Chichester Harbour, but very rare elsewhere in Sussex, the only other recent records being from Shoreham and Cuckmere Haven.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder   | Date       | Locality           |
|----------------|--|------------|--------------------|
| TQ2004         | Anon;Anon @ Sussex Bot. Rec. Soc.                          | 1988       | West Sussex (VC13) |
| TQ20460597     | A. Spiers  | 25/09/2003 | Shoreham Sea       |
| TQ20510596     | A. Spiers  | 25/09/2003 | Shoreham Sea       |
| TQ20580574     | A. Spiers  | 25/09/2003 | Shoreham Sea       |
| TQ20630566     | A. Spiers  | 25/09/2003 | Shoreham Sea       |
| TQ20670650     | A. Spiers  | 09/10/2003 | West Sussex (VC13) |
| TQ20670656     | A. Spiers  | 09/10/2003 | Shoreham Sea       |
| TQ20680597     | A. Spiers  | 09/10/2003 | West Sussex (VC13) |
| TQ207063       | A. Spiers  | 09/10/2003 | West Sussex (VC13) |
| TQ20710594     | A. Spiers  | 25/09/2003 | Shoreham Sea       |
| TQ20720585     | A. Spiers  | 25/09/2003 | Shoreham Sea       |
| TQ208063       | Anon @ Sussex Bot. Rec. Soc.;George<br>Bishop;Betty Bishop | 1996       | West Sussex (VC13) |
| TQ21610498     | A. Spiers  | 25/09/2003 | Shoreham Sea       |
| TQ21650476     | A. Spiers  | 25/09/2003 | Shoreham Sea       |
| TQ21650479     | A. Spiers  | 25/09/2003 | Shoreham Sea       |

## Petrorhagia nanteuilii

# **Childing Pink**

#### Flowering plant

A protected annual of thinly vegetated, stabilised shingle. Now found in our area only in West Sussex, with most records around Pagham Harbour. Present populations could be vulnerable to adverse weather, erosion or movement of shingle.

#### Designations

IUCN (2001) - Vulnerable; Sussex Protected Species Register; Sussex Rare Species Inventory; Wildlife and Countryside Act 1981 (Schedule 8)

| Grid Reference | Recorder                | Date       | Locality                    |
|----------------|-------------------------|------------|-----------------------------|
| TQ20H          | Alan Knapp;Eric Clement | 25/06/2004 | Shoreham Sea                |
| TQ229048       | Harry Montgomery        | 16/07/2002 | West Sussex (VC13)          |
| TQ22910484     | Jacky Woolcock          | 23/06/2010 | Shoreham Beach              |
| TQ22910485     | Jacqueline Woolcock     | 07/06/2014 | Shoreham Beach              |
| TQ22920486     | Alan Knapp              | 23/06/2009 | Shoreham Sea                |
| TQ22930485     | Jacky Woolcock          | 23/06/2010 | Shoreham Beach              |
| TQ22950485     | Jacqueline Woolcock     | 07/06/2014 | Silver Sands Shoreham Beach |
| TQ2297204849   | Ben Rainbow             | 13/06/2013 | West Sussex (VC13)          |

## Silene nutans

# Nottingham Catchfly

## Flowering plant

A plant of shallow, calcareous soils as well as acidic soil overlying shingle. Always scarce in Sussex and now known only from one site in each county where it occupies different habitats. In West Sussex it occurs on sand dunes at Climping, and in East Sussex it on chalk grassland at Castle Hill near Lewes.

#### Designations

IUCN (2001) - Lower risk - near threatened; Sussex Rare Species Inventory

| Grid Reference | Recorder                | Date       | Locality                 |
|----------------|-------------------------|------------|--------------------------|
| TQ228045       | Jon Curson;Simon Curson | 18/07/1997 | Shoreham Vegetated Beach |

Sea-heath

## Frankenia laevis

## Flowering plant

A plant of the damp edge of muddy or sandy shores as well as short turf and cliffs within the spray zone. There are several sites around Chichester Harbour and at Rye and Camber where it is thought to be native. Probably a garden escape at Felpham, Seaford and Rottingdean.

#### Designations

IUCN (2001) - Lower risk - near threatened; Sussex Rare Species Inventory

| Grid Reference | Recorder                           | Date                       | Locality             |
|----------------|------------------------------------|----------------------------|----------------------|
| TQ196041       | Ray Hamblett                       | 2001                       | Widewater Lagoon     |
| TQ19690409     | Ben Rainbow                        | 13/09/2012                 | West Sussex (VC13)   |
| TQ198041       | Beryl Clough                       | 20/09/2003                 | Shoreham Sea         |
| TQ198042       | Peter Whitcomb                     | 01/06/2008 -<br>30/06/2008 | Widewater Lagoon LNR |
| TQ19860412     | Alan Knapp;K.A. Knapp;Beryl Clough | 18/05/2005                 | West Sussex (VC13)   |
| TQ2021204260   | Ben Rainbow                        | 12/08/2012                 | West Sussex (VC13)   |
| TQ20220425     | Ben Rainbow                        | 08/05/2012                 | West Sussex (VC13)   |

## Limonium procerum

## Sea-Lavender

#### Flowering plant

A rare endemic sea lavender. Some recent casual records at scattered sites along the East Sussex coast may refer to L. procerum of garden origin.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder | Date      | Locality       |
|----------------|----------|-----------|----------------|
| TQ197040       | D. Wood  | July 2006 | Shoreham Beach |

## Galeopsis angustifolia

## **Red Hemp-nettle**

#### Flowering plant

A steadily decreasing annual of arable land, waste places and open ground. Now very rare in Sussex with only two post-1986 records from Rye Harbour in East Sussex and Pagham in West Sussex.

#### Designations

IUCN (2001) - Critically endangered; Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; Sussex Biodiversity Action Plan; Sussex Rare Species Inventory; UK Biodiversity Action Plan priority species

| Grid Reference | Recorder | Date | Locality           |
|----------------|----------|------|--------------------|
| TQ20D          | SPASU    | 1979 | West Sussex (VC13) |
| TQ20H          | SPASU    | 1979 | West Sussex (VC13) |

## Euphrasia pseudokerneri

# Eyebright

## **Flowering plant**

An annual of herb-rich downland turf on chalk and soft limestones. Recent records from our area are from a few chalk grassland sites in both East and West Sussex. Thought to be in decline.

#### Designations

IUCN (2001) - Endangered; Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; Sussex Biodiversity Action Plan; Sussex Rare Species Inventory; UK Biodiversity Action Plan priority species

| Grid Reference | Recorder  | Date       | Locality           |
|----------------|-----------|------------|--------------------|
| TQ10Y          | SPASU     | 1979       | West Sussex (VC13) |
| TQ1847306235   | A. Spiers | 30/09/2010 | Lancing Ring       |
| TQ20D          | SPASU     | 1979       | West Sussex (VC13) |

## Carex arenaria

## Sand Sedge

#### **Flowering plant**

A creeping perennial of coastal dunes and sandy heaths. Rare in Sussex and found only in the far east of East Sussex. In West Sussex it is rather more widespread along the coast but is now known from only one inland site on a sandy heath.

#### Designations

Sussex Rare Species Inventory

| Grid Reference     | Recorder   | Date               | Locality                             |
|--------------------|--|--------------------|--------------------------------------|
| TQ2204<br>TQ229048 | Anon<br>Anon @ Sussex Bot. Rec. Soc.;George<br>Bishop;Betty Bishop | 04/07/1979<br>1993 | Shoreham Beach<br>West Sussex (VC13) |

## Carex divisa

**Divided Sedge** 

## Flowering plant

Native. This sedge of brackish meadows and tidal river banks can be locally frequent in Sussex. It appears to be surviving well.

#### Designations

IUCN (2001) - Vulnerable; Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; Sussex Biodiversity Action Plan; Sussex Rare Species Inventory; UK Biodiversity Action Plan priority species

| Grid Reference | Recorder              | Date       | Locality           |
|----------------|-----------------------|------------|--------------------|
| TQ199069       | Ben Benatt            | 06/05/2012 | West Sussex (VC13) |
| TQ2066406660   | Alan Knapp;K.A. Knapp | 19/05/2009 | West Sussex (VC13) |
| TQ20C          | SPASU                 | 1978       | West Sussex (VC13) |

## Cyperus longus

Galingale

## Flowering plant

A rare and local perennial of marshes, pondsides and ditches. Probably native in West Sussex near the coast, planted and established elsewhere.

#### Designations

IUCN (2001) - Lower risk - near threatened; Sussex Rare Species Inventory

| Grid Reference | Recorder       | Date       | Locality                    |
|----------------|----------------|------------|-----------------------------|
| TQ180065       | Stuart Colgate | 04/11/2002 | Lancing Ring, North Lancing |
| TQ20C          | SPASU          | 1979       | West Sussex (VC13)          |
| TQ20D          | SPASU          | 1979       | West Sussex (VC13)          |

## Alopecurus bulbosus

## **Bulbous Foxtail**

#### **Flowering plant**

A rare grass in Sussex, this species is a plant of brackish meadows near the sea and of tidal river banks. Recorded from nine sites across the two counties since 1986.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder   | Date        | Locality           |
|----------------|--|-------------|--------------------|
| TQ205068       | Anon @ Monks Wood  | 1978        | West Sussex (VC13) |
| TQ205069       | Anon @ Sussex Bot. Rec. Soc.;George<br>Bishop;Betty Bishop | 1993        | West Sussex (VC13) |
| TQ206068       | Anon @ Sussex Bot. Rec. Soc.;George<br>Bishop;Betty Bishop | 1986 - 2000 | West Sussex (VC13) |

## Calamagrostis epigejos

# Wood Small-reed

#### Flowering plant

A perennial grass, this species has always had its stronghold in the far west of the county. Favouring wet woods, ditches and marshes, it has only very limited populations in East Sussex.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder  | Date                       | Locality                    |
|----------------|---|----------------------------|-----------------------------|
| TQ180065       | Ann Griffiths;Graham Roberts;Louise Scott<br>(Clark);Marion Lee / Finch | 19/06/1990 -<br>18/07/1990 | Lancing Ring, North Lancing |
| TQ185063       | Louise Scott (Clark);Marion Lee / Finch                                 | 14/06/1990                 | Disused Chalkpit            |

# Cynodon dactylon

## Flowering plant

Naturalised in a few places, with several new records in addition to the long established site near Hove Lagoon.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder  | Date | Locality           |
|----------------|---|------|--------------------|
| TQ173033       | Anon @ Sussex Bot. Rec. Soc.;Ron<br>Clough;Beryl Clough | 1994 | West Sussex (VC13) |

# Hordeum marinum

# Sea Barley

Bermuda-grass

#### Flowering plant

An annual grass of brackish places by the sea, tidal river banks and saltmarsh margins. Not seen in West Sussex since 1958 and confined to the Ouse Valley and the Rye Bay area in East Sussex.

#### Designations

IUCN (2001) - Vulnerable; Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; Sussex Biodiversity Action Plan; Sussex Rare Species Inventory; UK Biodiversity Action Plan priority species

| Grid Reference | Recorder          | Date | Locality           |
|----------------|-------------------|------|--------------------|
| TQ20D          | SPASU             | 1978 | West Sussex (VC13) |
| TQ222048       | Anon @ Monks Wood | 1971 | West Sussex (VC13) |

## Parapholis incurva

## Curved Hard-grass

#### **Flowering plant**

An annual grass of bare places by the sea. It occurs in both counties in a number of places between Itchenor and Rye.

## Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder   | Date                       | Locality           |
|----------------|--|----------------------------|--------------------|
| TQ208063       | Anon @ Sussex Bot. Rec. Soc.;George<br>Bishop;Betty Bishop | 1993                       | West Sussex (VC13) |
| TQ211054       | Anon @ Sussex Bot. Rec. Soc.;Ron<br>Clough;Beryl Clough    | 1994                       | West Sussex (VC13) |
| TQ2204         | Kate Ryland  | 13/05/2009 -<br>08/06/2009 | Shoreham Beach     |

## Poa bulbosa

## **Bulbous Meadow-grass**

Early Meadow-grass

#### **Flowering plant**

A grass of open turf and barish sandy or rocky places near the sea, mainly on sand dunes and stabilised shingle. The number of records for this species has increased considerably since 1988 and it has been widely recorded from places near the East and West Sussex coast.

#### Designations

Sussex Rare Species Inventory

| Grid Reference | Recorder                     | Date                       | Locality                     |
|----------------|------------------------------|----------------------------|------------------------------|
| TQ183037       | Anon @ Sussex Bot. Rec. Soc. | 26/03/2000                 | West Sussex (VC13)           |
| TQ183038       | Alan Knapp                   | 13/04/2003                 | West Sussex (VC13)           |
| TQ18320376     | Alan Knapp                   | 13/04/2003                 | West Sussex (VC13)           |
| TQ20H          | SPASU                        | 1979                       | West Sussex (VC13)           |
| TQ2178704693   | A. Spiers                    | 26/02/2010                 | Shoreham Harbour, Ferry Road |
| TQ2204         | Kate Ryland                  | 13/05/2009 -<br>08/06/2009 | Shoreham Beach               |

## Poa infirma

#### **Flowering plant**

An annual grass growing near the sea in open, trampled turf, on cliff-top paths, picnic sites, lawns and car parks and in stabilised dunes and other sandy places. Until quite recently thought to be restricted to west Cornwall, the Isles of Scilly and the Channel Islands, the species is rapidly expanding eastwards and now seems well-established in East and West Sussex.

#### Designations

Sussex Rare Species Inventory

| Recorder                     | Date  | Locality   |
|------------------------------|---|--|
| Anon @ Sussex Bot. Rec. Soc. | 26/03/2000  | West Sussex (VC13)   |
| Anon @ Sussex Bot. Rec. Soc. | 26/03/2000  | West Sussex (VC13)   |
| A. Spiers                    | 14/03/2006  | Shoreham Sea   |
| A. Spiers                    | 14/03/2006  | Shoreham Sea   |
| Graeme Lyons                 | 19/03/2011  | Shoreham   |
| A. Spiers                    | 14/03/2006  | Shoreham Sea   |
| A. Spiers                    | 14/03/2006  | Shoreham Sea   |
| A. Spiers                    | 14/03/2006  | Shoreham Sea   |
|                              | Recorder<br>Anon @ Sussex Bot. Rec. Soc.<br>Anon @ Sussex Bot. Rec. Soc.<br>A. Spiers<br>A. Spiers<br>Graeme Lyons<br>A. Spiers<br>A. Spiers<br>A. Spiers | Recorder         Date           Anon @ Sussex Bot. Rec. Soc.         26/03/2000           Anon @ Sussex Bot. Rec. Soc.         26/03/2000           A. Spiers         14/03/2006           A. Spiers         14/03/2006           Graeme Lyons         19/03/2011           A. Spiers         14/03/2006           A. Spiers         14/03/2006           A. Spiers         14/03/2006           A. Spiers         14/03/2006           A. Spiers         14/03/2006 |

# Spartina maritima

# Small Cord-grass

## Flowering plant

A rare and declining grass of tidal mud-flats and bare ground behind sea walls. Only recently recorded from three locations in West Sussex.

#### Designations

IUCN (2001) - Endangered; Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England (sec; Sussex Rare Species Inventory; UK Biodiversity Action Plan priority species

| Grid Reference                                | Recorder   | Date          | Locality             |
|---|--|---------------|----------------------|
| TQ200042                                      | Darren Sanders   | 06/05/2006    | Widewater Lagoon LNR |
| Hippophae rhat<br>Flowering plant             | mnoides  | Sea-buckthorn |                      |
| Designations<br>Sussex Rare Species Inventory |  |               |                      |
| Grid Reference                                | Recorder   | Date          | Locality             |
| TQ170056                                      | Anon @ Sussex Bot. Rec. Soc.;George<br>Bishop;Betty Bishop | 1995          | West Sussex (VC13)   |

# SUSSEX INVASIVE ALIEN SPECIES REPORT

The Sussex Invasive Alien Species Report is produced in order to help minimise the threat posed by invasive alien species in Sussex. Records are labelled so that only one record per species per grid reference is included - this will usually be the most up to date record.

Most alien species pose no threat to native species, and indeed many naturalised non-natives represent important additions to our flora and fauna. An older record of an alien invasive species may denote that there was once a problem at this site, but it has subsequently been dealt with. However, the problem may still persist but no up to date information is available.

## What is an Invasive Alien Species?

The term alien is synonymous with the term non-native. An invasive alien is defined as an alien species whose introduction and/or spread threatens biological diversity. Invasive alien species are referred to by several names, which are often used interchangeably: non-natives, introduced, non-indigenous, exotic, foreign, noxious, aggressive, pest or harmful species.

## What's the problem?

With no natural predators and a benign climate, invasive alien species can out-compete our native plant and animal species. For example, some invasive alien plants species can change light levels, decrease dissolved oxygen in water, change soil chemistry and its structure, and increase surface run-off and soil erosion. On a more subtle level, invasive alien species can affect ecosystem processes such as nutrient cycling, pollination and regeneration of soils. Invasive fauna can compete with native species, displace them, consume them, act as parasites or transmit diseases, reduce growth and survival rates, cause the decline or extinction of local populations or even entire species.

## What control is in place?

Section 14 of The Wildlife and Countryside Act (1981) is the principal legislation dealing with the release of non-native species. This has been amended by the Natural Environment and Rural Communities (NERC) Act (2006) in England and Wales. Section 14 of the Act makes it illegal to allow any animal which is not ordinarily resident in Great Britain, or is listed on Schedule 9 of the Act, to escape into the wild, or to release it into the wild. It is also illegal to plant or otherwise cause to grow in the wild any plant listed on Schedule 9 of the Act.

## What to do if there is an invasive alien species on your site

If you have any of the species listed in this report on your site, firstly investigate the recommended control for the particular species. You can search by species name on the <u>GB non-native species secretariat website</u> for further advice.

If there are invasive alien species at your site that are not in this report please contact us on <a href="mailto:sxbrc@sussexwt.org.uk">sxbrc@sussexwt.org.uk</a> or 01273 497521 so that we can update our database.



# SUSSEX INVASIVE ALIEN SPECIES REPORT

Please note that bird records are not included in this report.

Land at New Salts Farm, Shoreham + 2km buffer

23 June 2015 ESD/15/443 Search Area: TQ1704 toTQ2205; TQ1703 to TQ1903; TQ1806 to TQ2106

Vicky Hale (PJC Ecology)

# Harlequin Ladybird

## Insect - beetle (Coleoptera)

Harmonia axyridis

A native of the Far East this was first recorded in Britain in 2004 and in Sussex near Icklesham in May 2005; widespread in East and West Sussex by 2006. It is larger and more voracious than our native ladybirds and may compete with them and attack other invertebrates. Can also damage fruit and be a nuisance when hibernating in large aggregations in houses.

| Grid Reference | Recorder               | Date       | Locality  |
|----------------|------------------------|------------|---|
| TQ1722705546   | Royston Hockett        | 14/09/2013 | Unspecified Location Within Sompting CP         |
| TQ1807405454   | Deborah Young          | 29/03/2014 | Unspecified Location Within Lancing CP          |
| TQ186056       | Matthew Jackson        | 22/09/2014 | North Lancing                                   |
| TQ1938104133   | Wendy Dowse            | 27/07/2007 | 120 West Way, Lancing CP                        |
| TQ21490643     | Dave Green;Penny Green | 11/09/2010 | 10 Westmoreland Walk, Shoreham-by-Sea           |
| TQ218059       | Rae Titcomb            | 01/06/2007 | The Drive, Shoreham-by-Sea, Shoreham-<br>by-Sea |

## Cameraria ohridella

## Horse-Chestnut Leaf-miner

#### Insect - moth

Discovered in south east Europe in 1985, this moth was first recorded in Britain at Wimbledon, London, in 2002 but possibly had arrived the previous year. Now found quite extensively in the south-east of England including Sussex. The larval mines disfigure the leaves of horse chestnut with brown blotches, often many to one leaf.

| Grid Reference | Recorder               | Date       | Locality  |
|----------------|------------------------|------------|---|
| TQ214064       | Dave Green;Penny Green | 26/05/2011 | Shoreham-by-Sea, 10 Westmoreland Walk, West Sussex (VC13) |

## Campylopus introflexus

## Heath Star Moss

#### Moss

A now widespread moss introduced from the Southern Hemisphere. First British record was from Heath Common, Sullington in 1941. Tends to overwhelm native moss species and now very widespread in Sussex.

| Grid Reference | Recorder                     | Date       | Locality  |
|----------------|------------------------------|------------|---|
| TQ198040       | Tom Ottley                   | 26/07/2013 | Shoreham: Widewater Lagoon, West<br>Sussex (VC13) |
| TQ198041       | Betty Bishop                 | 1993       | Shingle around Widewater Lagoon                   |
| TQ200042       | Anon @ Sussex Bot. Rec. Soc. | 1998       | Widewater Lagoon LNR                              |

## Heracleum mantegazzianum

## Giant Hogweed

#### **Flowering plant**

A very large, introduced umbelliferous plant from south west Asia with a capacity to cause dermatitis and painful blistering of the skin. First recorded in the wild in UK in 1828 and now widespread especially along river and stream banks. It addition to its irritant qualities its huge leaves suppress native flora and fauna. Widespread in Sussex.

| Grid Reference | Recorder  | Date       | Locality                                      |
|----------------|-----------|------------|---|
| TQ17040382     | A. Spiers | 01/04/2005 | Brooklands Park, Worthing, West Sussex (VC13) |

# Allium triquetrum

## Three-cornered Garlic

## Flowering plant

This perennial bulbous plant was introduced from the Mediterranean region and established in Britain by the mid 19th C. It spreads rapidly by ant-dispersed seed and is increasing its range here partly in response to milder climatic conditions. It can displace bluebells and other native flora in woodlands and along verges. Widespread and increasing in Sussex.

| Recorder   | Date  | Locality   |
|--|---|--|
| E Bishop;P.C. Finch;J. Finch                               | 2005  | Lancing, Lancing CP  |
| Alan Knapp;K.A. Knapp                                      | 13/05/2009  | Coombes Road, West Sussex (VC13)   |
| Anon @ Sussex Bot. Rec.<br>Soc.;George Bishop;Betty Bishop | 1995  | Lancing, West Sussex (VC13)  |
| E Bishop;Beryl Clough                                      | 09/06/2003  | Lancing, Lancing CP  |
| Alan Knapp;K.A. Knapp;Beryl Clough                         | 18/05/2005  | Widewater, Shoreham, West Sussex (VC13)  |
| Anon @ Sussex Bot. Rec.<br>Soc.;George Bishop;Betty Bishop | 1986 - 2000   | Shoreham, West Sussex (VC13)   |
| Unknown  | 1996  | Shoreham, West Sussex (VC13)   |
| E Bishop   | May 2005  | Shoreham, Shoreham Sea   |
| Peter Whitcomb   | 06/05/2011  | Shoreham Beach   |
|  | Recorder<br>E Bishop;P.C. Finch;J. Finch<br>Alan Knapp;K.A. Knapp<br>Anon @ Sussex Bot. Rec.<br>Soc.;George Bishop;Betty Bishop<br>E Bishop;Beryl Clough<br>Alan Knapp;K.A. Knapp;Beryl Clough<br>Anon @ Sussex Bot. Rec.<br>Soc.;George Bishop;Betty Bishop<br>Unknown<br>E Bishop<br>Peter Whitcomb | RecorderDateE Bishop;P.C. Finch;J. Finch2005Alan Knapp;K.A. Knapp13/05/2009Anon @ Sussex Bot. Rec.1995Soc.;George Bishop;Betty Bishop09/06/2003E Bishop;Beryl Clough09/06/2003Alan Knapp;K.A. Knapp;Beryl Clough18/05/2005Anon @ Sussex Bot. Rec.1986 - 2000Soc.;George Bishop;Betty Bishop1996Unknown1996E BishopMay 2005Peter Whitcomb06/05/2011 |

## Hyacinthoides hispanica

## Spanish Bluebell

#### **Flowering plant**

A species from Spain and Portugal that has been recorded as a garden escape since 1909 and occasionally becomes naturalised. Often confused with its more invasive hybrid with our native bluebell H. non-scripta. Widespread in Sussex.

| Grid Reference | Recorder                     | Date                       | Locality                             |
|----------------|------------------------------|----------------------------|--------------------------------------|
| TQ173044       | Naomi Forbes                 | 22/05/2013                 | Former Brickworks, Brokhurst Wood    |
| TQ19810572     | Anon @ Enplan & Env Planners | 03/04/2001 -<br>09/05/2001 | Shoreham Airport, West Sussex (VC13) |

# *Hyacinthoides non-scripta x hispanica* = Hybrid bluebell *H. x massartiana*

#### **Flowering plant**

A hybrid between our native bluebell, H. non-scripta and Spanish Bluebell, H. hispanica. Widespread in Sussex.

| -              |                                    |            |  |
|----------------|------------------------------------|------------|--|
| Grid Reference | Recorder                           | Date       | Locality   |
| TQ10X          | Alan Knapp;K.A. Knapp;Beryl Clough | 18/05/2005 | Widewater, Shoreham, West Sussex (VC13)          |
| TQ10Y          | E Bishop;P.C. Finch;J. Finch       | 2006       | S of Coombes, West Sussex (VC13)                 |
| TQ18250602     | A.J. Quelch                        | 03/06/2013 | North Lancing                                    |
| TQ20C          | Paul Harmes                        | 09/02/2005 | Old Shoreham, West Sussex (VC13)                 |
| TQ20D          | E Bishop                           | May 2005   | Shoreham, Shoreham Sea                           |
| TQ20H          | Paul Harmes                        | 10/02/2005 | Kingston, Shoreham by Sea, West<br>Sussex (VC13) |

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# Crocosmia pottsii x aurea = C. x crocosmiiflora

## Montbretia

#### Flowering plant

A well-known garden escape with orange flowers from South Africa. Widespread across Sussex. Listed on Schedule 9 of the Wildlife & Countryside Act 1981.

| Grid Reference | Recorder                     | Date       | Locality                          |
|----------------|------------------------------|------------|-----------------------------------|
| TQ10Y          | E Bishop;P.C. Finch;J. Finch | 2006       | S of Coombes, West Sussex (VC13)  |
| TQ181037       | Anon @ Sussex Bot. Rec. Soc. | 20/09/2003 | South Lancing, West Sussex (VC13) |

## Petasites fragrans

# Winter Heliotrope

#### **Flowering plant**

A large-leaved, rampant perennial plant from the Far East spreading by means of underground stems by up to 1 metre per year. Very invasive, often forming large wayside colonies to the exclusion of all other species. Sweet scented mauve pink spikes of flower in winter.

| Grid Reference | Recorder                     | Date       | Locality                         |
|----------------|------------------------------|------------|----------------------------------|
| TQ10X          | Ann Griffiths                | 29/01/2009 | Widewater, Shoreham              |
| TQ10Y          | E Bishop;P.C. Finch;J. Finch | 2006       | S of Coombes, West Sussex (VC13) |
| TQ20C          | E Bishop                     | 2004       | Shoreham, Shoreham Sea           |

## Centranthus ruber

# Red valerian

#### **Flowering plant**

In small quantities this Mediterranean plant is of value to butterflies, moths, bees and other fauna, but it can become invasive and spread across areas like vegetated shingle. It is best, if possible, to remove dead flower heads to prevent seed from spreading. It was first recorded in the wild in Britain in 1763 and is common across Sussex.

| Grid Reference | Recorder                                | Date                       | Locality  |
|----------------|---|----------------------------|---|
| TQ10Y          | E Bishop;P.C. Finch;J. Finch            | 2006                       | S of Coombes, West Sussex (VC13)                                  |
| TQ200042       | Anon @ Sussex Bot. Rec. Soc.            | 1998                       | Widewater Lagoon LNR  |
| TQ20D          | Alan Knapp                              | 25/07/2005                 | Mill Hill (S of A27), West Sussex (VC13)                          |
| TQ20H          | Paul Harmes                             | 08/01/2005                 | Shoreham Beach  |
| TQ21280628     | Betty Bishop                            | 30/05/2005                 | Grass verge, corner Mill Hill and Mill Hill<br>Drive, Shoreham CP |
| TQ2204         | Kate Ryland                             | 03/05/2010 -<br>08/06/2010 | Local Nature Reserve, Shoreham Beach                              |
| TQ228045       | Louise Scott (Clark);Marion Lee / Finch | 12/06/1990                 | Shoreham Vegetated Beach  |

## Robinia pseudoacacia

False-acacia

#### Flowering plant

A North American tree introduced in the 17th century and later widely planted. It is now regarded as a global invader and often classified as a weed tree as it spreads readily by seed and suckers and grows quickly. With climate change it is establishing itself in the British countryside as native oak and beech come under increased environmental stress.

| Grid Reference | Recorder                                     | Date       | Locality                                  |
|----------------|--|------------|---|
| TQ194064       | James Johnston                               | 14/09/2009 | Land around sports hall., Lancing College |
| TQ202068       | Anon @ Sussex Bot. Rec. Soc.;Betty<br>Bishop | 1996       | Shoreham, West Sussex (VC13)              |
| TQ20C          | E Bishop                                     | 2004       | Shoreham Town, West Sussex (VC13)         |
| TQ213053       | Anon @ Sussex Bot. Rec. Soc.;Betty<br>Bishop | 1997       | Shoreham, West Sussex (VC13)              |

#### Parthenocissus quinquefolia **Flowering plant** A North American climbing plant widely naturalised as a garden escape. Frequently confused. Quite widely recorded in East and West Sussex. Listed on Schedule 9 of the Wildlife & Countryside Act 1981. Grid Reference Recorder Date Locality TQ219053 Anon @ Sussex Bot. Rec. Soc.;Ron October 1998 Southwick, West Sussex (VC13) Clough;Beryl Clough Common Fiddleneck Amsinckia micrantha Flowering plant A North American flowering plant that is increasingly found as a weed of sandy soils. It has been spreading rapidly in the last twenty years. Recorded from both East and West Sussex since 1994. Grid Reference Recorder Date Locality TQ216053 E Bishop May 2003 Shoreham, Shoreham Sea Fallopia japonica Japanese Knotweed **Flowering plant** Listed on Schedule 9 Part II of the Wildlife & Countryside Act (1981). It is an offence to plant or otherwise cause to grow the species in the wild. Described as the most pernicious weed in Britain by Plantlife, Japanese knotweed was introduced in the UK in the mid-19th century as an ornamental plant. It is now is a problem invasive perennial throughout Europe. It is an offence to plant, or otherwise cause to grow, the species in the wild. Landowners are liable to prosecution if they allow the plant to spread from their land.

| Grid Reference | Recorder                     | Date       | Locality                         |
|----------------|------------------------------|------------|----------------------------------|
| TQ10X          | Frances Abraham              | 30/07/2004 | Lancing, Lancing CP              |
| TQ10Y          | E Bishop;P.C. Finch;J. Finch | 2006       | S of Coombes, West Sussex (VC13) |
| TQ182036       | E Bishop;Beryl Clough        | June 2003  | Lancing, Lancing CP              |

# Lamium galeobdolon subsp. argentatum Yellow Archangel

#### **Flowering plant**

Often listed just as Lamiastrum galeobdolon montanum. However, the New Atlas of the British Flora and other sources point out that L. g. montanum is the widespread yellow archangel of the British countryside and that the nominate subspecies L. g. ssp. galeobdolon is a rare plant confined as a native to Lincolnshire and Kirkcudbrightshire. Some authorities position the variegated invasive alien yellow archangel as L. g. ssp. montanum, others as L. g. ssp. argentatum. This latter form is thought to have been introduced in the late 1960s and is spreading rapidly. It is widespread in Sussex and listed on Schedule 9 of the Wildlife & Countryside Act 1981.

| Grid Reference | Recorder                     | Date | Locality                         |
|----------------|------------------------------|------|----------------------------------|
| TQ10Y          | E Bishop;P.C. Finch;J. Finch | 2006 | S of Coombes, West Sussex (VC13) |

## Cotoneaster horizontalis

## Wall Cotoneaster

#### Flowering plant

A small shrub from western China now widely naturalised in the British Isles and often highly invasive, especially on chalk slopes. Recorded from many places in East and West Sussex. Listed on schedule 9 of the Wildlife & Countryside Act 1981.

| Grid Reference | Recorder                     | Date                       | Locality                                       |
|----------------|------------------------------|----------------------------|--|
| TQ185062       | Anon @ Sussex Bot. Rec. Soc. | 16/06/2006                 | Lancing Ring, West Sussex (VC13)               |
| TQ20C          | E Bishop                     | 2004                       | Shoreham, Shoreham Sea                         |
| TQ20D          | A. Spiers                    | 22/09/2010                 | A27 cutting, West Sussex (VC13)                |
| TQ21220658     | Ben Rainbow                  | 11/05/2012                 | NRV S02 Shoreham Bypass, West<br>Sussex (VC13) |
| TQ2204         | Kate Ryland                  | 03/05/2010 -<br>08/06/2010 | Local Nature Reserve, Shoreham Beach           |

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## Virginia creeper

## Cotoneaster integrifolius

## Small-leaved cotoneaster

#### Flowering plant

A small shrub from eastern Asia. Widely naturalised in Britain but often confused with C. microphylla which has not yet been found in the wild here. Scattered records across East and West Sussex. Listed on schedule 9 of the Wildlife & Countryside Act 1981.

| Grid Reference | Recorder  | Date       | Locality                        |
|----------------|-----------|------------|---------------------------------|
| TQ20D          | SPASU     | 1990       | West Sussex (VC13)              |
| TQ2111706491   | A. Spiers | 22/09/2010 | A27 cutting, West Sussex (VC13) |

## Cotoneaster simonsii

## Himalayan contoneaster

#### **Flowering plant**

A shrub up to 4m tall from the Himalayas widely naturalised in the British Isles. Well-established across East and West Sussex. Listed on schedule 9 of the Wildlife & Countryside Act 1981.

| Grid Reference | Recorder    | Date           | Locality                    |
|----------------|-------------|----------------|-----------------------------|
| TQ180065       | Martin Page | September 1981 | Lancing Ring, North Lancing |

## Rosa rugosa

## Japanese Rose

#### **Flowering plant**

A native of eastern Asia and now widespread as a garden escape in Britain, favouring waste ground and sandy areas. It can form extensive thickets and is increasing. Widely recorded in Sussex. Listed on Schedule 9 of the Wildlife & Countryside Act 1981.

| Grid Reference | Recorder    | Date                       | Locality                             |
|----------------|-------------|----------------------------|--------------------------------------|
| TQ20C          | E Bishop    | 2004                       | Shoreham, Shoreham Sea               |
| TQ2204         | Kate Ryland | 13/05/2009 -<br>08/06/2009 | Local Nature Reserve, Shoreham Beach |



# FULL SPECIES LIST (Excluding Birds)

## Land at New Salts Farm, Shoreham + 2km buffer

 23 June 2015
 ESD/15/443
 Search Area:
 TQ1704 toTQ2205; TQ1703 to TQ1903; TQ1806 to TQ2106

 Vicky Hale (PJC Ecology)
 Vicky Hale (PJC Ecology)
 Vicky Hale (PJC Ecology)

| Latin Name                           | Common Name               | Taxon Group | First Date | Last Date  | No. of Rec's |
|--------------------------------------|---------------------------|-------------|------------|------------|--------------|
| Leptoglossus occidentalis            |                           |             | 09/10/2011 | -          | 2            |
| Meconema meridionale                 | Southern Oak Bush-cricket |             | 22/09/2012 | -          | 2            |
| Tulostoma brumale                    | Winter Stalkball          | fungus      | 31/12/1993 | -          | 1            |
| Puccinia lagenophorae                |                           | fungus      | 06/04/2012 | -          | 1            |
| Trametes versicolor                  | Turkeytail                | fungus      | 31/12/1995 | -          | 1            |
| Auricularia auricula-judae           | Jelly Ear                 | fungus      | 31/12/1994 | 31/12/1995 | 2            |
| Armillaria gallica                   | Bulbous Honey Fungus      | fungus      | 29/10/2004 | -          | 1            |
| Hygrocybe psittacina                 | Parrot Wax-Cap            | fungus      | 03/11/2004 | -          | 1            |
| Hygrocybe glutinipes var. glutinipes | Glutinous Waxcap          | fungus      | 12/07/2012 | -          | 1            |
| Hygrocybe conica                     | Blackening Waxcap         | fungus      | 02/10/2004 | -          | 1            |
| Phycomyces nitens                    |                           | fungus      | 19/04/2011 | -          | 1            |
| Caloplaca flavescens                 |                           | lichen      | 10/02/1993 | 13/11/2004 | 5            |
| Caloplaca flavocitrina               |                           | lichen      | 31/12/1995 | -          | 1            |
| Caloplaca holocarpa                  |                           | lichen      | 10/02/1993 | 13/11/2004 | 3            |
| Caloplaca saxicola                   |                           | lichen      | 10/02/1993 | 13/11/2004 | 3            |
| Caloplaca teicholyta                 |                           | lichen      | 17/02/1993 | 13/11/2004 | 4            |
| Caloplaca variabilis                 |                           | lichen      | 13/11/2004 | -          | 1            |
| Caloplaca dalmatica                  |                           | lichen      | 10/02/1993 | 27/03/1993 | 2            |
| Xanthoria parietina                  | Common Orange Lichen      | lichen      | 10/02/1993 | 10/02/2012 | 10           |
| Micarea lignaria                     |                           | lichen      | 13/11/2004 | -          | 1            |
| Xanthoria calcicola                  |                           | lichen      | 10/02/1993 | 13/11/2004 | 2            |
| Caloplaca crenularia                 |                           | lichen      | 13/11/2004 | -          | 1            |
| Caloplaca citrina                    |                           | lichen      | 10/02/1993 | 13/11/2004 | 6            |
| Caloplaca aurantia                   |                           | lichen      | 10/02/1993 | 27/03/1993 | 2            |
| Lepraria incana                      |                           | lichen      | 27/03/1993 | 13/11/2004 | 3            |
| Xanthoria polycarpa                  |                           | lichen      | 31/12/1994 | 13/11/2004 | 3            |
| Protoblastenia rupestris             |                           | lichen      | 31/12/1994 | 13/11/2004 | 4            |
| Phlyctis argena                      |                           | lichen      | 13/11/2004 | -          | 2            |

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|-------------------------|---------------|-------------|------------|------------|--------------|
| Micarea erratica        |               | lichen      | 27/03/1993 | -          | 1            |
| Rinodina oleae          |               | lichen      | 31/12/1991 | 13/11/2004 | 6            |
| Physconia perisidiosa   |               | lichen      | 27/03/1993 | -          | 1            |
| Physconia grisea        |               | lichen      | 17/02/1993 | 13/11/2004 | 4            |
| Ramalina farinacea      |               | lichen      | 13/11/2004 | -          | 2            |
| Aspicilia calcarea      |               | lichen      | 10/02/1993 | 13/11/2004 | 5            |
| Hypocenomyce scalaris   |               | lichen      | 13/11/2004 | -          | 1            |
| Diploicia canescens     |               | lichen      | 10/02/1993 | 13/11/2004 | 5            |
| Buellia aethalea        |               | lichen      | 10/02/1993 | 27/03/1993 | 3            |
| Amandinea punctata      |               | lichen      | 10/02/1993 | 13/11/2004 | 4            |
| Toninia aromatica       |               | lichen      | 10/02/1993 | 13/11/2004 | 4            |
| Catillaria lenticularis |               | lichen      | 10/02/1993 | -          | 1            |
| Catillaria chalybeia    |               | lichen      | 10/02/1993 | 13/11/2004 | 3            |
| Pertusaria hymenea      |               | lichen      | 13/11/2004 | -          | 1            |
| Pertusaria albescens    |               | lichen      | 13/11/2004 | -          | 2            |
| Belonia nidarosiensis   |               | lichen      | 27/03/1993 | 13/11/2004 | 2            |
| Aspicilia contorta      |               | lichen      | 17/02/1993 | 13/11/2004 | 3            |
| Tephromela atra         | Black Shields | lichen      | 10/02/1993 | 13/11/2004 | 2            |
| Leptogium gelatinosum   |               | lichen      | 13/11/2004 | -          | 1            |
| Collema tenax           |               | lichen      | 31/12/1993 | 31/12/1998 | 2            |
| Collema crispum         |               | lichen      | 31/12/1993 | 31/12/1998 | 2            |
| Collema auriforme       |               | lichen      | 06/07/1992 | 31/12/1998 | 3            |
| Physcia caesia          |               | lichen      | 17/02/1993 | 13/11/2004 | 6            |
| Belonia russula         |               | lichen      | 10/02/1993 | -          | 1            |
| Porpidia tuberculosa    |               | lichen      | 10/02/1993 | 17/02/1993 | 2            |
| Scoliciosporum umbrinum |               | lichen      | 17/02/1993 | 13/11/2004 | 2            |
| Lecania erysibe         |               | lichen      | 17/02/1993 | -          | 1            |
| Ochrolechia parella     | Parelle       | lichen      | 10/02/1993 | -          | 1            |
| Placynthiella icmalea   |               | lichen      | 27/03/1993 | -          | 1            |
| Physcia tribacia        |               | lichen      | 10/02/1993 | -          | 1            |
| Lecanora albescens      |               | lichen      | 10/02/1993 | 13/11/2004 | 4            |
| Cladonia squamosa       |               | lichen      | 31/12/1991 | 31/12/1998 | 3            |
| Cladonia rangiformis    |               | lichen      | 31/12/1991 | 31/12/1998 | 3            |
| Cladonia pyxidata       |               | lichen      | 31/12/1993 | 31/12/1998 | 2            |
| Cladonia pocillum       |               | lichen      | 31/12/1993 | 31/12/1998 | 2            |
| Cladonia coniocraea     |               | lichen      | 13/11/2004 | -          | 1            |
| Cladonia chlorophaea    |               | lichen      | 31/12/1993 | 31/12/1998 | 2            |
| Candelariella vitellina |               | lichen      | 10/02/1993 | 13/11/2004 | 4            |
| Candelariella medians   |               | lichen      | 17/02/1993 | 13/11/2004 | 2            |
| Candelariella aurella   |               | lichen      | 10/02/1993 | 13/11/2004 | 4            |
| Lecanora chlarotera     |               | lichen      | 10/02/1993 | 13/11/2004 | 2            |
| Trapelia coarctata      |               | lichen      | 27/03/1993 | -          | 1            |
| Lecanora confusa        |               | lichen      | 13/11/2004 | -          | 1            |
| Acarospora macrospora   |               | lichen      | 10/02/1993 | -          | 1            |

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|----------------------------------|----------------------|-------------|------------|------------|--------------|
| Verrucaria viridula              |                      | lichen      | 10/02/1993 | 13/11/2004 | 3            |
| Verrucaria nigrescens            |                      | lichen      | 10/02/1993 | 13/11/2004 | 7            |
| Verrucaria muralis               |                      | lichen      | 10/02/1993 | 27/03/1993 | 4            |
| Verrucaria macrostoma            |                      | lichen      | 13/11/2004 | -          | 1            |
| Verrucaria hochstetteri          |                      | lichen      | 10/02/1993 | 13/11/2004 | 4            |
| Verrucaria baldensis             |                      | lichen      | 10/02/1993 | 27/03/1993 | 2            |
| Collemopsidium monense           |                      | lichen      | 13/11/2004 | -          | 1            |
| Schismatomma decolorans          |                      | lichen      | 10/02/1993 | -          | 1            |
| Opegrapha herbarum               |                      | lichen      | 13/11/2004 | -          | 1            |
| Dirina massiliensis f. sorediata |                      | lichen      | 10/02/1993 | 27/03/1993 | 3            |
| Arthonia pruinata                |                      | lichen      | 10/02/1993 | -          | 1            |
| Candelaria concolor              |                      | lichen      | 13/11/2004 | -          | 1            |
| Flavoparmelia caperata           |                      | lichen      | 27/03/1993 | 13/11/2004 | 3            |
| Diplotomma alboatrum             |                      | lichen      | 17/02/1993 | 27/03/1993 | 2            |
| Physcia adscendens               |                      | lichen      | 10/02/1993 | 13/11/2004 | 9            |
| Phaeophyscia orbicularis         |                      | lichen      | 10/02/1993 | 13/11/2004 | 5            |
| Hyperphyscia adglutinata         |                      | lichen      | 13/11/2004 | -          | 1            |
| Punctelia subrudecta             |                      | lichen      | 13/11/2004 | -          | 1            |
| Parmotrema perlatum              |                      | lichen      | 13/11/2004 | -          | 1            |
| Parmelia sulcata                 | Netted Shield Lichen | lichen      | 10/02/1993 | 13/11/2004 | 3            |
| Parmelia saxatilis               |                      | lichen      | 13/11/2004 | -          | 1            |
| Melanelixia subaurifera          |                      | lichen      | 27/03/1993 | 13/11/2004 | 2            |
| Melanelixia glabratula           |                      | lichen      | 13/11/2004 | -          | 1            |
| Melanelixia fuliginosa           |                      | lichen      | 13/11/2004 | -          | 1            |
| Lecanora campestris              |                      | lichen      | 10/02/1993 | 13/11/2004 | 5            |
| Flavoparmelia soredians          |                      | lichen      | 13/11/2004 | -          | 1            |
| Physcia tenella                  |                      | lichen      | 27/03/1993 | 13/11/2004 | 3            |
| Evernia prunastri                | Oak Moss             | lichen      | 27/03/1993 | 13/11/2004 | 3            |
| Lecidella stigmatea              |                      | lichen      | 17/02/1993 | 13/11/2004 | 2            |
| Lecidella scabra                 |                      | lichen      | 10/02/1993 | 13/11/2004 | 4            |
| Lecanora symmicta                |                      | lichen      | 13/11/2004 | -          | 1            |
| Lecanora sulphurea               |                      | lichen      | 10/02/1993 | -          | 1            |
| Lecanora polytropa               |                      | lichen      | 31/12/1991 | 31/12/1993 | 2            |
| Lecanora orosthea                |                      | lichen      | 17/02/1993 | 13/11/2004 | 2            |
| Lecanora muralis                 |                      | lichen      | 13/11/2004 | -          | 1            |
| Lecanora expallens               |                      | lichen      | 27/03/1993 | 13/11/2004 | 2            |
| Lecanora dispersa                |                      | lichen      | 17/02/1993 | 13/11/2004 | 5            |
| Lecanora crenulata               |                      | lichen      | 10/02/1993 | 27/03/1993 | 3            |
| Lecanora conizaeoides            |                      | lichen      | 13/11/2004 | -          | 1            |
| Hypotrachyna revoluta            |                      | lichen      | 13/11/2004 | -          | 2            |
| Buellia griseovirens             |                      | lichen      | 27/03/1993 | -          | 1            |
| Ulva lactuca                     | Sea Lettuce          | alga        | 06/05/2006 | -          | 1            |
| Chlorophyta                      | Green Alga Sp.       | alga        | 31/12/1994 | 18/09/2001 | 3            |
| Chaetomorpha                     |                      | alga        | 06/05/2006 | -          | 1            |

| Latin Name                           | Common Name                | Taxon Group | First Date | Last Date  | No. of Rec's |
|--------------------------------------|----------------------------|-------------|------------|------------|--------------|
| Chaetomorpha mediterranea            |                            | alga        | 06/05/2006 | -          | 1            |
| Cladophora                           |                            | alga        | 06/05/2006 | -          | 1            |
| Cladophora laetevirens               |                            | alga        | 06/05/2006 | -          | 1            |
| Ulva intestinalis                    | Gutweed                    | alga        | 06/05/2006 | 28/08/2013 | 2            |
| Ulva linza                           |                            | alga        | 31/12/1995 | -          | 1            |
| Porphyra umbilicalis                 | Purple Laver               | alga        | 31/12/1995 | -          | 1            |
| Ulva                                 | Green Laver                | alga        | 31/12/1993 | 17/09/1997 | 2            |
| Halidrys siliquosa                   | Sea Oak                    | chromist    | 31/12/1995 | -          | 1            |
| Pelvetia canaliculata                | Channelled Wrack           | chromist    | 31/12/1995 | -          | 1            |
| Fucus serratus                       | Toothed Wrack              | chromist    | 31/12/1995 | -          | 1            |
| Fucus ceranoides                     | Horned Wrack               | chromist    | 31/12/1995 | -          | 1            |
| Chara vulgaris                       | Common Stonewort           | stonewort   | 31/12/1984 | -          | 1            |
| Chara globularis                     | Fragile Stonewort          | stonewort   | 05/09/2001 | -          | 1            |
| Cephaloziella hampeana               | Hampe's Threadwort         | liverwort   | 31/12/1993 | 31/12/1998 | 2            |
| Marchantia polymorpha                | Common Liverwort           | liverwort   | 31/12/1993 | 31/12/1998 | 2            |
| Riccia fluitans                      | Floating Crystalwort       | liverwort   | 31/12/2010 | -          | 1            |
| Lophocolea heterophylla              | Variable-leaved Crestwort  | liverwort   | 31/12/1994 | 31/12/1998 | 3            |
| Brachythecium albicans               | Whitish Feather-moss       | moss        | 31/12/1993 | 26/07/2013 | 3            |
| Brachythecium rutabulum              | Rough-stalked Feather-moss | moss        | 31/12/1993 | 31/12/1998 | 2            |
| Eurhynchium praelongum               | Common Feather-moss        | moss        | 31/12/1993 | -          | 1            |
| Homalothecium lutescens              | Yellow Feather-moss        | moss        | 30/09/1981 | -          | 1            |
| Homalothecium sericeum               | Silky Wall Feather-moss    | moss        | 31/12/1993 | 31/12/1998 | 2            |
| Rhynchostegium megapolitanum         | Megapolitan Feather-moss   | moss        | 31/12/2010 | 26/07/2013 | 2            |
| Scleropodium purum                   | Neat Feather-moss          | moss        | 30/09/1981 | 06/07/1992 | 2            |
| Entodon concinnus                    | Montagne's Cylinder-moss   | moss        | 31/12/2010 | -          | 1            |
| Bryum algovicum                      | Drooping Thread-moss       | moss        | 26/07/2013 | -          | 2            |
| Amblystegium serpens var. serpens    |                            | moss        | 26/07/2013 | -          | 1            |
| Rhynchostegium confertum             | Clustered Feather-moss     | moss        | 31/12/1993 | 26/07/2013 | 2            |
| Funaria hygrometrica                 | Common Cord-moss           | moss        | 31/12/1993 | 31/12/1998 | 2            |
| Dicranoweisia cirrata                | Common Pincushion          | moss        | 17/02/1993 | -          | 1            |
| Campylopus introflexus               | Heath Star Moss            | moss        | 31/12/1993 | 26/07/2013 | 3            |
| Fissidens taxifolius var. taxifolius |                            | moss        | 26/07/2013 | -          | 1            |
| Fissidens taxifolius                 | Common Pocket-moss         | moss        | 30/09/1981 | -          | 1            |
| Ceratodon purpureus                  | Redshank                   | moss        | 31/12/1993 | 31/12/1998 | 2            |
| Bryum subelegans                     | Flabby Thread-moss         | moss        | 31/12/2010 | -          | 1            |
| Bryum rubens                         | Crimson-tuber Thread-moss  | moss        | 31/12/1993 | 31/12/1998 | 2            |
| Rhytidiadelphus squarrosus           | Springy Turf-moss          | moss        | 30/09/1981 | -          | 1            |
| Bryum argenteum                      | Silver-moss                | moss        | 30/09/1981 | -          | 1            |
| Barbula unguiculata                  | Bird's-claw Beard-moss     | moss        | 31/12/1993 | 31/12/1998 | 2            |
| Bryum bicolor                        |                            | moss        | 31/12/1993 | 31/12/1998 | 2            |
| Bryum                                |                            | moss        | 30/09/1981 | -          | 1            |
| Bryum capillare                      | Capillary Thread-moss      | moss        | 06/07/1992 | 31/12/1998 | 3            |
| Microbryum starckeanum               | Starke's Pottia            | moss        | 31/12/1994 | 31/12/1998 | 3            |
| Weissia controversa var. controversa |                            | moss        | 31/12/1994 | 31/12/1998 | 3            |

| Latin Name                          | Common Name                   | Taxon Group     | First Date | Last Date  | No. of Rec's |
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| Trichostomum brachydontium          | Variable Crisp-moss           | moss            | 31/12/1993 | 31/12/1998 | 2            |
| Tortula wilsonii                    | Wilson's Pottia               | moss            | 31/12/1908 | -          | 1            |
| Tortula viridifolia                 | Bristly Pottia                | moss            | 31/12/1908 | -          | 1            |
| Tortula truncata                    | Common Pottia                 | moss            | 31/12/1993 | 31/12/1998 | 2            |
| Tortula protobryoides               | Tall Pottia                   | moss            | 31/12/1991 | -          | 1            |
| Tortula muralis                     | Wall Screw-moss               | moss            | 31/12/1993 | 31/12/1998 | 2            |
| Tortula modica                      | Blunt-fruited Pottia          | moss            | 31/12/1993 | 31/12/1998 | 2            |
| Tortula lanceola                    | Lance-leaved Pottia           | moss            | 31/12/1993 | 31/12/1998 | 2            |
| Tortella flavovirens                | Yellow Crisp-moss             | moss            | 31/12/1991 | 31/12/1998 | 3            |
| Syntrichia intermedia               | Intermediate Screw-moss       | moss            | 19/03/2011 | -          | 1            |
| Pseudocrossidium hornschuchianum    | Hornschuch's Beard-moss       | moss            | 31/12/1993 | 31/12/1998 | 2            |
| Aloina aloides                      | Common Aloe-moss              | moss            | 31/12/1993 | 31/12/1998 | 2            |
| Phascum cuspidatum                  | Cuspidate Earth-moss          | moss            | 31/12/1993 | 31/12/1998 | 2            |
| Calliergonella cuspidata            | Pointed Spear-moss            | moss            | 30/09/1981 | -          | 1            |
| Microbryum rectum                   | Upright Pottia                | moss            | 31/12/1993 | 31/12/2010 | 3            |
| Microbryum floerkeanum              | Floerke's Phascum             | moss            | 31/12/1993 | -          | 1            |
| Hennediella heimii                  | Heim's Pottia                 | moss            | 31/12/1991 | 31/12/1998 | 3            |
| Didymodon vinealis                  | Soft-tufted Beard-moss        | moss            | 31/12/1994 | 31/12/1998 | 3            |
| Didymodon fallax                    | Fallacious Beard-moss         | moss            | 31/12/1993 | 26/07/2013 | 3            |
| Bryum caespiticium                  | Tufted Thread-moss            | moss            | 31/12/1993 | 31/12/1998 | 2            |
| Barbula convoluta                   | Lesser Bird's-claw Beard-moss | moss            | 31/12/1993 | 31/12/1998 | 2            |
| Orthotrichum diaphanum              | White-tipped Bristle-moss     | moss            | 31/12/1994 | -          | 2            |
| Leucodon sciuroides var. sciuroides |                               | moss            | 26/04/2010 | -          | 2            |
| Leskea polycarpa                    | Many-fruited Leskea           | moss            | 31/12/2010 | -          | 1            |
| Leptodon smithii                    | Prince-of-Wales Feather-moss  | moss            | 31/12/2010 | -          | 1            |
| Hypnum cupressiforme                |                               | moss            | 31/12/1993 | -          | 1            |
| Ctenidium molluscum                 | Chalk Comb-moss               | moss            | 06/07/1992 | 31/12/2010 | 2            |
| Pleurochaete squarrosa              | Side-fruited Crisp-moss       | moss            | 31/12/2010 | -          | 1            |
| Bryum gemmiferum                    | Small-bud Bryum               | moss            | 31/12/1993 | 31/12/1998 | 2            |
| Equisetum arvense                   | Field Horsetail               | horsetail       | 01/06/1999 | 31/12/2008 | 9            |
| Equisetum telmateia                 | Great Horsetail               | horsetail       | 01/06/1999 | 30/07/2004 | 2            |
| Asplenium ruta-muraria              | Wall-rue                      | fern            | 23/05/2004 | -          | 1            |
| Asplenium trichomanes               | Maidenhair Spleenwort         | fern            | 31/12/2004 | 31/12/2005 | 2            |
| Phyllitis scolopendrium             | Hart's-tongue                 | fern            | 31/12/2004 | 31/12/2006 | 3            |
| Pteridium aquilinum                 | Bracken                       | fern            | 31/08/1996 | 31/12/2008 | 2            |
| Polypodium vulgare                  | Polypody                      | fern            | 31/12/2004 | -          | 1            |
| Dryopteris filix-mas                | Male-fern                     | fern            | 01/06/1999 | 22/05/2013 | 3            |
| Dryopteris filix-mas agg.           | Male Fern                     | fern            | 31/08/1996 | -          | 1            |
| Taxus baccata                       | Yew                           | conifer         | 31/08/1996 | 14/09/2009 | 8            |
| Chamaecyparis lawsoniana            | Lawson's Cypress              | conifer         | 31/12/2003 | -          | 1            |
| Cupressus macrocarpa                | Monterey Cypress              | conifer         | 31/12/2003 | -          | 1            |
| Pinus nigra                         | Corsican Pine                 | conifer         | 09/02/2005 | -          | 1            |
| Juniperus communis                  | Juniper                       | conifer         | 31/12/1970 | 31/12/2006 | 2            |
| Ulex europaeus                      | Gorse                         | flowering plant | 31/12/1978 | 16/06/2006 | 12           |

| Latin Name                                   | Common Name               | Taxon Group     | First Date | Last Date  | No. of Rec's |
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| Trifolium stellatum                          | Starry Clover             | flowering plant | 08/06/2009 | 14/06/2014 | 7            |
| Vicia faba                                   | Broad Bean                | flowering plant | 13/05/2009 | -          | 2            |
| Inula conyzae                                | Ploughman's-spikenard     | flowering plant | 18/07/1990 | 31/12/2004 | 3            |
| Hypochaeris radicata                         | Cat's-ear                 | flowering plant | 04/07/1979 | 08/06/2009 | 19           |
| Hieracium pilosum                            | Fimbriate-pitted Hawkweed | flowering plant | 31/12/1981 | -          | 1            |
| Hieracium                                    | Hawkweed                  | flowering plant | 09/05/2001 | -          | 2            |
| Helianthus annuus                            | Sunflower                 | flowering plant | 08/07/2010 | -          | 1            |
| Galinsoga parviflora                         | Gallant Soldier           | flowering plant | 31/12/2008 | 28/05/2009 | 2            |
| Vicia cracca                                 | Tufted Vetch              | flowering plant | 30/09/1981 | 05/07/2010 | 13           |
| Ulex minor                                   | Dwarf Gorse               | flowering plant | 31/12/2005 | -          | 1            |
| Trifolium incarnatum                         | Crimson Clover            | flowering plant | 31/12/1998 | -          | 1            |
| Melilotus indicus                            | Small Melilot             | flowering plant | 31/12/1996 | 26/07/2011 | 3            |
| Onobrychis viciifolia                        | Sainfoin                  | flowering plant | 31/12/2004 | -          | 1            |
| Ononis repens                                | Common Restharrow         | flowering plant | 14/07/1986 | 16/06/2006 | 10           |
| Robinia pseudoacacia                         | False-acacia              | flowering plant | 31/12/1996 | 14/09/2009 | 4            |
| Trifolium arvense                            | Hare's-foot Clover        | flowering plant | 23/06/2009 | -          | 1            |
| Trifolium campestre                          | Hop Trefoil               | flowering plant | 31/12/1981 | 10/07/2012 | 9            |
| Trifolium dubium                             | Lesser Trefoil            | flowering plant | 31/12/1981 | 08/06/2009 | 8            |
| Trifolium subterraneum                       | Subterranean Clover       | flowering plant | 31/12/1993 | 31/12/1995 | 2            |
| Trifolium hybridum                           | Alsike Clover             | flowering plant | 31/12/1998 | 31/12/2004 | 2            |
| Trifolium suffocatum                         | Suffocated Clover         | flowering plant | 26/03/2000 | -          | 1            |
| Trifolium incarnatum subsp. incarnatum       | Crimson Clover            | flowering plant | 31/12/1998 | -          | 1            |
| Trifolium ochroleucon                        | Sulphur Clover            | flowering plant | 31/12/1979 | -          | 1            |
| Trifolium pratense                           | Red Clover                | flowering plant | 30/09/1981 | 05/07/2010 | 23           |
| Trifolium repens                             | White Clover              | flowering plant | 04/07/1979 | 05/07/2010 | 27           |
| Trifolium scabrum                            | Rough Clover              | flowering plant | 04/07/1979 | 12/08/2012 | 10           |
| Erigeron acer                                | Blue Fleabane             | flowering plant | 31/12/2004 | -          | 1            |
| Trifolium striatum                           | Knotted Clover            | flowering plant | 31/12/1998 | 08/06/2009 | 3            |
| Filago vulgaris                              | Common Cudweed            | flowering plant | 31/12/1993 | -          | 1            |
| Trifolium fragiferum                         | Strawberry Clover         | flowering plant | 06/08/2004 | 13/06/2013 | 3            |
| Arctium minus                                | Lesser Burdock            | flowering plant | 19/06/1990 | 08/06/2010 | 17           |
| Erigeron karvinskianus                       | Mexican Fleabane          | flowering plant | 31/12/2004 | 08/07/2010 | 2            |
| Carduus crispus                              | Welted Thistle            | flowering plant | 12/06/1990 | 30/07/2004 | 2            |
| Calendula officinalis                        | Pot Marigold              | flowering plant | 25/01/2003 | 08/06/2010 | 3            |
| Bellis perennis                              | Daisy                     | flowering plant | 31/12/1978 | 22/05/2013 | 39           |
| Aster tripolium                              | Sea Aster                 | flowering plant | 31/12/1979 | 13/05/2009 | 9            |
| Aster laevis x novi-belgii = A. x versicolor | Late Michaelmas-daisy     | flowering plant | 31/12/1997 | 20/09/2003 | 2            |
| Aster agg.                                   |                           | flowering plant | 31/12/2004 | -          | 1            |
| Aster  | Michaelmas-Daisy          | flowering plant | 08/06/2010 | -          | 1            |
| Carduus pycnocephalus                        | Plymouth Thistle          | flowering plant | 04/07/1979 | -          | 1            |
| Arctium tomentosum                           | Woolly Burdock            | flowering plant | 31/12/2006 | -          | 1            |
| Carduus tenuiflorus                          | Slender Thistle           | flowering plant | 31/12/1979 | 08/06/2010 | 6            |
| Arctium lappa                                | Greater Burdock           | flowering plant | 31/12/2004 | 13/05/2009 | 3            |
| Anthemis cotula                              | Stinking Chamomile        | flowering plant | 31/12/1994 | 02/10/2005 | 6            |

| Latin Name                                | Common Name           | Taxon Group     | First Date | Last Date  | No. of Rec's |
|---|-----------------------|-----------------|------------|------------|--------------|
| Achillea millefolium                      | Yarrow                | flowering plant | 30/09/1981 | 05/07/2010 | 32           |
| Kniphofia                                 |                       | flowering plant | 08/06/2009 | -          | 1            |
| Spiranthes spiralis                       | Autumn Lady's-tresses | flowering plant | 31/12/2003 | 13/09/2010 | 2            |
| Orchis mascula                            | Early-purple Orchid   | flowering plant | 31/12/2006 | -          | 1            |
| Ophrys apifera                            | Bee Orchid            | flowering plant | 31/12/2004 | 07/06/2007 | 5            |
| Gymnadenia conopsea                       | Fragrant Orchid       | flowering plant | 30/09/1981 | 31/12/2004 | 2            |
| Artemisia vulgaris                        | Mugwort               | flowering plant | 31/12/1981 | 08/06/2010 | 15           |
| Cirsium eriophorum                        | Woolly Thistle        | flowering plant | 30/09/2004 | -          | 1            |
| Melilotus albus                           | White Melilot         | flowering plant | 25/07/2005 | -          | 1            |
| Erigeron glaucus                          | Seaside Daisy         | flowering plant | 08/06/2010 | -          | 1            |
| Medicago sativa subsp. sativa             | Lucerne               | flowering plant | 30/05/2012 | -          | 1            |
| Crepis vesicaria                          | Beaked Hawk's-beard   | flowering plant | 04/07/1979 | 30/05/2013 | 14           |
| Crepis capillaris                         | Smooth Hawk's-beard   | flowering plant | 30/09/1981 | 08/06/2010 | 11           |
| Crepis biennis                            | Rough Hawk's-beard    | flowering plant | 18/07/1990 | 05/07/2010 | 3            |
| Conyza sumatrensis                        | Guernsey Fleabane     | flowering plant | 31/12/1995 | 31/10/1998 | 2            |
| Conyza canadensis                         | Canadian Fleabane     | flowering plant | 31/12/2004 | 31/12/2006 | 2            |
| Carduus nutans                            | Musk Thistle          | flowering plant | 30/09/1981 | 31/12/2006 | 3            |
| Cirsium palustre                          | Marsh Thistle         | flowering plant | 31/12/1978 | 31/12/2004 | 3            |
| Eupatorium cannabinum                     | Hemp-agrimony         | flowering plant | 04/07/1979 | 22/05/2013 | 15           |
| Cirsium arvense                           | Creeping thistle      | flowering plant | 04/07/1979 | 22/05/2013 | 38           |
| Cirsium acaule                            | Dwarf Thistle         | flowering plant | 30/09/1981 | 16/06/2006 | 10           |
| Cichorium intybus                         | Chicory               | flowering plant | 06/08/2004 | -          | 1            |
| Centaurea scabiosa                        | Greater Knapweed      | flowering plant | 30/09/1981 | 16/06/2006 | 10           |
| Centaurea nigra                           | Common Knapweed       | flowering plant | 30/09/1981 | 22/05/2013 | 22           |
| Centaurea montana                         | Perennial Cornflower  | flowering plant | 30/05/2005 | 17/06/2005 | 3            |
| Centaurea calcitrapa                      | Red Star-thistle      | flowering plant | 31/12/1993 | 13/09/2005 | 2            |
| Carlina vulgaris                          | Carline Thistle       | flowering plant | 30/09/1981 | 13/09/2005 | 2            |
| Cirsium vulgare                           | Spear thistle         | flowering plant | 04/07/1979 | 22/05/2013 | 37           |
| Leucanthemum vulgare                      | Oxeye Daisy           | flowering plant | 30/09/1981 | 03/06/2013 | 14           |
| Tussilago farfara                         | Colt's-foot           | flowering plant | 31/12/1981 | 08/06/2009 | 11           |
| Pulicaria dysenterica                     | Common Fleabane       | flowering plant | 01/06/1999 | 22/05/2013 | 10           |
| Pilosella officinarum                     | Mouse-ear-hawkweed    | flowering plant | 31/12/1978 | 08/06/2009 | 9            |
| Pilosella aurantiaca                      | Fox-and-cubs          | flowering plant | 31/12/1981 | 31/12/1983 | 2            |
| Picris hieracioides                       | Hawkweed Oxtongue     | flowering plant | 04/07/1979 | 08/06/2009 | 21           |
| Picris echioides                          | Bristly Oxtongue      | flowering plant | 31/12/1981 | 05/07/2010 | 14           |
| Petasites fragrans                        | Winter Heliotrope     | flowering plant | 31/12/2004 | 29/01/2009 | 3            |
| Mycelis muralis                           | Wall Lettuce          | flowering plant | 31/12/2004 | 31/12/2006 | 2            |
| Senecio erucifolius                       | Hoary Ragwort         | flowering plant | 31/12/1981 | 22/05/2013 | 14           |
| Matricaria discoidea                      | Pineappleweed         | flowering plant | 04/07/1979 | 16/06/2006 | 8            |
| Senecio inaequidens                       | Narrow-leaved Ragwort | flowering plant | 31/12/2004 | -          | 1            |
| Leucanthemum lacustre x maximum = L. x su | Shasta Daisy          | flowering plant | 31/12/1994 | 31/12/2000 | 2            |
| Leucanthemum                              |                       | flowering plant | 08/06/2009 | -          | 1            |
| Leontodon saxatilis                       | Lesser Hawkbit        | flowering plant | 31/12/2004 | 22/05/2013 | 4            |
| Leontodon hispidus                        | Rough Hawkbit         | flowering plant | 30/09/1981 | 16/06/2006 | 15           |

| Latin Name                             | Common Name                  | Taxon Group     | First Date | Last Date  | No. of Rec's |
|--|------------------------------|-----------------|------------|------------|--------------|
| Leontodon autumnalis                   | Autumn Hawkbit               | flowering plant | 06/07/1992 | 08/07/2010 | 9            |
| Lapsana communis                       | Nipplewort                   | flowering plant | 31/12/2004 | 31/12/2006 | 3            |
| Lactuca serriola                       | Prickly Lettuce              | flowering plant | 23/05/2004 | 31/12/2004 | 2            |
| Tripleurospermum inodorum              | Scentless Mayweed            | flowering plant | 04/07/1979 | 31/12/2005 | 10           |
| Melilotus altissimus                   | Tall Melilot                 | flowering plant | 31/12/1981 | 31/12/2005 | 6            |
| Matricaria recutita                    | Scented Mayweed              | flowering plant | 31/12/2004 | 22/05/2013 | 2            |
| Sonchus asper                          | Prickly Sow-thistle          | flowering plant | 04/07/1979 | 08/06/2009 | 18           |
| Tragopogon pratensis subsp. minor      | Goat's-Beard                 | flowering plant | 10/05/2011 | -          | 1            |
| Tragopogon pratensis                   | Goat's-beard                 | flowering plant | 14/07/1986 | 05/07/2010 | 10           |
| Tragopogon porrifolius                 | Salsify                      | flowering plant | 31/12/1996 | 31/05/2005 | 2            |
| Taraxacum laevigatum                   | Lesser Dandelion             | flowering plant | 30/09/1981 | 31/12/1998 | 3            |
| Taraxacum officinale agg.              | Dandelion                    | flowering plant | 31/12/1978 | 05/07/2010 | 10           |
| Taraxacum aggregate                    |                              | flowering plant | 09/02/2005 | 16/06/2006 | 4            |
| Taraxacum                              | Dandelion Agg.               | flowering plant | 06/07/1992 | 31/12/2004 | 4            |
| Tanacetum vulgare                      | Tansy                        | flowering plant | 31/12/2004 | -          | 1            |
| Senecio cineraria                      | Silver Ragwort               | flowering plant | 04/07/1979 | 08/06/2009 | 5            |
| Sonchus oleraceus                      | Smooth Sow-thistle           | flowering plant | 04/07/1979 | 08/06/2009 | 10           |
| Campanula portenschlagiana             | Adria Bellflower             | flowering plant | 10/02/2005 | -          | 1            |
| Sonchus arvensis                       | Perennial Sow-thistle        | flowering plant | 04/07/1979 | 08/06/2009 | 10           |
| Sonchus                                | Sow-Thistle                  | flowering plant | 05/07/2010 | -          | 1            |
| Solidago canadensis                    | Canadian Goldenrod           | flowering plant | 31/12/2004 | -          | 1            |
| Silybum marianum                       | Milk Thistle                 | flowering plant | 31/05/2004 | -          | 1            |
| Seriphidium maritimum                  | Sea Wormwood                 | flowering plant | 31/12/1979 | 29/06/2005 | 4            |
| Senecio vulgaris                       | Groundsel                    | flowering plant | 31/12/1978 | 11/05/2012 | 18           |
| Senecio viscosus                       | Sticky Groundsel             | flowering plant | 31/12/1981 | 08/06/2009 | 6            |
| Senecio squalidus                      | Oxford Ragwort               | flowering plant | 04/07/1979 | 08/06/2009 | 8            |
| Senecio jacobaea                       | Ragwort                      | flowering plant | 31/12/1978 | 05/07/2010 | 36           |
| Tanacetum parthenium                   | Feverfew                     | flowering plant | 30/07/2004 | 31/12/2004 | 2            |
| Lathyrus nissolia                      | Grass Vetchling              | flowering plant | 31/12/2004 | 16/06/2006 | 2            |
| Tripleurospermum maritimum             | Sea Mayweed                  | flowering plant | 31/12/1993 | 11/05/2012 | 3            |
| Valerianella carinata                  | Keeled-fruited Cornsalad     | flowering plant | 31/12/1993 | 23/05/2004 | 2            |
| Valerianella locusta                   | Common Cornsalad             | flowering plant | 31/12/1978 | 30/05/2005 | 4            |
| Anthyllis vulneraria                   | Kidney Vetch                 | flowering plant | 31/12/1981 | 30/05/2012 | 10           |
| Anthyllis vulneraria subsp. vulneraria | Kidney Vetch                 | flowering plant | 31/12/2004 | 16/06/2006 | 3            |
| Galega officinalis                     | Goat's-rue                   | flowering plant | 31/12/1981 | 31/12/1983 | 2            |
| Hippocrepis comosa                     | Horseshoe Vetch              | flowering plant | 30/09/1981 | 16/06/2006 | 3            |
| Laburnum anagyroides                   | Laburnum                     | flowering plant | 31/12/2000 | 31/12/2003 | 2            |
| Succisa pratensis                      | Devil's-bit Scabious         | flowering plant | 30/09/1981 | -          | 1            |
| Lathyrus latifolius                    | Broad-leaved Everlasting-pea | flowering plant | 31/12/1990 | 04/09/2010 | 5            |
| Scabiosa columbaria                    | Small Scabious               | flowering plant | 30/09/1981 | 31/12/2006 | 5            |
| Lathyrus pratensis                     | Meadow Vetchling             | flowering plant | 30/09/1981 | 10/07/2012 | 16           |
| Lotus corniculatus                     | Common Bird's-foot-trefoil   | flowering plant | 04/07/1979 | 22/05/2013 | 31           |
| Lotus pedunculatus                     | Greater Bird's-foot-trefoil  | flowering plant | 09/05/2001 | 31/05/2005 | 7            |
| Medicago arabica                       | Spotted Medick               | flowering plant | 31/12/1998 | 08/06/2009 | 11           |

| Latin Name                                    | Common Name              | Taxon Group     | First Date | Last Date  | No. of Rec's |
|---|--------------------------|-----------------|------------|------------|--------------|
| Medicago lupulina                             | Black Medick             | flowering plant | 04/07/1979 | 05/07/2010 | 19           |
| Medicago minima                               | Bur Medick               | flowering plant | 31/12/1937 | -          | 1            |
| Medicago polymorpha                           | Toothed Medick           | flowering plant | 31/12/1953 | 08/06/2009 | 5            |
| Medicago sativa                               | Medick                   | flowering plant | 18/07/1990 | -          | 1            |
| Medicago sativa subsp. falcata                | Sickle Medick            | flowering plant | 31/12/1986 | -          | 1            |
| Lathyrus aphaca                               | Yellow Vetchling         | flowering plant | 31/12/1979 | -          | 1            |
| Sambucus nigra                                | Elder                    | flowering plant | 31/12/1981 | 22/05/2013 | 23           |
| Campanula rotundifolia                        | Harebell                 | flowering plant | 30/09/1981 | 30/09/2004 | 4            |
| Phyteuma orbiculare                           | Round-headed Rampion     | flowering plant | 31/12/1978 | -          | 1            |
| Euonymus europaeus                            | Spindle                  | flowering plant | 31/05/2005 | 31/12/2006 | 2            |
| Euonymus japonicus                            | Evergreen Spindle        | flowering plant | 07/04/2003 | 08/06/2010 | 3            |
| Daucus carota                                 | Carrot                   | flowering plant | 30/09/1981 | 08/06/2010 | 12           |
| Cornus sanguinea                              | Dogwood                  | flowering plant | 30/09/1981 | 02/01/2012 | 10           |
| Dactylorhiza fuchsii                          | Common Spotted-orchid    | flowering plant | 30/09/1981 | 16/06/2006 | 7            |
| Philadelphus coronarius x microphyllus x pub  | Hairy Mock-orange        | flowering plant | 03/07/2003 | -          | 1            |
| Symphoricarpos albus                          | Snowberry                | flowering plant | 31/12/2004 | 31/12/2006 | 3            |
| Dioscorea communis                            | Black Bryony             | flowering plant | 01/06/1999 | 12/05/2008 | 3            |
| Tripleurospermum maritimum                    | Scentless Mayweed agg.   | flowering plant | 19/06/1990 | 31/12/1998 | 2            |
| Viburnum lantana                              | Wayfaring-tree           | flowering plant | 30/09/1981 | 16/06/2006 | 6            |
| Viburnum opulus                               | Guelder-rose             | flowering plant | 16/06/2006 | 12/05/2008 | 2            |
| Viburnum tinus                                | Laurustinus              | flowering plant | 09/02/2005 | -          | 1            |
| Centranthus ruber                             | Red valerian             | flowering plant | 31/12/1978 | 08/06/2010 | 17           |
| Dipsacus fullonum                             | Wild Teasel              | flowering plant | 31/12/1983 | 31/12/2006 | 15           |
| Dipsacus fullonum                             | Wild Teasel              | flowering plant | 31/12/1981 | 22/05/2013 | 6            |
| Knautia arvensis                              | Field Scabious           | flowering plant | 14/06/1990 | 31/12/2004 | 4            |
| Lonicera caprifolium x etrusca = L. x italica | Garden Honeysuckle       | flowering plant | 09/05/2001 | -          | 2            |
| Lonicera periclymenum                         | Honeysuckle              | flowering plant | 31/08/1996 | 08/06/2009 | 5            |
| Bryonia dioica                                | White Bryony             | flowering plant | 31/12/1981 | 16/06/2006 | 4            |
| Fragaria ananassa                             | Garden Strawberry        | flowering plant | 31/12/2003 | -          | 1            |
| Cotoneaster horizontalis                      | Wall Cotoneaster         | flowering plant | 31/12/2004 | 11/05/2012 | 5            |
| Cotoneaster integrifolius                     | Small-leaved cotoneaster | flowering plant | 31/12/1990 | 22/09/2010 | 3            |
| Cotoneaster lacteus                           | Late Cotoneaster         | flowering plant | 22/09/2010 | -          | 1            |
| Cotoneaster rehderi                           | Bullate Cotoneaster      | flowering plant | 31/12/1997 | 16/06/2006 | 2            |
| Cotoneaster simonsii                          | Himalayan contoneaster   | flowering plant | 30/09/1981 | -          | 1            |
| Crataegus monogyna                            | Hawthorn                 | flowering plant | 31/12/1978 | 22/05/2013 | 29           |
| Crataegus monogyna x laevigata = C. x medi    |                          | flowering plant | 31/12/2004 | 31/12/2006 | 4            |
| Daucus carota subsp. gummifer                 | Sea Carrot               | flowering plant | 18/06/1990 | -          | 1            |
| Filipendula vulgaris                          | Dropwort                 | flowering plant | 31/08/1996 | -          | 1            |
| Agrimonia eupatoria                           | Agrimony                 | flowering plant | 30/09/1981 | 08/06/2010 | 12           |
| Fragaria vesca                                | Wild Strawberry          | flowering plant | 08/07/2010 | 22/05/2013 | 2            |
| Geum urbanum                                  | Wood Avens               | flowering plant | 31/08/1996 | 16/06/2006 | 6            |
| Kerria japonica                               | Kerria                   | flowering plant | 09/02/2005 | -          | 1            |
| Malus pumila                                  | Apple                    | flowering plant | 31/12/2004 | 16/06/2006 | 4            |
| Malus sylvestris                              | Crab Apple               | flowering plant | 31/12/2004 | -          | 1            |

| Latin Name                    | Common Name              | Taxon Group     | First Date     | Last Date  | No. of Rec's |
|-------------------------------|--------------------------|-----------------|----------------|------------|--------------|
| Elytrigia juncea              | Sand Couch               | flowering plant | 31/12/2003     | -          | 1            |
| Potentilla reptans            | Creeping Cinquefoil      | flowering plant | 04/07/1979     | 22/05/2013 | 26           |
| Prunus                        | Planted Cherry           | flowering plant | 14/09/2009     | -          | 1            |
| Filipendula ulmaria           | Meadowsweet              | flowering plant | 09/05/2001     | -          | 2            |
| Setaria viridis               | Green Bristle-grass      | flowering plant | 31/12/2005     | -          | 1            |
| Poa compressa                 | Flattened Meadow-grass   | flowering plant | 30/09/1981     | -          | 1            |
| Poa humilis                   | Spreading Meadow-grass   | flowering plant | 31/12/1997     | 26/07/2011 | 2            |
| Poa infirma                   | Early Meadow-grass       | flowering plant | 26/03/2000     | 19/03/2011 | 9            |
| Poa pratensis                 | Smooth Meadow-grass      | flowering plant | 30/09/1981     | 31/12/2006 | 7            |
| Poa trivialis                 | Rough Meadow-grass       | flowering plant | 31/12/1981     | 08/06/2009 | 10           |
| Polypogon viridis             | Water Bent               | flowering plant | 31/12/2004     | 08/07/2010 | 2            |
| Puccinellia                   | Saltmarsh-Grass          | flowering plant | 09/05/2001     | -          | 2            |
| Puccinellia distans           | Reflexed Saltmarsh-Grass | flowering plant | 31/12/1981     | 17/06/2005 | 4            |
| Cotoneaster dielsianus        | Diels' Cotoneaster       | flowering plant | 16/06/2006     | -          | 1            |
| Setaria pumila                | Yellow Bristle-grass     | flowering plant | 31/12/1996     | -          | 1            |
| Cotoneaster                   |                          | flowering plant | 11/05/2012     | -          | 1            |
| Spartina maritima             | Small Cord-grass         | flowering plant | 06/05/2006     | -          | 1            |
| Trisetum flavescens           | Yellow Oat-grass         | flowering plant | 30/09/1981     | 16/06/2006 | 10           |
| Vulpia myuros                 | Rat's-tail Fescue        | flowering plant | 31/12/2003     | -          | 1            |
| Sparganium                    |                          | flowering plant | 06/05/2003     | -          | 1            |
| Sparganium erectum            | Branched Bur-reed        | flowering plant | 01/06/1999     | 13/05/2009 | 3            |
| Typha latifolia               | Bulrush                  | flowering plant | 01/06/1999     | 22/05/2013 | 7            |
| Hippophae rhamnoides          | Sea-buckthorn            | flowering plant | 31/12/1995     | -          | 1            |
| Prunus spinosa                | Blackthorn               | flowering plant | 18/07/1990     | 02/01/2012 | 15           |
| Puccinellia maritima          | Common Saltmarsh-grass   | flowering plant | 31/12/1979     | 31/12/2004 | 6            |
| Sedum acre                    | Biting Stonecrop         | flowering plant | 31/12/1978     | 13/06/2013 | 12           |
| Prunus avium                  | Wild Cherry              | flowering plant | 19/05/2006     | 12/05/2008 | 2            |
| Ulmus                         | Elm                      | flowering plant | 01/06/1999     | 31/12/2006 | 5            |
| Ulmus glabra                  | Wych Elm                 | flowering plant | 31/12/2004     | -          | 1            |
| Ulmus minor                   | Elm                      | flowering plant | 31/12/2000     | -          | 1            |
| Ulmus minor subsp. sarniensis | Jersey Elm               | flowering plant | 31/12/1999     | -          | 1            |
| Ulmus procera                 | English Elm              | flowering plant | 22/05/1990     | 31/12/2004 | 6            |
| Parietaria judaica            | Pellitory-of-the-wall    | flowering plant | 31/12/1998     | 08/06/2009 | 7            |
| Soleirolia soleirolii         | Mind-your-own-business   | flowering plant | 31/12/2004     | 14/10/2008 | 3            |
| Sorbus aucuparia              | Rowan                    | flowering plant | 31/12/2004     | 08/07/2010 | 4            |
| Urtica urens                  | Small Nettle             | flowering plant | 30/07/2004     | -          | 1            |
| Sorbus aria                   | Common Whitebeam         | flowering plant | 31/08/1996     | 16/06/2006 | 3            |
| Sedum album                   | White Stonecrop          | flowering plant | <br>31/12/1978 | 08/06/2009 | 13           |
| Sedum anglicum                | English Stonecrop        | flowering plant | 31/12/1981     | 13/06/2013 | 8            |
| Sedum rupestre                | Reflexed Stonecrop       | flowering plant | 09/02/2005     | -          | 1            |
| Sedum spectabile              | Butterfly Stonecrop      | flowering plant | 14/10/2008     | -          | 1            |
| Sedum spurium                 | Caucasian-stonecrop      | flowering plant | 31/12/1989     | 31/12/2004 | 2            |
| Umbilicus rupestris           | Navelwort                | flowering plant | 31/12/2004     | -          | 1            |
| Ribes nigrum                  | Black Currant            | flowering plant | 31/12/2006     | -          | 1            |

| Latin Name                                 | Common Name             | Taxon Group     | First Date | Last Date  | No. of Rec's |
|--|-------------------------|-----------------|------------|------------|--------------|
| Ribes rubrum                               | Red Currant             | flowering plant | 31/12/2006 | -          | 1            |
| Urtica dioica                              | Common Nettle           | flowering plant | 31/12/1978 | 22/05/2013 | 35           |
| Rosa stylosa                               | Short-styled Field-rose | flowering plant | 16/06/2006 | -          | 1            |
| Poa pratensis                              | Smooth Meadow-Grass     | flowering plant | 31/08/1996 | 23/05/2004 | 8            |
| Pyrus communis                             | Pear                    | flowering plant | 31/12/1993 | -          | 1            |
| Rosa                                       | Rose                    | flowering plant | 01/06/1999 | 08/06/2009 | 2            |
| Rosa canina agg.                           | Dog Rose                | flowering plant | 31/12/1983 | 16/06/2006 | 9            |
| Rosa rubiginosa agg.                       | Sweet-Briar             | flowering plant | 31/12/1994 | 31/12/2003 | 2            |
| Rosa arvensis                              | Field-rose              | flowering plant | 16/06/2006 | 22/05/2013 | 2            |
| Rosa canina                                | Dog-rose                | flowering plant | 31/12/1981 | 22/05/2013 | 4            |
| Rosa canina x obtusifolia = R. x dumetorum | Rose                    | flowering plant | 30/06/2004 | -          | 1            |
| Sorbus intermedia                          | Swedish Whitebeam       | flowering plant | 31/12/2004 | -          | 1            |
| Rosa rugosa                                | Japanese Rose           | flowering plant | 31/12/2004 | 08/06/2009 | 2            |
| Prunus cerasifera                          | Cherry Plum             | flowering plant | 31/12/2004 | 31/12/2006 | 3            |
| Rubus fruticosus agg.                      | Bramble                 | flowering plant | 31/12/1978 | 22/05/2013 | 37           |
| Rubus caesius                              | Dewberry                | flowering plant | 31/12/2004 | 16/06/2006 | 3            |
| Rubus armeniacus                           | Bramble                 | flowering plant | 17/06/2005 | -          | 1            |
| Rubus laciniatus                           | Bramble                 | flowering plant | 31/12/1994 | -          | 1            |
| Sanguisorba minor                          | Salad Burnet            | flowering plant | 30/09/1981 | 30/09/2004 | 9            |
| Sanguisorba minor subsp. minor             | Salad Burnet            | flowering plant | 14/06/1990 | 16/06/2006 | 7            |
| Sanguisorba minor subsp. muricata          | Fodder Burnet           | flowering plant | 31/12/1979 | -          | 1            |
| Sorbus aria agg.                           | Whitebeam               | flowering plant | 18/07/1990 | -          | 1            |
| Rosa rubiginosa                            | Sweet-briar             | flowering plant | 31/12/2006 | -          | 1            |
| Smyrnium olusatrum                         | Alexanders              | flowering plant | 31/12/1978 | 20/02/2015 | 13           |
| Foeniculum vulgare                         | Fennel                  | flowering plant | 31/12/1981 | 08/06/2010 | 7            |
| Allium triquetrum                          | Three-cornered Garlic   | flowering plant | 31/12/1995 | 06/05/2011 | 10           |
| Allium subhirsutum                         | Hairy Garlic            | flowering plant | 22/05/2010 | -          | 2            |
| Allium schoenoprasum                       | Chives                  | flowering plant | 22/05/2010 | -          | 2            |
| Allium roseum                              | Rosy Garlic             | flowering plant | 22/05/2010 | -          | 2            |
| Allium neapolitanum                        | Neapolitan Garlic       | flowering plant | 31/12/1996 | 30/06/2003 | 2            |
| llex aquifolium                            | Holly                   | flowering plant | 31/08/1996 | 12/05/2008 | 9            |
| Hedera helix                               | lvy                     | flowering plant | 30/09/1981 | 03/06/2013 | 25           |
| Galanthus nivalis                          | Snowdrop                | flowering plant | 09/02/2005 | -          | 2            |
| Torilis japonica                           | Upright Hedge-parsley   | flowering plant | 18/07/1990 | 31/12/2006 | 5            |
| Narcissus                                  | daffodils               | flowering plant | 09/02/2005 | 31/12/2006 | 5            |
| Sison amomum                               | Stone Parsley           | flowering plant | 31/12/2005 | 05/07/2010 | 3            |
| Sanicula europaea                          | Sanicle                 | flowering plant | 31/12/2005 | 12/05/2008 | 3            |
| Pimpinella saxifraga                       | Burnet-saxifrage        | flowering plant | 30/09/1981 | 25/07/2005 | 8            |
| Petroselinum segetum                       | Corn Parsley            | flowering plant | 31/12/2004 | -          | 1            |
| Pastinaca sativa                           | Wild Parsnip            | flowering plant | 30/09/1981 | 16/06/2006 | 16           |
| Oenanthe crocata                           | Hemlock Water-dropwort  | flowering plant | 01/06/1999 | 06/05/2006 | 6            |
| Heracleum sphondylium                      | Hogweed                 | flowering plant | 31/12/1981 | 10/07/2012 | 27           |
| Poa bulbosa                                | Bulbous Meadow-grass    | flowering plant | 31/12/1979 | 26/02/2010 | 7            |
| Torilis nodosa                             | Knotted Hedge-parsley   | flowering plant | 26/03/2000 | 17/06/2005 | 5            |

| Latin Name                                     | Common Name             | Taxon Group     | First Date | Last Date  | No. of Rec's |
|--|-------------------------|-----------------|------------|------------|--------------|
| Scilla liliohyacinthus                         | Pyrenean Squill         | flowering plant | 22/05/2010 | -          | 2            |
| Iris pseudacorus                               | Yellow Iris             | flowering plant | 31/08/1996 | 19/05/2011 | 12           |
| Iris orientalis                                | Turkish Iris            | flowering plant | 31/12/2003 | -          | 1            |
| Iris germanica                                 | Bearded Iris            | flowering plant | 22/05/2010 | -          | 2            |
| Iris foetidissima                              | Stinking Iris           | flowering plant | 08/03/2003 | 31/12/2006 | 5            |
| Iris   |                         | flowering plant | 08/06/2009 | -          | 1            |
| Gladiolus communis                             | Eastern Gladiolus       | flowering plant | 31/12/2004 | -          | 1            |
| Crocus tommasinianus                           | Early Crocus            | flowering plant | 31/12/2003 | 09/02/2005 | 3            |
| Crocus angustifolius x flavus = C. x stellaris | Yellow Crocus           | flowering plant | 09/02/2005 | -          | 1            |
| Allium vineale                                 | Wild Onion              | flowering plant | 31/12/1981 | 10/02/2005 | 7            |
| Yucca  |                         | flowering plant | 08/06/2009 | -          | 1            |
| Vicia hirsuta                                  | Hairy Tare              | flowering plant | 31/12/1981 | 30/05/2013 | 7            |
| Ornithogalum angustifolium                     | Star-of-Bethlehem       | flowering plant | 31/12/2004 | 12/05/2008 | 3            |
| Muscari armeniacum                             | Garden Grape-hyacinth   | flowering plant | 31/12/2005 | 13/03/2008 | 2            |
| Hyacinthoides non-scripta x hispanica = $H. x$ | Hybrid bluebell         | flowering plant | 31/12/2004 | 03/06/2013 | 15           |
| Hyacinthoides non-scripta                      | Bluebell                | flowering plant | 31/08/1996 | 11/05/2012 | 5            |
| Hyacinthoides hispanica                        | Spanish Bluebell        | flowering plant | 09/05/2001 | 22/05/2013 | 3            |
| Asparagus officinalis                          | Garden Asparagus        | flowering plant | 31/12/1981 | 08/06/2005 | 3            |
| Tristagma uniflorum                            | Spring Starflower       | flowering plant | 13/03/2008 | -          | 1            |
| Narcissus poeticus                             | Pheasant's-eye Daffodil | flowering plant | 09/05/2001 | -          | 2            |
| Crocosmia pottsii x aurea = C. x crocosmiiflor | Montbretia              | flowering plant | 20/09/2003 | 31/12/2006 | 3            |
| Lolium perenne                                 | Perennial Rye-grass     | flowering plant | 04/07/1979 | 05/07/2010 | 37           |
| Heracleum mantegazzianum                       | Giant Hogweed           | flowering plant | 01/04/2005 | -          | 1            |
| Ribes sanguineum                               | Flowering Currant       | flowering plant | 31/12/2000 | 31/12/2003 | 2            |
| Glyceria maxima                                | Reed Sweet-grass        | flowering plant | 01/06/1999 | 31/12/2006 | 6            |
| Helictotrichon pratense                        | Meadow Oat-grass        | flowering plant | 30/09/1981 | 16/06/2006 | 5            |
| Helictotrichon pubescens                       | Downy Oat-grass         | flowering plant | 06/07/1992 | 16/06/2006 | 4            |
| Holcus lanatus                                 | Yorkshire-fog           | flowering plant | 14/07/1986 | 10/07/2012 | 33           |
| Hordeum marinum                                | Sea Barley              | flowering plant | 31/12/1971 | 31/12/1978 | 2            |
| Hordeum murinum                                | Wall Barley             | flowering plant | 04/07/1979 | 08/06/2009 | 12           |
| Festuca rubra subsp. litoralis                 | Red Fescue              | flowering plant | 30/08/2006 | -          | 2            |
| Koeleria macrantha                             | Crested Hair-grass      | flowering plant | 30/09/1981 | 16/06/2006 | 2            |
| Festuca rubra                                  | Red Fescue              | flowering plant | 31/12/1981 | 08/06/2010 | 9            |
| Parapholis incurva                             | Curved Hard-grass       | flowering plant | 31/12/1993 | 08/06/2009 | 3            |
| Parapholis strigosa                            | Hard-grass              | flowering plant | 04/07/1979 | 17/06/2005 | 5            |
| Phalaris arundinacea                           | Reed Canary-grass       | flowering plant | 01/06/1999 | 09/05/2001 | 7            |
| Phleum bertolonii                              | Smaller Cat's-tail      | flowering plant | 14/07/1986 | 16/06/2006 | 12           |
| Phleum pratense                                | Timothy                 | flowering plant | 18/07/1990 | 16/06/2006 | 6            |
| Phragmites australis                           | Common Reed             | flowering plant | 31/12/1998 | 13/05/2009 | 22           |
| Poa  | Meadow-Grass            | flowering plant | 12/06/1990 | 19/06/1990 | 3            |
| Anacamptis pyramidalis                         | Pyramidal Orchid        | flowering plant | 30/09/1981 | 10/07/2012 | 16           |
| Koeleria macrantha                             | Crested Hair-Grass      | flowering plant | 14/06/1990 | 06/07/1992 | 3            |
| Aethusa cynapium                               | Fool's Parsley          | flowering plant | 30/07/2004 | -          | 1            |
| Daucus carota subsp. carota                    | Wild Carrot             | flowering plant | 31/12/2004 | 08/07/2010 | 6            |

| Latin Name                                   | Common Name            | Taxon Group     | ] [ | First Date | Last Date  | No. of Rec's |
|--|------------------------|-----------------|-----|------------|------------|--------------|
| Potentilla anserina                          | Silverweed             | flowering plant | 1   | 31/12/1981 | 31/12/2008 | 21           |
| Crithmum maritimum                           | Rock Samphire          | flowering plant |     | 04/07/1979 | 08/06/2010 | 11           |
| Conopodium majus                             | Pignut                 | flowering plant |     | 14/07/1986 | -          | 2            |
| Conium maculatum                             | Hemlock                | flowering plant |     | 31/12/1978 | 30/07/2004 | 6            |
| Chaerophyllum temulum                        | Rough Chervil          | flowering plant |     | 16/06/2006 | -          | 1            |
| Berula erecta                                | Lesser Water-parsnip   | flowering plant |     | 05/07/2003 | -          | 1            |
| Apium nodiflorum                             | Fool's-water-cress     | flowering plant |     | 01/06/1999 | 11/10/2007 | 6            |
| Glyceria fluitans                            | Floating Sweet-grass   | flowering plant |     | 01/06/1999 | 16/06/2006 | 4            |
| Anthriscus sylvestris                        | Cow Parsley            | flowering plant |     | 31/12/1978 | 05/07/2010 | 31           |
| Poa annua                                    | Annual Meadow-grass    | flowering plant |     | 31/12/1978 | 19/03/2011 | 23           |
| Aegopodium podagraria                        | Ground-elder           | flowering plant |     | 31/12/2004 | 31/12/2006 | 3            |
| Elytrigia repens                             | Common Couch           | flowering plant |     | 14/06/1990 | 08/06/2010 | 9            |
| Festuca                                      | Fescue                 | flowering plant |     | 14/06/1990 | 10/07/2012 | 3            |
| Festuca ovina agg.                           | Sheep's Fescue agg.    | flowering plant |     | 30/09/1981 | 16/06/2006 | 10           |
| Festuca rubra agg.                           | Red Fescue             | flowering plant |     | 22/05/1990 | 16/06/2006 | 18           |
| Festuca arundinacea                          | Tall Fescue            | flowering plant |     | 30/09/1981 | 13/05/2009 | 12           |
| Festuca ovina                                | Sheep's-fescue         | flowering plant |     | 06/07/1992 | 08/06/2010 | 2            |
| Festuca pratensis x Lolium perenne = X Festu | Hybrid Fescue          | flowering plant |     | 16/06/2006 | -          | 1            |
| Apium graveolens                             | Wild Celery            | flowering plant |     | 14/08/2004 | -          | 1            |
| Rumex  | Dock                   | flowering plant |     | 12/06/1990 | 18/06/1990 | 2            |
| Anagallis arvensis subsp. arvensis           | Scarlet Pimpernel      | flowering plant |     | 31/12/1983 | 18/07/1990 | 2            |
| Anagallis arvensis                           | Scarlet Pimpernel      | flowering plant |     | 04/07/1979 | 08/06/2010 | 8            |
| Tamarix gallica                              | Tamarisk               | flowering plant |     | 31/12/1981 | 08/06/2009 | 12           |
| Rumex sanguineus                             | Wood Dock              | flowering plant |     | 31/08/1996 | 31/12/2006 | 4            |
| Rumex pulcher                                | Fiddle Dock            | flowering plant |     | 31/12/2003 | 08/07/2010 | 3            |
| Rumex obtusifolius                           | Broad-leaved Dock      | flowering plant |     | 31/12/1981 | 16/06/2006 | 16           |
| Rumex crispus subsp. littoreus               | Curled Dock            | flowering plant |     | 09/05/2001 | 20/09/2003 | 11           |
| Rumex crispus                                | Curled Dock            | flowering plant |     | 31/12/1978 | 05/07/2010 | 16           |
| Rumex conglomeratus                          | Clustered Dock         | flowering plant |     | 30/07/2004 | 31/12/2006 | 3            |
| Rumex acetosella                             | Sheep's Sorrel         | flowering plant |     | 31/12/1981 | 31/08/1996 | 3            |
| Atriplex glabriuscula                        | Babington's Orache     | flowering plant |     | 04/07/1979 | 20/09/2003 | 5            |
| Rumex acetosa                                | Common Sorrel          | flowering plant |     | 31/12/1983 | 08/07/2010 | 12           |
| Primula veris                                | Cowslip                | flowering plant |     | 31/12/1979 | 31/12/2006 | 12           |
| Polygonum aviculare                          | Knotgrass              | flowering plant |     | 31/12/1981 | 08/06/2009 | 3            |
| Polygonum arenastrum                         | Equal-leaved Knotgrass | flowering plant |     | 31/12/1981 | 08/07/2010 | 7            |
| Polygonum aviculare agg.                     | Knotgrass agg.         | flowering plant |     | 31/12/1983 | 25/07/2005 | 4            |
| Persicaria maculosa                          | Redshank               | flowering plant |     | 30/07/2004 | 31/12/2006 | 4            |
| Fallopia japonica                            | Japanese Knotweed      | flowering plant |     | 30/06/2003 | 31/12/2006 | 3            |
| Fallopia baldschuanica                       | Russian-vine           | flowering plant |     | 31/10/1998 | -          | 1            |
| Limonium procerum subsp. procerum            | Sea-Lavender           | flowering plant |     | 31/07/2006 | -          | 1            |
| Limonium procerum                            | Sea-Lavender           | flowering plant |     | 31/07/2006 | -          | 1            |
| Armeria maritima subsp. maritima             | Thrift                 | flowering plant |     | 06/05/2006 | -          | 1            |
| Armeria maritima                             | Sea Pink               | flowering plant |     | 31/12/1978 | 11/05/2012 | 14           |
| Rumex acetosa subsp. acetosa                 | Common Sorrel          | flowering plant |     | 25/06/2004 | -          | 1            |

| Latin Name                                  | Common Name             | Taxon Group     | First Date | Last Date  | No. of Rec's |
|---|-------------------------|-----------------|------------|------------|--------------|
| Lamium galeobdolon subsp. argentatum        | Yellow Archangel        | flowering plant | 31/12/2006 | -          | 2            |
| Stachys sylvatica                           | Hedge Woundwort         | flowering plant | 01/06/1999 | 31/12/2006 | 5            |
| Stachys palustris                           | Marsh Woundwort         | flowering plant | 30/07/2004 | -          | 1            |
| Stachys arvensis                            | Field Woundwort         | flowering plant | 31/12/2004 | -          | 1            |
| Salvia verbenaca                            | Wild Clary              | flowering plant | 31/05/2005 | 31/12/2005 | 2            |
| Rosmarinus officinalis                      | Rosemary                | flowering plant | 09/02/2005 | -          | 1            |
| Prunella vulgaris                           | Selfheal                | flowering plant | 30/09/1981 | 05/07/2010 | 13           |
| Origanum vulgare                            | Wild Marjoram           | flowering plant | 31/12/2004 | 16/06/2006 | 2            |
| Mentha spicata                              | Spear Mint              | flowering plant | 08/06/2009 | -          | 1            |
| Mentha aquatica                             | Water Mint              | flowering plant | 09/05/2001 | 31/12/2006 | 4            |
| Melissa officinalis                         | Balm                    | flowering plant | 31/12/2004 | -          | 1            |
| Glaux maritima                              | Sea-milkwort            | flowering plant | 31/12/1981 | 11/10/2007 | 4            |
| Lamium purpureum                            | Red Dead-nettle         | flowering plant | 31/12/1978 | 12/03/2012 | 11           |
| Lysimachia vulgaris                         | Yellow Loosestrife      | flowering plant | 01/06/1999 | -          | 1            |
| Lamium amplexicaule                         | Henbit Dead-nettle      | flowering plant | 23/05/2004 | 31/12/2004 | 2            |
| Lamium album                                | White Dead-nettle       | flowering plant | 31/12/1978 | 31/12/2006 | 14           |
| Glechoma hederacea                          | Ground-ivy              | flowering plant | 31/12/1981 | 22/05/2013 | 18           |
| Galeopsis angustifolia                      | Red Hemp-nettle         | flowering plant | 31/12/1979 | -          | 2            |
| Clinopodium vulgare                         | Wild Basil              | flowering plant | 30/09/1981 | 31/12/2005 | 6            |
| Ballota nigra                               | Black Horehound         | flowering plant | 31/12/1981 | 08/06/2010 | 9            |
| Ajuga reptans                               | Bugle                   | flowering plant | 06/05/2006 | 22/05/2013 | 3            |
| Samolus valerandi                           | Brookweed               | flowering plant | 31/12/1995 | -          | 1            |
| Primula vulgaris                            | Primrose                | flowering plant | 31/12/2004 | 22/05/2013 | 3            |
| Primula veris x vulgaris $= P. x$ polyantha | False Oxlip             | flowering plant | 31/12/2004 | -          | 1            |
| Stellaria media                             | Common Chickweed        | flowering plant | 18/07/1990 | 31/12/2006 | 6            |
| Lycopus europaeus                           | Gypsywort               | flowering plant | 09/05/2001 | 30/07/2004 | 4            |
| Chenopodium rubrum                          | Red Goosefoot           | flowering plant | 31/12/2005 | -          | 1            |
| Frankenia laevis                            | Sea-heath               | flowering plant | 31/12/2001 | 13/09/2012 | 7            |
| Arenaria serpyllifolia subsp. serpyllifolia | Thyme-leaved Sandwort   | flowering plant | 31/12/1981 | 16/06/2006 | 5            |
| Arenaria serpyllifolia                      | Thyme-Leaved Sandwort   | flowering plant | 16/06/2006 | -          | 1            |
| Arenaria serpyllifolia                      | Thyme-Leaved Sandwort   | flowering plant | 31/12/1983 | -          | 1            |
| Suaeda maritima                             | Annual Sea-blite        | flowering plant | 31/12/1978 | 18/05/2005 | 8            |
| Sarcocornia perennis                        | Perennial Glasswort     | flowering plant | 31/12/1988 | 09/10/2003 | 15           |
| Salicornia ramosissima                      | Purple Glasswort        | flowering plant | 31/12/1997 | 12/08/2012 | 4            |
| Salicornia fragilis                         | Yellow Glasswort        | flowering plant | 14/09/2001 | 29/09/2001 | 2            |
| Salicornia europaea                         | Common Glasswort        | flowering plant | 31/12/1979 | 31/12/2000 | 5            |
| Salicornia dolichostachya                   | Long-spiked Glasswort   | flowering plant | 31/12/1993 | 25/09/2003 | 3            |
| Cerastium diffusum                          | Sea Mouse-ear           | flowering plant | 31/12/1978 | 08/05/2012 | 9            |
| Salicornia                                  | Glasswort               | flowering plant | 22/05/1990 | 13/09/2009 | 4            |
| Cerastium fontanum                          | Common Mouse-ear        | flowering plant | 31/12/1978 | 02/01/2012 | 27           |
| Chenopodium polyspermum                     | Many-seeded Goosefoot   | flowering plant | 31/12/2003 | 31/12/2004 | 2            |
| Chenopodium murale                          | Nettle-leaved Goosefoot | flowering plant | 31/12/1999 | 02/10/2005 | 4            |
| Chenopodium bonus-henricus                  | Good-King-Henry         | flowering plant | 12/06/1990 | 31/12/1994 | 3            |
| Chenopodium album                           | Fat-hen                 | flowering plant | 30/07/2004 | 31/12/2004 | 2            |

| Latin Name                                | Common Name           | Taxon Group     | First Date | Last Date  | No. of Rec's |
|---|-----------------------|-----------------|------------|------------|--------------|
| Chenopodium album agg.                    | Fat Hen               | flowering plant | 31/12/1998 | -          | 1            |
| Beta vulgaris subsp. maritima             | Sea Beet              | flowering plant | 31/12/1978 | 31/12/2006 | 11           |
| Beta vulgaris                             | Beet                  | flowering plant | 04/07/1979 | 08/06/2010 | 5            |
| Atriplex prostrata                        | Spear-leaved Orache   | flowering plant | 04/07/1979 | 08/06/2010 | 8            |
| Atriplex portulacoides                    | Sea-purslane          | flowering plant | 04/07/1979 | 06/05/2006 | 11           |
| Atriplex patula                           | Common Orache         | flowering plant | 31/12/1981 | 31/12/2005 | 4            |
| Atriplex littoralis                       | Grass-leaved Orache   | flowering plant | 31/12/1979 | 17/06/2005 | 4            |
| Salicornia europaea agg.                  | Glasswort             | flowering plant | 31/12/1981 | 31/12/1991 | 2            |
| Silene dioica                             | Red Campion           | flowering plant | 31/12/2004 | 08/06/2009 | 3            |
| Thymus pulegioides                        | Large Thyme           | flowering plant | 14/06/1990 | -          | 2            |
| Stellaria graminea                        | Lesser Stitchwort     | flowering plant | 14/06/1990 | 16/06/2006 | 6            |
| Spergularia rupicola x marina             | Sea-Spurrey           | flowering plant | 08/05/2012 | 12/08/2012 | 2            |
| Spergularia media                         | Greater Sea-spurrey   | flowering plant | 31/12/1979 | 31/12/2005 | 6            |
| Spergularia marina                        | Lesser Sea-spurrey    | flowering plant | 31/12/1981 | 31/12/2004 | 6            |
| Spergula arvensis                         | Corn Spurrey          | flowering plant | 31/12/2005 | -          | 1            |
| Silene vulgaris subsp. vulgaris           | Bladder Campion       | flowering plant | 31/12/2004 | 16/06/2006 | 4            |
| Silene vulgaris                           | Bladder Campion       | flowering plant | 14/07/1986 | 05/07/2010 | 9            |
| Silene uniflora                           | Sea Campion           | flowering plant | 04/07/1979 | 08/06/2009 | 11           |
| Silene nutans                             | Nottingham Catchfly   | flowering plant | 18/07/1997 | -          | 1            |
| Cerastium arvense                         | Field Mouse-ear       | flowering plant | 30/09/1981 | -          | 1            |
| Silene latifolia                          | White Campion         | flowering plant | 22/05/1990 | 16/06/2006 | 3            |
| Stellaria pallida                         | Lesser Chickweed      | flowering plant | 31/12/1999 | 20/02/2004 | 4            |
| Sagina procumbens                         | Procumbent Pearlwort  | flowering plant | 31/12/1981 | 10/05/2011 | 7            |
| Sagina maritima                           | Sea Pearlwort         | flowering plant | 04/07/1979 | 18/05/2005 | 10           |
| Sagina apetala subsp. erecta              | Fringed Pearlwort     | flowering plant | 31/12/1981 | -          | 1            |
| Sagina apetala                            | Annual Pearlwort      | flowering plant | 04/07/1979 | 31/12/1998 | 4            |
| Petrorhagia nanteuilii                    | Childing Pink         | flowering plant | 03/07/1999 | 07/06/2014 | 13           |
| Moehringia trinervia                      | Three-nerved Sandwort | flowering plant | 31/12/2006 | -          | 1            |
| Honckenya peploides                       | Sea Sandwort          | flowering plant | 31/12/1993 | 13/06/2013 | 5            |
| Cerastium tomentosum                      | Snow-in-summer        | flowering plant | 31/12/1981 | 08/05/2012 | 8            |
| Cerastium semidecandrum                   | Little Mouse-ear      | flowering plant | 08/06/2010 | -          | 1            |
| Cerastium glomeratum                      | Sticky Mouse-ear      | flowering plant | 31/12/1981 | 08/06/2010 | 10           |
| Cerastium fontanum subsp. holosteoides    | Common Mouse-Ear      | flowering plant | 14/07/1986 | -          | 1            |
| Silene latifolia x dioica = S. x hampeana | Hybrid Campion        | flowering plant | 31/12/2004 | 13/05/2009 | 2            |
| Schoenoplectus tabernaemontani            | Grey Club-rush        | flowering plant | 30/07/2004 | -          | 1            |
| Carex divisa                              | Divided Sedge         | flowering plant | 31/12/1978 | 06/05/2012 | 3            |
| Alopecurus myosuroides                    | Black-grass           | flowering plant | 01/06/1999 | 13/05/2009 | 3            |
| Alopecurus bulbosus                       | Bulbous Foxtail       | flowering plant | 31/12/1978 | 31/12/2000 | 3            |
| Aira praecox                              | Early Hair-grass      | flowering plant | 31/12/1981 | 18/05/2005 | 4            |
| Agrostis stolonifera                      | Creeping Bent         | flowering plant | 30/09/1981 | 08/06/2010 | 25           |
| Agrostis gigantea                         | Black Bent            | flowering plant | 31/12/2004 | 08/07/2010 | 3            |
| Agrostis capillaris                       | Common Bent           | flowering plant | 14/07/1986 | 05/07/2010 | 10           |
| Luzula campestris                         | Field Wood-rush       | flowering plant | 09/05/2001 | 31/12/2005 | 3            |
| Juncus inflexus                           | Hard Rush             | flowering plant | 01/06/1999 | 31/12/2008 | 13           |

| Latin Name                        | Common Name           | Taxon Group     | First Date | Last Date  | No. of Rec's |
|-----------------------------------|-----------------------|-----------------|------------|------------|--------------|
| Juncus gerardii                   | Saltmarsh Rush        | flowering plant | 31/12/1981 | 18/05/2005 | 6            |
| Anthoxanthum odoratum             | Sweet Vernal-grass    | flowering plant | 30/09/1981 | 16/06/2006 | 17           |
| Juncus articulatus                | Jointed Rush          | flowering plant | 09/05/2001 | -          | 2            |
| Arrhenatherum elatius             | False Oat-grass       | flowering plant | 04/07/1979 | 05/07/2010 | 40           |
| Schoenoplectus lacustris          | Common Club-rush      | flowering plant | 01/06/1999 | -          | 1            |
| Eleocharis palustris              | Common Spike-rush     | flowering plant | 16/06/2006 | -          | 1            |
| Cyperus longus                    | Galingale             | flowering plant | 31/12/1979 | 04/11/2002 | 3            |
| Cyperus eragrostis                | Pale Galingale        | flowering plant | 31/12/2006 | -          | 1            |
| Carex riparia                     | Greater Pond-sedge    | flowering plant | 01/06/1999 | 09/05/2001 | 5            |
| Carex pendula                     | Pendulous Sedge       | flowering plant | 31/12/2004 | 22/05/2013 | 7            |
| Carex panicea                     | Carnation Sedge       | flowering plant | 09/05/2001 | -          | 4            |
| Carex otrubae                     | False Fox-sedge       | flowering plant | 01/06/1999 | 19/05/2009 | 10           |
| Carex hirta                       | Hairy Sedge           | flowering plant | 01/06/1999 | -          | 1            |
| Carex flacca                      | Glaucous Sedge        | flowering plant | 30/09/1981 | 16/06/2006 | 14           |
| Thymus polytrichus                |                       | flowering plant | 30/09/1981 | 16/06/2006 | 5            |
| Juncus effusus                    | Soft-rush             | flowering plant | 01/06/1999 | 22/05/2013 | 4            |
| Catapodium marinum                | Sea Fern-grass        | flowering plant | 31/12/1981 | 13/05/2007 | 7            |
| Potentilla sterilis               | Barren Strawberry     | flowering plant | 30/09/1981 | 31/12/2004 | 2            |
| Vicia lathyroides                 | Spring Vetch          | flowering plant | 31/12/1979 | -          | 1            |
| Elytrigia atherica                | Sea Couch             | flowering plant | 04/07/1979 | 08/06/2010 | 9            |
| Echinochloa crus-galli            | Cockspur              | flowering plant | 31/12/2004 | 31/12/2005 | 3            |
| Digitaria sanguinalis             | Hairy Finger-grass    | flowering plant | 08/07/2010 | -          | 1            |
| Deschampsia cespitosa             | Tufted Hair-Grass     | flowering plant | 01/06/1999 | 16/06/2006 | 3            |
| Dactylis glomerata                | Cock's-foot           | flowering plant | 04/07/1979 | 05/07/2010 | 39           |
| Cynosurus cristatus               | Crested Dog's-tail    | flowering plant | 30/09/1981 | 16/06/2006 | 11           |
| Cynodon dactylon                  | Bermuda-grass         | flowering plant | 31/12/1994 | -          | 1            |
| Cortaderia selloana               | Pampas-grass          | flowering plant | 31/12/2004 | -          | 1            |
| Alopecurus pratensis              | Meadow Foxtail        | flowering plant | 01/06/1999 | 19/05/2009 | 9            |
| Catapodium rigidum                | Fern-grass            | flowering plant | 31/12/1981 | 28/06/2011 | 6            |
| Carex disticha                    | Brown Sedge           | flowering plant | 06/05/2012 | -          | 1            |
| Bromus sterilis                   | Barren Brome          | flowering plant | 04/07/1979 | 05/07/2010 | 17           |
| Bromus hordeaceus subsp. ferronii | Least Soft-brome      | flowering plant | 01/06/2007 | -          | 1            |
| Bromus hordeaceus                 | Lesser Soft-Brome     | flowering plant | 31/12/1981 | 05/07/2010 | 9            |
| Bromus commutatus                 | Meadow Brome          | flowering plant | 30/07/2004 | -          | 1            |
| Bromopsis erecta                  | Upright Brome         | flowering plant | 30/09/1981 | 10/07/2012 | 14           |
| Briza media                       | Quaking-grass         | flowering plant | 14/07/1986 | 16/06/2006 | 7            |
| Briza maxima                      | Greater Quaking-grass | flowering plant | 08/06/2010 | -          | 1            |
| Brachypodium sylvaticum           | False-brome           | flowering plant | 31/08/1996 | 31/12/2006 | 7            |
| Brachypodium pinnatum             | Heath False-brome     | flowering plant | 30/09/1981 | 30/09/2004 | 11           |
| Avena sativa                      | Oat                   | flowering plant | 08/06/2010 | -          | 1            |
| Avena fatua                       | Wild-oat              | flowering plant | 30/07/2004 | 31/12/2004 | 2            |
| Ceratochloa cathartica            | Rescue Brome          | flowering plant | 31/12/1994 | 29/07/2005 | 3            |
| Odontites vernus subsp. serotinus | Red Bartsia           | flowering plant | 06/08/2004 | 31/12/2004 | 2            |
| Carex divulsa subsp. divulsa      | Grey Sedge            | flowering plant | 31/12/2004 | 13/05/2009 | 5            |

| Latin Name                                   | Common Name            | Taxon Group     | First Date | Last Date  | No. of Rec's |
|--|------------------------|-----------------|------------|------------|--------------|
| Linaria purpurea                             | Purple Toadflax        | flowering plant | 30/07/2004 | 08/06/2009 | 5            |
| Kickxia elatine                              | Sharp-leaved Fluellen  | flowering plant | 06/09/2010 | -          | 1            |
| Hebe elliptica x speciosa = H. x franciscana | Hedge Veronica         | flowering plant | 09/02/2005 | -          | 1            |
| Digitalis purpurea                           | Foxglove               | flowering plant | 31/12/2006 | 08/07/2010 | 2            |
| Cymbalaria muralis                           | Ivy-leaved Toadflax    | flowering plant | 31/12/1981 | 08/06/2010 | 11           |
| Chaenorhinum minus                           | Small Toadflax         | flowering plant | 06/09/2010 | -          | 1            |
| Callitriche stagnalis                        | Common Water-Starwort  | flowering plant | 09/05/2001 | 31/12/2005 | 3            |
| Callitriche                                  | Water-starwort         | flowering plant | 01/06/1999 | 11/10/2007 | 6            |
| Rhinanthus minor                             | Yellow-rattle          | flowering plant | 14/06/1990 | 16/06/2006 | 5            |
| Plantago coronopus                           | Buck's-horn Plantain   | flowering plant | 31/12/1978 | 08/06/2009 | 13           |
| Orobanche elatior                            | Knapweed Broomrape     | flowering plant | 26/06/2010 | -          | 1            |
| Plantago lanceolata                          | Ribwort Plantain       | flowering plant | 31/12/1978 | 02/01/2012 | 43           |
| Odontites vernus                             | Red Bartsia            | flowering plant | 18/07/1990 | 10/07/2012 | 8            |
| Euphrasia pseudokerneri                      | Eyebright              | flowering plant | 31/12/1979 | 30/09/2010 | 3            |
| Euphrasia nemorosa x pseudokerneri           | Eyebright              | flowering plant | 31/08/1998 | -          | 1            |
| Euphrasia nemorosa                           | Eyebright              | flowering plant | 31/12/2004 | 10/07/2012 | 3            |
| Euphrasia officinalis agg.                   | Eyebright              | flowering plant | 18/07/1990 | 31/12/2006 | 3            |
| Euphrasia                                    | Eyebright              | flowering plant | 05/07/2010 | -          | 1            |
| Syringa vulgaris                             | Lilac                  | flowering plant | 31/12/1994 | 31/12/2004 | 2            |
| Ligustrum vulgare                            | Wild Privet            | flowering plant | 31/12/1978 | 22/05/2013 | 13           |
| Ligustrum ovalifolium                        | Garden Privet          | flowering plant | 31/12/2004 | -          | 1            |
| Fraxinus excelsior                           | Ash                    | flowering plant | 01/06/1999 | 22/05/2013 | 10           |
| Bromus hordeaceus subsp. hordeaceus          | Common Soft-brome      | flowering plant | 23/05/2004 | 16/06/2006 | 5            |
| Orobanche minor                              | Common Broomrape       | flowering plant | 31/08/1996 | 05/07/2010 | 5            |
| Veronica persica                             | Common Field-speedwell | flowering plant | 31/12/1998 | 12/03/2012 | 7            |
| Carex caryophyllea                           | Spring-sedge           | flowering plant | 30/09/1981 | 06/07/1992 | 2            |
| Carex arenaria                               | Sand Sedge             | flowering plant | 04/07/1979 | 31/12/1993 | 2            |
| Carex  | Sedge                  | flowering plant | 14/06/1990 | 01/06/1999 | 2            |
| Bolboschoenus maritimus                      | Sea Club-rush          | flowering plant | 01/06/1999 | 01/11/2004 | 2            |
| Verbena officinalis                          | Vervain                | flowering plant | 31/12/2004 | 31/12/2006 | 4            |
| Verbascum thapsus                            | Great Mullein          | flowering plant | 31/12/2004 | 31/12/2006 | 2            |
| Verbascum                                    | Mullein                | flowering plant | 08/06/2009 | -          | 1            |
| Scrophularia nodosa                          | Common Figwort         | flowering plant | 31/12/2004 | 22/05/2013 | 2            |
| Scrophularia auriculata                      | Water Figwort          | flowering plant | 31/12/2004 | 22/05/2013 | 2            |
| Buddleja davidii                             | Butterfly-bush         | flowering plant | 25/06/2004 | 22/05/2013 | 5            |
| Linaria vulgaris                             | Common Toadflax        | flowering plant | 04/07/1979 | 31/12/2006 | 12           |
| Veronica polita                              | Grey Field-speedwell   | flowering plant | 31/12/2004 | 31/12/2005 | 4            |
| Thymus polytrichus subsp. britannicus        |                        | flowering plant | 14/07/1986 | -          | 1            |
| Veronica officinalis                         | Heath Speedwell        | flowering plant | 31/12/2004 | -          | 1            |
| Veronica hederifolia subsp. hederifolia      | Ivy-Leaved Speedwell   | flowering plant | 23/05/2004 | 13/05/2009 | 3            |
| Veronica hederifolia                         | Ivy-leaved Speedwell   | flowering plant | 31/12/1978 | 08/06/2009 | 13           |
| Veronica filiformis                          | Slender Speedwell      | flowering plant | 31/12/2004 | 31/12/2006 | 2            |
| Veronica chamaedrys                          | Germander Speedwell    | flowering plant | 30/09/1981 | 16/06/2006 | 12           |
| Veronica catenata                            | Pink Water-Speedwell   | flowering plant | 06/05/2003 | 30/07/2004 | 2            |

| Latin Name   | Common Name               | Taxon Group     | First Da | ate | Last Date  | No. of Rec's |
|--|---------------------------|-----------------|----------|-----|------------|--------------|
| Veronica beccabunga                                | Brooklime                 | flowering plant | 30/07/20 | 004 | -          | 1            |
| Veronica arvensis                                  | Wall Speedwell            | flowering plant | 31/08/19 | 996 | 31/05/2005 | 7            |
| Plantago media                                     | Hoary Plantain            | flowering plant | 31/12/19 | 978 | 16/06/2006 | 7            |
| Plantago maritima                                  | Sea Plantain              | flowering plant | 31/12/19 | 979 | 13/05/2009 | 6            |
| Plantago major                                     | Greater Plantain          | flowering plant | 30/09/19 | 981 | 08/06/2009 | 18           |
| Veronica serpyllifolia                             | Thyme-leaved Speedwell    | flowering plant | 31/12/20 | 004 | 22/05/2013 | 6            |
| Salix caprea                                       | Goat Willow               | flowering plant | 01/06/19 | 999 | 22/05/2013 | 9            |
| Mercurialis perennis                               | Dog's Mercury             | flowering plant | 31/12/20 | 800 | -          | 1            |
| Alcea rosea  | Hollyhock                 | flowering plant | 14/06/20 | 000 | -          | 1            |
| Viola riviniana                                    | Common Dog-violet         | flowering plant | 31/12/20 | 005 | 31/12/2008 | 3            |
| Viola reichenbachiana                              | Early Dog-violet          | flowering plant | 31/12/20 | 005 | 31/12/2006 | 2            |
| Viola odorata var. dumetorum                       |                           | flowering plant | 20/03/20 | 008 | -          | 1            |
| Viola lutea x tricolor x altaica = V. x wittrockia | Garden Pansy              | flowering plant | 22/05/20 | 010 | -          | 2            |
| Viola arvensis                                     | Field Pansy               | flowering plant | 18/07/19 | 990 | -          | 1            |
| Salix viminalis                                    | Osier                     | flowering plant | 01/06/19 | 999 | -          | 1            |
| Salix purpurea                                     | Purple Willow             | flowering plant | 31/12/19 | 993 | -          | 1            |
| Salix fragilis                                     | Crack-willow              | flowering plant | 01/06/19 | 999 | 22/05/2013 | 6            |
| Malva neglecta                                     | Dwarf Mallow              | flowering plant | 31/12/19 | 996 | 31/12/2004 | 3            |
| Salix cinerea                                      | Common Sallow             | flowering plant | 01/06/19 | 999 | 22/05/2013 | 6            |
| Malva sylvestris                                   | Common Mallow             | flowering plant | 31/12/19 | 978 | 13/09/2009 | 15           |
| Salix babylonica                                   | Weeping Willow            | flowering plant | 25/06/20 | 004 | -          | 1            |
| Salix alba   | White Willow              | flowering plant | 09/05/20 | 001 | -          | 4            |
| Populus tremula                                    | Aspen                     | flowering plant | 31/12/20 | 004 | -          | 1            |
| Populus nigra x deltoides = P. x canadensis        | Hybrid Black-poplar       | flowering plant | 14/10/20 | 800 | -          | 1            |
| Populus nigra 'Italica'                            | Lombardy-Poplar           | flowering plant | 31/12/20 | 003 | -          | 1            |
| Populus nigra                                      | Black-poplar              | flowering plant | 31/12/20 | 001 | -          | 1            |
| Populus alba x tremula = $P$ . x canescens         | Grey Poplar               | flowering plant | 31/12/20 | 003 | 19/05/2006 | 2            |
| Populus  | Poplar                    | flowering plant | 14/09/20 | 009 | -          | 1            |
| Linum catharticum                                  | Fairy Flax                | flowering plant | 31/12/19 | 978 | 10/07/2012 | 13           |
| Hypericum perforatum                               | Perforate St John's-wort  | flowering plant | 30/09/19 | 981 | 16/06/2006 | 13           |
| Pseudofumaria lutea                                | Yellow Corydalis          | flowering plant | 31/12/20 | 004 | 08/07/2010 | 3            |
| Salix cinerea subsp. oleifolia                     | Rusty Willow              | flowering plant | 30/07/20 | 004 | 08/07/2010 | 4            |
| Epilobium tetragonum                               | Square-stalked Willowherb | flowering plant | 25/07/20 | 005 | -          | 1            |
| Papaver somniferum                                 | Opium Poppy               | flowering plant | 31/12/19 | 998 | 23/05/2004 | 3            |
| Papaver rhoeas                                     | Common Poppy              | flowering plant | 04/07/19 | 979 | 31/12/2006 | 7            |
| Meconopsis cambrica                                | Welsh Poppy               | flowering plant | 31/12/19 | 988 | 08/06/2009 | 3            |
| Glaucium flavum                                    | Yellow Horned-poppy       | flowering plant | 21/02/19 | 976 | 10/06/2011 | 14           |
| Fumaria officinalis                                | Common Fumitory           | flowering plant | 31/12/19 | 981 | 31/12/2004 | 3            |
| Fumaria densiflora                                 | Dense-flowered Fumitory   | flowering plant | 31/12/20 | 000 | 16/06/2006 | 2            |
| Chelidonium majus                                  | Greater Celandine         | flowering plant | 31/12/20 | 005 | 13/05/2009 | 3            |
| Platanus occidentalis x orientalis = P. x hispa    | London Plane              | flowering plant | 31/12/19 | 995 | 31/12/2005 | 2            |
| Oxalis corniculata                                 | Procumbent Yellow-sorrel  | flowering plant | 31/12/20 | 004 | 08/07/2010 | 2            |
| Oxalis articulata                                  | Pink-sorrel               | flowering plant | 30/06/20 | 003 | -          | 2            |
| Lavatera arborea                                   | Tree-mallow               | flowering plant | 31/12/19 | 978 | 08/06/2009 | 5            |

| Latin Name                                   | Common Name                     | Taxon Group     |     | First Date | [ | Last Date  | No. of Rec's |
|--|---------------------------------|-----------------|-----|------------|---|------------|--------------|
| Oenothera biennis                            | Common Evening-primrose         | flowering plant | 1 F | 22/05/2013 |   | -          | 1            |
| Mercurialis annua                            | Annual Mercury                  | flowering plant |     | 30/07/2004 | ſ | 31/12/2004 | 3            |
| Epilobium parviflorum                        | Hoary Willowherb                | flowering plant |     | 31/12/1998 | ſ | 08/07/2010 | 6            |
| Epilobium montanum                           | Broad-leaved Willowherb         | flowering plant |     | 31/12/2004 | Ī | 22/05/2013 | 5            |
| Epilobium hirsutum                           | Great Willowherb                | flowering plant |     | 12/06/1990 | ſ | 22/05/2013 | 25           |
| Epilobium ciliatum                           | American Willowherb             | flowering plant |     | 31/12/1998 |   | 31/12/2006 | 5            |
| Epilobium                                    | Willowherb                      | flowering plant |     | 09/05/2001 |   | -          | 8            |
| Circaea lutetiana                            | Enchanter's-nightshade          | flowering plant |     | 31/12/2005 |   | 08/07/2010 | 2            |
| Chamerion angustifolium                      | Rosebay Willowherb              | flowering plant |     | 31/12/1998 |   | 22/05/2013 | 5            |
| Lythrum salicaria                            | Purple-loosestrife              | flowering plant |     | 16/06/2006 | ſ | -          | 1            |
| Daphne laureola                              | Spurge-laurel                   | flowering plant |     | 31/12/2006 | ſ | -          | 1            |
| Tilia platyphyllos x cordata = T. x europaea | Lime                            | flowering plant |     | 31/12/2004 | ſ | 31/12/2006 | 5            |
| Tilia  | Lime                            | flowering plant |     | 14/09/2009 |   | -          | 1            |
| Oenothera glazioviana                        | Large-flowered Evening-primrose | flowering plant |     | 25/06/2004 |   | 25/07/2005 | 5            |
| Corylus avellana                             | Hazel                           | flowering plant |     | 31/12/2004 |   | 12/05/2008 | 4            |
| Hypericum hirsutum                           | Hairy St John's-wort            | flowering plant |     | 31/12/2004 |   | 22/05/2013 | 2            |
| Vinca minor                                  | Lesser Periwinkle               | flowering plant |     | 09/02/2005 | Ī | -          | 1            |
| Vinca major                                  | Greater Periwinkle              | flowering plant |     | 31/12/1981 | Ī | 31/05/2005 | 7            |
| Juglans regia                                | Walnut                          | flowering plant |     | 31/12/1996 | ſ | 31/12/2005 | 2            |
| Quercus rubra                                | Red Oak                         | flowering plant |     | 31/12/2004 | ſ | -          | 1            |
| Quercus robur                                | Pedunculate Oak                 | flowering plant |     | 31/12/2004 |   | -          | 3            |
| Quercus ilex                                 | Evergreen Oak                   | flowering plant |     | 31/12/2004 |   | 31/12/2005 | 5            |
| Quercus cerris                               | Turkey Oak                      | flowering plant |     | 31/12/2004 |   | 31/12/2006 | 3            |
| Vicia lutea                                  | Yellow-vetch                    | flowering plant |     | 31/12/1964 | Ī | 08/06/2009 | 13           |
| Fagus sylvatica                              | Beech                           | flowering plant |     | 31/08/1996 | Ī | 14/09/2009 | 9            |
| Gentianella amarella                         | Autumn Gentian                  | flowering plant |     | 30/09/1981 | ſ | 13/09/2005 | 2            |
| Castanea sativa                              | Sweet Chestnut                  | flowering plant |     | 01/01/1993 |   | 31/12/1993 | 2            |
| Asperula cynanchica                          | Squinancywort                   | flowering plant |     | 30/09/1981 |   | -          | 1            |
| Carpinus betulus                             | Hornbeam                        | flowering plant |     | 31/05/2005 |   | 31/12/2005 | 2            |
| Betula pendula                               | Silver Birch                    | flowering plant |     | 25/06/2004 | ſ | 22/05/2013 | 5            |
| Alnus glutinosa                              | Alder                           | flowering plant |     | 31/12/2004 | ſ | 31/12/2006 | 2            |
| Polygala vulgaris                            | Common Milkwort                 | flowering plant |     | 30/09/1981 | ſ | 11/05/2012 | 10           |
| Polygala calcarea                            | Chalk Milkwort                  | flowering plant |     | 14/07/1986 |   | -          | 1            |
| Vicia tetrasperma                            | Smooth Tare                     | flowering plant |     | 01/06/1999 |   | 31/12/2003 | 2            |
| Vicia sepium                                 | Bush Vetch                      | flowering plant |     | 31/12/2004 |   | -          | 1            |
| Vicia sativa subsp. segetalis                | Common Vetch                    | flowering plant |     | 23/05/2004 |   | 16/06/2006 | 5            |
| Vicia sativa subsp. nigra                    | Narrow-leaved Vetch             | flowering plant |     | 31/12/1981 | ſ | 16/06/2006 | 5            |
| Calamagrostis epigejos                       | Wood Small-reed                 | flowering plant |     | 14/06/1990 | ſ | 18/07/1990 | 2            |
| Atriplex                                     | Orache                          | flowering plant |     | 22/05/1990 | ĺ | -          | 1            |
| Vicia sativa                                 | Common Vetch                    | flowering plant |     | 14/06/1990 | ĺ | 08/06/2009 | 6            |
| Geranium columbinum                          | Long-stalked Crane's-bill       | flowering plant |     | 09/05/2001 | ſ | -          | 6            |
| Euphorbia peplus                             | Petty Spurge                    | flowering plant |     | 30/07/2004 | ſ | 12/03/2012 | 7            |
| Euphorbia lathyris                           | Caper Spurge                    | flowering plant |     | 14/06/2000 | ſ | 06/05/2011 | 3            |
| Euphorbia hyberna                            | Irish Spurge                    | flowering plant |     | 30/05/2005 | Ī | -          | 1            |
| Latin Name                            | Common Name                  | Taxon Group     | First Date | Last Date  | No. of Rec's |
|---------------------------------------|------------------------------|-----------------|------------|------------|--------------|
| Euphorbia helioscopia                 | Sun Spurge                   | flowering plant | 30/07/2004 | 12/03/2012 | 4            |
| Euphorbia cyparissias                 | Cypress Spurge               | flowering plant | 22/05/2010 | 08/06/2010 | 3            |
| Laurus nobilis                        | Вау                          | flowering plant | 31/12/2005 | 13/03/2008 | 3            |
| Geranium rotundifolium                | Round-leaved Crane's-bill    | flowering plant | 26/07/2011 | -          | 1            |
| Geranium robertianum                  | Herb-Robert                  | flowering plant | 31/12/1981 | 12/05/2008 | 7            |
| Geranium pyrenaicum                   | Hedgerow Crane's-bill        | flowering plant | 31/12/2005 | 08/06/2010 | 2            |
| Geranium pusillum                     | Small-flowered Crane's-bill  | flowering plant | 09/05/2001 | 28/06/2011 | 4            |
| Centaurium erythraea                  | Common Centaury              | flowering plant | 14/07/1986 | 31/12/2004 | 3            |
| Geranium dissectum                    | Cut-leaved Crane's-bill      | flowering plant | 04/07/1979 | 05/07/2010 | 14           |
| Viola odorata                         | Sweet Violet                 | flowering plant | 31/08/1996 | 08/07/2010 | 6            |
| Geranium                              | Crane's-Bill                 | flowering plant | 06/05/2006 | -          | 1            |
| Erodium moschatum                     | Musk Stork's-bill            | flowering plant | 01/04/2005 | 31/12/2005 | 5            |
| Erodium cicutarium agg.               | Common Stork's-Bill          | flowering plant | 23/05/2004 | -          | 1            |
| Sherardia arvensis                    | Field Madder                 | flowering plant | 31/12/1981 | 12/03/2012 | 8            |
| Galium verum                          | Lady's Bedstraw              | flowering plant | 30/09/1981 | 16/06/2006 | 13           |
| Galium saxatile                       | Heath Bedstraw               | flowering plant | 14/07/1986 | -          | 2            |
| Galium odoratum                       | Woodruff                     | flowering plant | 31/12/2003 | -          | 1            |
| Galium mollugo                        | Hedge Bedstraw               | flowering plant | 04/07/1979 | 08/06/2010 | 14           |
| Galium aparine                        | Cleavers                     | flowering plant | 04/07/1979 | 12/03/2012 | 27           |
| Cruciata laevipes                     | Crosswort                    | flowering plant | 16/06/2006 | 19/05/2009 | 2            |
| Asperula cynanchica subsp. cynanchica | Squinancywort                | flowering plant | 18/07/1990 | 16/06/2006 | 2            |
| Geranium molle                        | Dove's-foot Crane's-bill     | flowering plant | 31/12/1981 | 08/06/2010 | 12           |
| Zannichellia palustris                | Horned Pondweed              | flowering plant | 31/12/1981 | 31/12/1991 | 3            |
| Cardamine hirsuta                     | Hairy Bitter-cress           | flowering plant | 31/12/1978 | 12/03/2012 | 13           |
| Cardamine flexuosa                    | Wavy Bitter-cress            | flowering plant | 31/12/2004 | 31/12/2008 | 3            |
| Capsella bursa-pastoris               | Shepherd's-purse             | flowering plant | 31/12/1981 | 03/06/2013 | 11           |
| Cakile maritima                       | Sea Rocket                   | flowering plant | 31/12/1989 | 29/10/2009 | 4            |
| Brassica oleracea var. oleracea       | Wild Cabbage                 | flowering plant | 31/12/1955 | -          | 1            |
| Brassica napus                        | Rape                         | flowering plant | 08/01/2005 | 19/05/2006 | 3            |
| Barbarea vulgaris                     | Winter-cress                 | flowering plant | 31/12/1981 | 31/12/2006 | 7            |
| Barbarea verna                        | American Winter-cress        | flowering plant | 22/05/2010 | -          | 2            |
| Barbarea intermedia                   | Medium-flowered Winter-cress | flowering plant | 31/12/1978 | -          | 1            |
| Armoracia rusticana                   | Horse-radish                 | flowering plant | 31/12/2004 | 19/05/2009 | 2            |
| Arum maculatum                        | Lords-and-Ladies             | flowering plant | 31/08/1996 | 31/12/2008 | 13           |
| Alliaria petiolata                    | Garlic Mustard               | flowering plant | 31/12/1998 | 12/05/2008 | 7            |
| Crambe maritima                       | Sea-kale                     | flowering plant | 31/12/1978 | 08/06/2010 | 17           |
| Ruppia maritima                       | Beaked Tasselweed            | flowering plant | 17/09/1997 | 12/08/2012 | 6            |
| Potamogeton trichoides                | Hairlike Pondweed            | flowering plant | 31/12/1978 | -          | 1            |
| Potamogeton pectinatus                | Fennel Pondweed              | flowering plant | 26/08/2006 | -          | 1            |
| Potamogeton crispus                   | Curled Pondweed              | flowering plant | 06/05/2003 | 22/05/2013 | 2            |
| Potamogeton berchtoldii               | Small Pondweed               | flowering plant | 31/12/1993 | -          | 1            |
| Potamogeton acutifolius               | Sharp-leaved Pondweed        | flowering plant | 31/12/1980 | 31/12/2001 | 2            |
| Groenlandia densa                     | Opposite-leaved Pondweed     | flowering plant | 31/12/1993 | 06/05/2003 | 3            |
| Triglochin maritimum                  | Sea Arrowgrass               | flowering plant | 31/12/1981 | 18/05/2005 | 7            |

| Latin Name                                | Common Name             | Taxon Group     | First Date | Last Date  | No. of Rec's |
|---|-------------------------|-----------------|------------|------------|--------------|
| Hydrocharis morsus-ranae                  | Frogbit                 | flowering plant | 31/12/1993 | -          | 1            |
| Lemna trisulca                            | Ivy-leaved Duckweed     | flowering plant | 09/05/2001 | -          | 2            |
| Lemna minor                               | Common Duckweed         | flowering plant | 01/06/1999 | 30/07/2004 | 5            |
| Arabidopsis thaliana                      | Thale Cress             | flowering plant | 31/12/2004 | 31/12/2005 | 3            |
| Lepidium didymum                          | Lesser Swine-cress      | flowering plant | 23/05/2004 | 31/12/2006 | 4            |
| Amaranthus retroflexus                    | Common Amaranth         | flowering plant | 31/12/2006 | -          | 1            |
| Reseda luteola                            | Weld                    | flowering plant | 31/12/1981 | 08/07/2010 | 5            |
| Reseda lutea                              | Wild Mignonette         | flowering plant | 31/12/1981 | 16/06/2006 | 7            |
| Sisymbrium orientale                      | Eastern Rocket          | flowering plant | 31/12/1981 | 31/12/2005 | 4            |
| Sisymbrium officinale                     | Hedge Mustard           | flowering plant | 04/07/1979 | 08/06/2009 | 12           |
| Sinapis arvensis                          | Charlock                | flowering plant | 19/06/1990 | 13/05/2009 | 8            |
| Rorippa nasturtium-aquaticum              | Water-cress             | flowering plant | 01/06/1999 | 30/07/2004 | 3            |
| Rorippa austriaca                         | Austrian Yellow-cress   | flowering plant | 31/12/1984 | 17/06/2005 | 4            |
| Rapistrum rugosum                         | Bastard Cabbage         | flowering plant | 31/12/1993 | 31/12/2003 | 4            |
| Raphanus raphanistrum subsp. raphanistrum | Wild Radish             | flowering plant | 31/12/2005 | 10/05/2011 | 2            |
| Raphanus raphanistrum                     | Radish                  | flowering plant | 31/12/1981 | 31/12/1998 | 3            |
| Cardamine pratensis                       | Cuckooflower            | flowering plant | 09/05/2001 | -          | 2            |
| Lepidium draba                            | Hoary Cress             | flowering plant | 31/12/1978 | 08/06/2009 | 10           |
| Cochlearia danica                         | Danish Scurvygrass      | flowering plant | 31/12/1978 | 08/06/2010 | 9            |
| Lepidium coronopus                        | Swine-cress             | flowering plant | 31/12/1981 | 16/06/2006 | 7            |
| Hirschfeldia incana                       | Hoary Mustard           | flowering plant | 31/12/1993 | 31/12/2005 | 3            |
| Erysimum cheiri                           | Wallflower              | flowering plant | 23/05/2004 | -          | 1            |
| Eruca vesicaria subsp. vesicaria          | Garden Rocket           | flowering plant | 31/05/2006 | -          | 1            |
| Viola hirta                               | Hairy Violet            | flowering plant | 30/09/1981 | 31/12/2006 | 4            |
| Erophila verna                            | Common Whitlowgrass     | flowering plant | 31/12/1983 | -          | 1            |
| Aquilegia vulgaris                        | Columbine               | flowering plant | 08/06/2010 | -          | 1            |
| Erophila verna                            | Common Whitlowgrass     | flowering plant | 31/12/1998 | -          | 1            |
| Diplotaxis tenuifolia                     | Perennial Wall-rocket   | flowering plant | 31/12/1981 | 31/12/2006 | 5            |
| Diplotaxis muralis                        | Annual Wall-rocket      | flowering plant | 31/12/1981 | 31/12/2005 | 5            |
| Erophila verna                            | Common Whitlowgrass     | flowering plant | 31/12/1981 | -          | 1            |
| Lunaria annua                             | Honesty                 | flowering plant | 31/12/2005 | -          | 1            |
| Ranunculus sceleratus                     | Celery-leaved Buttercup | flowering plant | 30/07/2004 | -          | 1            |
| Datura stramonium                         | Thorn-apple             | flowering plant | 31/12/2004 | 31/12/2006 | 2            |
| Atropa belladonna                         | Deadly Nightshade       | flowering plant | 30/07/2004 | -          | 1            |
| Calystegia soldanella                     | Sea Bindweed            | flowering plant | 04/07/1979 | 31/12/1979 | 2            |
| Eruca vesicaria                           | Garden Rocket           | flowering plant | 31/05/2006 | -          | 1            |
| Calystegia sepium                         | Hedge Bindweed          | flowering plant | 01/06/1999 | 31/12/2006 | 5            |
| Calystegia                                | Bindweed                | flowering plant | 09/05/2001 | -          | 6            |
| Aesculus hippocastanum                    | Horse-chestnut          | flowering plant | 31/12/2004 | 08/07/2010 | 7            |
| Acer pseudoplatanus                       | Sycamore                | flowering plant | 06/07/1992 | 14/09/2009 | 15           |
| Acer platanoides                          | Norway Maple            | flowering plant | 31/12/2003 | 31/12/2004 | 2            |
| Acer campestre                            | Field Maple             | flowering plant | 01/06/1999 | 02/01/2012 | 6            |
| Nicandra physalodes                       | Apple-of-Peru           | flowering plant | 31/12/2004 | -          | 1            |
| Thalictrum minus                          | Lesser Meadow-rue       | flowering plant | 31/12/1979 | 30/09/1981 | 2            |

| Latin Name                                   | Common Name              | Taxon Group               | First Date | Last Date  | No. of Rec's |
|--|--------------------------|---------------------------|------------|------------|--------------|
| Convolvulus arvensis                         | Field Bindweed           | flowering plant           | 14/07/1986 | 05/07/2010 | 16           |
| Ranunculus sardous                           | Hairy Buttercup          | flowering plant           | 06/08/2004 | 28/06/2011 | 4            |
| Ranunculus repens                            | Creeping Buttercup       | flowering plant           | 31/12/1981 | 05/07/2010 | 33           |
| Ranunculus peltatus                          | Pond Water-crowfoot      | flowering plant           | 31/12/1993 | -          | 1            |
| Ranunculus ficaria subsp. ficaria            | Lesser Celandine         | flowering plant           | 31/12/2004 | 13/05/2009 | 3            |
| Ranunculus ficaria subsp. bulbilifer         | Lesser Celandine         | flowering plant           | 31/12/2004 | 31/12/2006 | 2            |
| Ranunculus ficaria                           | Lesser Celandine         | flowering plant           | 31/12/1978 | 12/05/2008 | 5            |
| Ranunculus bulbosus                          | Bulbous Buttercup        | flowering plant           | 30/09/1981 | 16/06/2006 | 11           |
| Ranunculus acris                             | Meadow Buttercup         | flowering plant           | 31/08/1996 | 05/07/2010 | 10           |
| Nigella damascena                            | Love-in-a-mist           | flowering plant           | 31/12/1995 | 08/07/2010 | 2            |
| Arum italicum subsp. neglectum               | Arum                     | flowering plant           | 31/12/1997 | 31/12/2006 | 5            |
| Thesium humifusum                            | Bastard-toadflax         | flowering plant           | 31/12/1979 | -          | 1            |
| Myosotis discolor                            | Changing Forget-me-not   | flowering plant           | 19/05/2009 | -          | 1            |
| Arum italicum subsp. italicum                | Arum                     | flowering plant           | 31/12/2006 | -          | 1            |
| Arum italicum                                | Italian Lords-and-Ladies | flowering plant           | 07/12/1996 | 19/12/1997 | 2            |
| Arum   |                          | flowering plant           | 03/06/2013 | -          | 1            |
| Alisma plantago-aquatica                     | Water-plantain           | flowering plant           | 16/06/2006 | -          | 1            |
| Symphytum orientale                          | White Comfrey            | flowering plant           | 14/06/2000 | 31/12/2006 | 3            |
| Symphytum officinale x asperum = S. x uplan  | Russian Comfrey          | flowering plant           | 31/12/1983 | 31/12/2004 | 2            |
| Pentaglottis sempervirens                    | Green Alkanet            | flowering plant           | 31/12/1983 | 31/12/2006 | 6            |
| Calystegia silvatica                         | Large Bindweed           | flowering plant           | 30/07/2004 | 16/06/2006 | 3            |
| Myosotis ramosissima                         | Early Forget-me-not      | flowering plant           | 31/12/1981 | 18/05/2005 | 4            |
| Nicotiana alata x forgetiana = N. x sanderae | Tobacco                  | flowering plant           | 31/12/1999 | -          | 1            |
| Myosotis arvensis                            | Field Forget-me-not      | flowering plant           | 31/12/1981 | 22/05/2013 | 9            |
| Myosotis                                     | Forget-Me-Not            | flowering plant           | 25/06/2004 | -          | 1            |
| Solanum sisymbriifolium                      | Red Buffalo-bur          | flowering plant           | 31/12/2008 | -          | 1            |
| Solanum dulcamara                            | Bittersweet              | flowering plant           | 04/07/1979 | 08/06/2009 | 19           |
| Myosotis sylvatica                           | Wood Forget-me-not       | flowering plant           | 01/06/1999 | 13/05/2009 | 5            |
| Solanum nigrum                               | Black Nightshade         | flowering plant           | 31/12/2004 | 22/05/2013 | 3            |
| Lithospermum officinale                      | Common Gromwell          | flowering plant           | 06/07/1992 | 31/08/1996 | 4            |
| Parthenocissus quinquefolia                  | Virginia creeper         | flowering plant           | 31/10/1998 | -          | 1            |
| Helleborus foetidus                          | Stinking Hellebore       | flowering plant           | 31/12/1987 | -          | 1            |
| Amsinckia micrantha                          | Common Fiddleneck        | flowering plant           | 31/05/2003 | -          | 1            |
| Clematis vitalba                             | Traveller's-joy          | flowering plant           | 31/12/1981 | 16/06/2006 | 13           |
| Anchusa azurea                               | Garden Anchusa           | flowering plant           | 31/05/2002 | -          | 1            |
| Anchusa officinalis                          | Alkanet                  | flowering plant           | 31/12/1981 | -          | 1            |
| Borago officinalis                           | Borage                   | flowering plant           | 17/06/2009 | -          | 1            |
| Echium vulgare                               | Viper's-bugloss          | flowering plant           | 31/12/1978 | 01/06/2011 | 15           |
| Pachycordyle navis                           | Brackish Hydroid         | coelenterate (=cnidarian) | 30/09/1990 | 17/09/1997 | 2            |
| Dynamena pumila                              |                          | coelenterate (=cnidarian) | 31/12/1995 | -          | 1            |
| Edwardsia ivelli                             | Ivell's Sea Anemone      | coelenterate (=cnidarian) | 31/12/1973 | 31/12/1983 | 2            |
| Cochlicella (Cochlicella) acuta              | Pointed Snail            | mollusc                   | 25/07/2013 | -          | 1            |
| Cerastoderma glaucum                         | Lagoon Cockle            | mollusc                   | 29/09/1984 | 06/05/2006 | 7            |
| Abra tenuis                                  |                          | mollusc                   | 13/09/1990 | 06/05/2006 | 2            |

| Latin Name                        | Common Name                  | Taxon Group                  | First Date | Last Date  | No. of Rec's |
|-----------------------------------|------------------------------|------------------------------|------------|------------|--------------|
| Hydrobia ventrosa agg.            |                              | mollusc                      | 31/12/1989 | 17/09/1997 | 4            |
| Hydrobia acuta subsp. neglecta    |                              | mollusc                      | 06/05/2006 | -          | 1            |
| Hydrobia ventrosa                 | Spire Snail                  | mollusc                      | 28/08/2013 | -          | 1            |
| Cecilioides (Cecilioides) acicula | Blind Snail                  | mollusc                      | 31/12/1995 | -          | 1            |
| Cornu aspersum                    | Common Garden Snail          | mollusc                      | 01/04/2012 | -          | 1            |
| Cernuella (Cernuella) virgata     | Striped Snail                | mollusc                      | 31/12/1991 | 31/12/1995 | 2            |
| Monacha (Monacha) cantiana        | Kentish Snail                | mollusc                      | 31/12/1991 | 24/04/2012 | 3            |
| Littorina                         |                              | mollusc                      | 06/05/2006 | -          | 1            |
| Aegopinella nitidula              | Smooth Glass Snail           | mollusc                      | 01/04/2012 | -          | 1            |
| Pupilla (Pupilla) muscorum        | Moss Chrysalis Snail         | mollusc                      | 31/12/1995 | -          | 1            |
| Vallonia cf. excentrica           | Eccentric Grass Snail        | mollusc                      | 31/12/1995 | -          | 1            |
| Hydrobia ventrosa seg.            |                              | mollusc                      | 18/09/2001 | -          | 1            |
| Tubificoides                      |                              | annelid                      | 13/09/1990 | -          | 1            |
| Capitella capitata                | Gallery Worm                 | annelid                      | 13/09/1990 | -          | 1            |
| Hediste diversicolor              | Estuary Ragworm              | annelid                      | 25/07/2013 | -          | 1            |
| Tubifex tubifex                   |                              | annelid                      | 06/05/2006 | -          | 1            |
| Enchytraeidae                     | Whiteworm                    | annelid                      | 06/05/2006 | -          | 1            |
| Nereis                            |                              | annelid                      | 06/05/2006 | -          | 1            |
| Cheiracanthium erraticum          |                              | spider (Araneae)             | 08/05/2001 | -          | 2            |
| Enoplognatha ovata                |                              | spider (Araneae)             | 08/05/2001 | -          | 2            |
| Neottiura bimaculata              |                              | spider (Araneae)             | 08/05/2001 | -          | 2            |
| Tetragnatha extensa               |                              | spider (Araneae)             | 08/05/2001 | -          | 2            |
| Salticus scenicus                 | Zebra Spider                 | spider (Araneae)             | 25/07/2013 | -          | 1            |
| Heliophanus cupreus               |                              | spider (Araneae)             | 08/05/2001 | -          | 2            |
| Pisaura mirabilis                 | Nursery-Web Spider           | spider (Araneae)             | 31/12/1995 | 08/05/2001 | 3            |
| Pardosa pullata                   |                              | spider (Araneae)             | 08/05/2001 | -          | 2            |
| Pardosa nigriceps                 |                              | spider (Araneae)             | 08/05/2001 | -          | 2            |
| Pardosa monticola                 |                              | spider (Araneae)             | 08/05/2001 | -          | 2            |
| Drassodes cupreus                 |                              | spider (Araneae)             | 08/05/2001 | -          | 2            |
| Larinioides cornutus              |                              | spider (Araneae)             | 08/05/2001 | -          | 2            |
| Argiope bruennichi                | Wasp Spider                  | spider (Araneae)             | 31/08/1998 | 24/09/2013 | 2            |
| Araniella cucurbitina             |                              | spider (Araneae)             | 08/05/2001 | -          | 2            |
| Xysticus cristatus                |                              | spider (Araneae)             | 08/05/2001 | -          | 2            |
| Pirata hygrophilus                |                              | spider (Araneae)             | 08/05/2001 | -          | 2            |
| Carcinus maenas                   | Green Shore Crab             | crustacean                   | 30/05/2013 | 25/07/2013 | 2            |
| Androniscus dentiger              | Rosy Woodlouse               | crustacean                   | 08/01/2011 | -          | 1            |
| Idotea chelipes                   |                              | crustacean                   | 29/09/1984 | 30/09/1990 | 4            |
| Gammarus insensibilis             | Lagoon Sand-shrimp           | crustacean                   | 25/07/2013 | -          | 2            |
| Gammarus                          | Freshwater Shrimp (Gammarus) | crustacean                   | 06/05/2006 | -          | 1            |
| Ligia oceanica                    | Sea Slater                   | crustacean                   | 30/09/1990 | 08/01/2011 | 2            |
| Libellula depressa                | Broad-bodied Chaser          | insect - dragonfly (Odonata) | 12/05/1990 | 03/06/2007 | 19           |
| Coenagrion pulchellum             | Variable Damselfly           | insect - dragonfly (Odonata) | 22/05/2013 | -          | 1            |
| Sympetrum sanguineum              | Ruddy Darter                 | insect - dragonfly (Odonata) | 31/12/1991 | 25/08/2007 | 11           |
| Sympetrum fonscolombii            | Red-veined Darter            | insect - dragonfly (Odonata) | 24/06/2002 | 03/06/2007 | 2            |

| Latin Name                             | Common Name              | Taxon Group                   | First Date | Last Date  | No. of Rec's |
|--|--------------------------|-------------------------------|------------|------------|--------------|
| Orthetrum coerulescens                 | Keeled Skimmer           | insect - dragonfly (Odonata)  | 09/08/2006 | -          | 1            |
| Orthetrum cancellatum                  | Black-tailed Skimmer     | insect - dragonfly (Odonata)  | 15/07/2001 | 03/06/2006 | 2            |
| Libellula quadrimaculata               | Four-spotted Chaser      | insect - dragonfly (Odonata)  | 03/06/2006 | 03/06/2007 | 2            |
| Lestes sponsa                          | Emerald Damselfly        | insect - dragonfly (Odonata)  | 31/12/1965 | -          | 1            |
| Pyrrhosoma nymphula                    | Large Red Damselfly      | insect - dragonfly (Odonata)  | 31/12/1978 | 08/05/2011 | 13           |
| Ischnura elegans                       | Blue-tailed Damselfly    | insect - dragonfly (Odonata)  | 31/12/1978 | 25/08/2007 | 27           |
| Enallagma cyathigerum                  | Common Blue Damselfly    | insect - dragonfly (Odonata)  | 31/12/1978 | 25/08/2007 | 6            |
| Coenagrion puella                      | Azure Damselfly          | insect - dragonfly (Odonata)  | 31/12/1978 | 25/08/2007 | 21           |
| Calopteryx virgo                       | Beautiful Demoiselle     | insect - dragonfly (Odonata)  | 12/05/1998 | 05/04/2007 | 8            |
| Sympetrum striolatum                   | Common Darter            | insect - dragonfly (Odonata)  | 31/12/1944 | 26/08/2007 | 14           |
| Anax imperator                         | Emperor Dragonfly        | insect - dragonfly (Odonata)  | 12/05/1990 | 25/08/2007 | 24           |
| Brachytron pratense                    | Hairy Dragonfly          | insect - dragonfly (Odonata)  | 20/05/1992 | 03/06/2006 | 9            |
| Aeshna cyanea                          | Southern Hawker          | insect - dragonfly (Odonata)  | 31/12/1978 | 28/07/2013 | 10           |
| Zygoptera                              | Damselfly                | insect - dragonfly (Odonata)  | 03/06/2013 | -          | 2            |
| Odonata                                | Indet Dragon/Damselfly   | insect - dragonfly (Odonata)  | 31/12/2010 | -          | 5            |
| Erythromma viridulum                   | Small Red-eyed Damselfly | insect - dragonfly (Odonata)  | 09/08/2006 | 25/08/2007 | 3            |
| Aeshna mixta                           | Migrant Hawker           | insect - dragonfly (Odonata)  | 31/12/1991 | 25/08/2007 | 7            |
| Pholidoptera griseoaptera              | Dark Bush-cricket        | insect - orthopteran          | 31/12/1982 | -          | 1            |
| Metrioptera roeselii                   | Roesel's Bush-cricket    | insect - orthopteran          | 02/10/2008 | 22/07/2011 | 2            |
| Tetrix subulata                        | Slender Ground-hopper    | insect - orthopteran          | 26/04/2009 | -          | 1            |
| Leptophyes punctatissima               | Speckled Bush-cricket    | insect - orthopteran          | 31/12/1982 | 27/06/2004 | 2            |
| Conocephalus fuscus                    | Long-winged Cone-head    | insect - orthopteran          | 18/10/1997 | -          | 1            |
| Chorthippus parallelus                 | Meadow Grasshopper       | insect - orthopteran          | 31/12/1982 | -          | 1            |
| Chorthippus brunneus                   | Field Grasshopper        | insect - orthopteran          | 31/12/1982 | 13/09/2012 | 4            |
| Chorthippus albomarginatus             | Lesser Marsh Grasshopper | insect - orthopteran          | 31/12/1982 | 13/09/2012 | 6            |
| Platycleis albopunctata                | Grey Bush-cricket        | insect - orthopteran          | 31/12/1995 | -          | 1            |
| Forficula auricularia                  | Common Earwig            | insect - earwig (Dermaptera)  | 31/12/1982 | -          | 1            |
| Forficula lesnei                       | Lesne's Earwig           | insect - earwig (Dermaptera)  | 12/08/2000 | 31/12/2000 | 2            |
| Pyrrhocoris apterus                    | Firebug                  | insect - true bug (Hemiptera) | 31/12/2009 | 28/04/2012 | 4            |
| Derephysia (Derephysia) foliacea       |                          | insect - true bug (Hemiptera) | 16/09/2003 | -          | 1            |
| Acanthosoma haemorrhoidale             | Hawthorn Shieldbug       | insect - true bug (Hemiptera) | 26/06/2009 | 22/04/2011 | 4            |
| Hydaticus seminiger                    |                          | insect - beetle (Coleoptera)  | 21/03/2005 | -          | 1            |
| Porhydrus lineatus                     |                          | insect - beetle (Coleoptera)  | 25/06/2003 | -          | 1            |
| Heterocerus flexuosus                  |                          | insect - beetle (Coleoptera)  | 21/02/1976 | -          | 2            |
| Haliplus (Neohaliplus) lineatocollis   |                          | insect - beetle (Coleoptera)  | 25/06/2003 | 21/03/2005 | 2            |
| Haliplus (Haliplinus) ruficollis       |                          | insect - beetle (Coleoptera)  | 25/06/2003 | -          | 1            |
| Gyrinus urinator                       |                          | insect - beetle (Coleoptera)  | 25/06/2003 | -          | 1            |
| Gyrinus caspius                        | Whirligig beetles        | insect - beetle (Coleoptera)  | 21/03/2005 | -          | 1            |
| Endomychus coccineus                   |                          | insect - beetle (Coleoptera)  | 23/01/2013 | -          | 1            |
| Rhantus (Rhantus) suturalis            |                          | insect - beetle (Coleoptera)  | 21/03/2005 | -          | 1            |
| Ilybius ater                           |                          | insect - beetle (Coleoptera)  | 25/06/2003 | -          | 1            |
| Hygrotus (Hygrotus) inaequalis         |                          | insect - beetle (Coleoptera)  | 25/06/2003 | 21/03/2005 | 2            |
| Hygrotus (Coelambus) impressopunctatus |                          | insect - beetle (Coleoptera)  | 21/03/2005 | -          | 2            |
| Hydroporus planus                      |                          | insect - beetle (Coleoptera)  | 21/03/2005 | -          | 1            |

| Latin Name                           | Common Name                | Taxon Group                  | First Date | Last Date  | No. of Rec's |
|--------------------------------------|----------------------------|------------------------------|------------|------------|--------------|
| Hydroporus palustris                 |                            | insect - beetle (Coleoptera) | 21/03/2005 | -          | 5            |
| Hydroporus nigrita                   |                            | insect - beetle (Coleoptera) | 21/03/2005 | -          | 2            |
| Hydraena riparia                     |                            | insect - beetle (Coleoptera) | 21/03/2005 | -          | 1            |
| Hydroporus angustatus                |                            | insect - beetle (Coleoptera) | 21/03/2005 | -          | 3            |
| Laccobius bipunctatus                |                            | insect - beetle (Coleoptera) | 21/03/2005 | -          | 2            |
| Hydroporus erythrocephalus           |                            | insect - beetle (Coleoptera) | 25/06/2003 | 21/03/2005 | 4            |
| Hyphydrus ovatus                     |                            | insect - beetle (Coleoptera) | 25/06/2003 | 21/03/2005 | 3            |
| Stenus (Stenus) juno                 |                            | insect - beetle (Coleoptera) | 21/03/2005 | -          | 1            |
| Cafius xantholoma                    |                            | insect - beetle (Coleoptera) | 01/04/1973 | 21/02/1976 | 3            |
| Pyrochroa serraticornis              | Red-headed Cardinal Beetle | insect - beetle (Coleoptera) | 31/12/1995 | -          | 1            |
| Noterus clavicornis                  | Larger Noterus             | insect - beetle (Coleoptera) | 21/03/2005 | -          | 3            |
| Melolontha melolontha                | Common Cockchafer          | insect - beetle (Coleoptera) | 26/06/2004 | 10/05/2007 | 2            |
| Amphimallon solstitiale              | Summer Chafer              | insect - beetle (Coleoptera) | 08/07/2010 | 10/07/2010 | 2            |
| Lucanus cervus                       | Stag Beetle                | insect - beetle (Coleoptera) | 30/06/2000 | 17/06/2012 | 37           |
| Helophorus (Megahelophorus) grandis  |                            | insect - beetle (Coleoptera) | 21/03/2005 | -          | 2            |
| Lampyris noctiluca                   | Glow-worm                  | insect - beetle (Coleoptera) | 15/07/1972 | 14/07/2010 | 31           |
| Ochthebius (Homalochthebius) minimus |                            | insect - beetle (Coleoptera) | 21/03/2005 | -          | 2            |
| Hydrobius fuscipes                   |                            | insect - beetle (Coleoptera) | 21/03/2005 | -          | 4            |
| Dytiscus semisulcatus                |                            | insect - beetle (Coleoptera) | 21/03/2005 | -          | 1            |
| Helophorus (Helophorus) obscurus     |                            | insect - beetle (Coleoptera) | 21/03/2005 | -          | 4            |
| Enochrus testaceus                   |                            | insect - beetle (Coleoptera) | 21/03/2005 | -          | 2            |
| Enochrus bicolor                     |                            | insect - beetle (Coleoptera) | 25/07/2013 | -          | 2            |
| Anacaena limbata                     |                            | insect - beetle (Coleoptera) | 21/03/2005 | -          | 5            |
| Anacaena globulus                    |                            | insect - beetle (Coleoptera) | 21/03/2005 | -          | 1            |
| Lucanidae                            |                            | insect - beetle (Coleoptera) | 31/05/2011 | 01/06/2011 | 2            |
| Dytiscus marginalis                  | Great Diving Beetle        | insect - beetle (Coleoptera) | 25/06/2003 | -          | 1            |
| Philorhizus notatus                  |                            | insect - beetle (Coleoptera) | 21/02/1976 | -          | 2            |
| Apion frumentarium                   |                            | insect - beetle (Coleoptera) | 21/02/1976 | -          | 1            |
| Abax parallelepipedus                |                            | insect - beetle (Coleoptera) | 08/05/2001 | -          | 2            |
| Acupalpus meridianus                 |                            | insect - beetle (Coleoptera) | 04/05/2002 | -          | 1            |
| Amara (Amara) tibialis               |                            | insect - beetle (Coleoptera) | 21/02/1976 | -          | 1            |
| Bembidion (Emphanes) normannum       |                            | insect - beetle (Coleoptera) | 21/02/1976 | -          | 2            |
| Bembidion (Lymnaeum) nigropiceum     | Ground beetle              | insect - beetle (Coleoptera) | 01/04/1973 | 28/06/2008 | 2            |
| Bembidion (Metallina) lampros        |                            | insect - beetle (Coleoptera) | 12/06/2001 | -          | 1            |
| Bembidion (Notaphemphanes) ephippium |                            | insect - beetle (Coleoptera) | 01/04/1973 | -          | 1            |
| Platynus assimilis                   |                            | insect - beetle (Coleoptera) | 08/05/2001 | -          | 2            |
| Dicheirotrichus obsoletus            |                            | insect - beetle (Coleoptera) | 12/06/2001 | -          | 1            |
| Dyschirius (Dyschiriodes) extensus   |                            | insect - beetle (Coleoptera) | 31/12/1871 | 31/12/1905 | 2            |
| Elaphrus (Trichelaphrus) riparius    |                            | insect - beetle (Coleoptera) | 08/05/2001 | -          | 2            |
| Liopterus haemorrhoidalis            |                            | insect - beetle (Coleoptera) | 21/03/2005 | -          | 1            |
| Harpalus (Harpalus) rubripes         |                            | insect - beetle (Coleoptera) | 21/02/1976 | -          | 2            |
| Leistus (Leistophorus) fulvibarbis   |                            | insect - beetle (Coleoptera) | 21/02/1976 | -          | 2            |
| Microlestes maurus                   |                            | insect - beetle (Coleoptera) | 21/02/1976 | -          | 2            |
| Nebria (Nebria) brevicollis          |                            | insect - beetle (Coleoptera) | 05/05/2001 | 08/05/2001 | 3            |

| Latin Name                            | Common Name             | Taxon Group                  | First Date | Last Date  | No. of Rec's |
|---------------------------------------|-------------------------|------------------------------|------------|------------|--------------|
| Notiophilus biguttatus                |                         | insect - beetle (Coleoptera) | 08/05/2001 | -          | 2            |
| Paranchus albipes                     |                         | insect - beetle (Coleoptera) | 31/05/2003 | -          | 1            |
| Philorhizus melanocephalus            |                         | insect - beetle (Coleoptera) | 21/02/1976 | -          | 2            |
| Calathus (Calathus) fuscipes          |                         | insect - beetle (Coleoptera) | 21/02/1976 | -          | 2            |
| Sirocalodes depressicollis            |                         | insect - beetle (Coleoptera) | 14/05/2004 | -          | 1            |
| Harpalus (Harpalus) affinis           |                         | insect - beetle (Coleoptera) | 21/02/1976 | 04/05/2002 | 3            |
| Poecilus versicolor                   |                         | insect - beetle (Coleoptera) | 08/05/2001 | -          | 2            |
| Colymbetes fuscus                     |                         | insect - beetle (Coleoptera) | 21/03/2005 | -          | 1            |
| Agabus (Gaurodytes) paludosus         |                         | insect - beetle (Coleoptera) | 21/03/2005 | -          | 2            |
| Agabus (Gaurodytes) didymus           |                         | insect - beetle (Coleoptera) | 21/03/2005 | -          | 2            |
| Agabus (Acatodes) sturmii             |                         | insect - beetle (Coleoptera) | 21/03/2005 | -          | 4            |
| Rhinoncus pericarpius                 |                         | insect - beetle (Coleoptera) | 21/02/1976 | -          | 1            |
| Otiorhynchus (Dorymerus) sulcatus     | Vine Weevil             | insect - beetle (Coleoptera) | 28/08/2013 | -          | 1            |
| Liparus coronatus                     |                         | insect - beetle (Coleoptera) | 24/04/2012 | -          | 1            |
| Ceutorhynchus pallidactylus           | Cabbage Stem Weevil     | insect - beetle (Coleoptera) | 14/05/2004 | -          | 1            |
| Pterostichus (Steropus) madidus       | Rain-Clock              | insect - beetle (Coleoptera) | 21/02/1976 | 08/05/2001 | 4            |
| Pogonus chalceus                      |                         | insect - beetle (Coleoptera) | 12/06/2001 | 04/05/2002 | 3            |
| Agabus (Gaurodytes) bipustulatus      |                         | insect - beetle (Coleoptera) | 21/03/2005 | -          | 1            |
| Pogonus littoralis                    |                         | insect - beetle (Coleoptera) | 07/07/2001 | -          | 1            |
| Subcoccinella vigintiquattuorpunctata | 24-spot Ladybird        | insect - beetle (Coleoptera) | 27/04/2012 | 11/05/2012 | 3            |
| Adalia bipunctata                     | 2-spot Ladybird         | insect - beetle (Coleoptera) | 31/12/1995 | 13/07/2014 | 5            |
| Adalia decempunctata                  | 10-spot Ladybird        | insect - beetle (Coleoptera) | 31/12/1995 | -          | 1            |
| Harmonia axyridis                     | Harlequin Ladybird      | insect - beetle (Coleoptera) | 01/06/2007 | 22/09/2014 | 13           |
| Propylea quattuordecimpunctata        | 14-spot Ladybird        | insect - beetle (Coleoptera) | 22/05/2011 | -          | 1            |
| Psyllobora vigintiduopunctata         | 22-spot Ladybird        | insect - beetle (Coleoptera) | 06/04/2007 | 22/07/2013 | 3            |
| Coccinella septempunctata             | 7-spot Ladybird         | insect - beetle (Coleoptera) | 31/12/1995 | 15/05/2014 | 9            |
| Hamearis lucina                       | Duke of Burgundy        | insect - butterfly           | 31/12/2003 | -          | 1            |
| Melanargia galathea                   | Marbled White           | insect - butterfly           | 17/07/1996 | 14/07/2013 | 33           |
| Melanargia galathea subsp. serena     | Marbled White           | insect - butterfly           | 18/07/1990 | 24/07/1996 | 3            |
| Nymphalis polychloros                 | Large Tortoiseshell     | insect - butterfly           | 03/07/2005 | 27/02/2008 | 4            |
| Pararge aegeria                       | Speckled Wood           | insect - butterfly           | 18/07/1990 | 25/06/2013 | 87           |
| Polygonia c-album                     | Comma                   | insect - butterfly           | 18/07/1990 | 23/09/2013 | 96           |
| Pyronia tithonus                      | Hedge Brown             | insect - butterfly           | 18/07/1995 | 24/07/2014 | 97           |
| Lycaena phlaeas                       | Small Copper            | insect - butterfly           | 18/07/1990 | 07/09/2014 | 54           |
| Vanessa atalanta                      | Red Admiral             | insect - butterfly           | 18/07/1990 | 25/07/2014 | 209          |
| Vanessa cardui                        | Painted Lady            | insect - butterfly           | 03/08/1995 | 24/07/2012 | 73           |
| Lampides boeticus                     | Long-tailed Blue        | insect - butterfly           | 06/10/2013 | -          | 1            |
| Satyrium w-album                      | White-letter Hairstreak | insect - butterfly           | 31/12/2000 | 04/08/2008 | 3            |
| Maniola jurtina                       | Meadow Brown            | insect - butterfly           | 18/07/1990 | 27/07/2014 | 112          |
| Pyronia tithonus subsp. britanniae    | Hedge Brown             | insect - butterfly           | 18/07/1990 | 15/08/1996 | 5            |
| Limenitis camilla                     | White Admiral           | insect - butterfly           | 23/09/2004 | -          | 1            |
| Lasiommata megera                     | Wall                    | insect - butterfly           | 18/07/1990 | 25/06/2013 | 44           |
| Inachis io                            | Peacock                 | insect - butterfly           | 02/05/1995 | 31/05/2013 | 106          |
| Danaus plexippus                      | Monarch                 | insect - butterfly           | 19/08/2013 | -          | 1            |

| Latin Name                             | Common Name              | Taxon Group        | First Date | Last Date  | No. of Rec's |
|--|--------------------------|--------------------|------------|------------|--------------|
| Coenonympha pamphilus                  | Small Heath              | insect - butterfly | 22/05/1990 | 19/05/2012 | 46           |
| Argynnis paphia                        | Silver-washed Fritillary | insect - butterfly | 31/07/2007 | 28/08/2013 | 2            |
| Argynnis aglaja                        | Dark Green Fritillary    | insect - butterfly | 26/07/1996 | 03/08/2011 | 6            |
| Aphantopus hyperantus                  | Ringlet                  | insect - butterfly | 10/07/2006 | 28/07/2010 | 12           |
| Aglais urticae                         | Small Tortoiseshell      | insect - butterfly | 05/06/1988 | 31/07/2014 | 115          |
| Polyommatus (Lysandra) bellargus       | Adonis Blue              | insect - butterfly | 31/12/1994 | 19/05/2012 | 26           |
| Polyommatus icarus                     | Common Blue              | insect - butterfly | 22/05/1990 | 16/05/2014 | 82           |
| Thecla betulae                         | Brown Hairstreak         | insect - butterfly | 18/08/2010 | 30/08/2010 | 2            |
| Ochlodes sylvanus                      | Large Skipper            | insect - butterfly | 18/07/1990 | 14/07/2013 | 34           |
| Favonius quercus                       | Purple Hairstreak        | insect - butterfly | 03/08/2011 | -          | 1            |
| Polyommatus (Lysandra) coridon         | Chalk Hill Blue          | insect - butterfly | 18/07/1990 | 31/07/2014 | 29           |
| Thymelicus lineola                     | Essex Skipper            | insect - butterfly | 26/07/1996 | 19/08/2013 | 15           |
| Cupido minimus                         | Small Blue               | insect - butterfly | 16/06/1996 | 25/06/2013 | 16           |
| Erynnis tages                          | Dingy Skipper            | insect - butterfly | 02/05/1995 | 31/05/2013 | 10           |
| Pyrgus malvae                          | Grizzled Skipper         | insect - butterfly | 02/05/1995 | 23/05/2007 | 7            |
| Thymelicus sylvestris                  | Small Skipper            | insect - butterfly | 18/07/1990 | 31/07/2012 | 53           |
| Aricia agestis                         | Brown Argus              | insect - butterfly | 14/08/1997 | 31/05/2013 | 10           |
| Celastrina argiolus                    | Holly Blue               | insect - butterfly | 18/07/1995 | 16/05/2014 | 91           |
| Gonepteryx rhamni                      | Brimstone                | insect - butterfly | 11/03/1995 | 31/05/2013 | 64           |
| Pieris rapae                           | Small White              | insect - butterfly | 22/08/1995 | 23/09/2013 | 198          |
| Anthocharis cardamines                 | Orange-tip               | insect - butterfly | 27/04/1996 | 22/04/2012 | 18           |
| Colias croceus                         | Clouded Yellow           | insect - butterfly | 11/08/1996 | 07/09/2014 | 42           |
| Celastrina argiolus subsp. britanna    | Holly Blue               | insect - butterfly | 18/07/1990 | 15/08/1996 | 3            |
| Pieris brassicae                       | Large White              | insect - butterfly | 05/06/1988 | 23/09/2013 | 186          |
| Pieris napi                            | Green-veined White       | insect - butterfly | 31/12/1995 | 31/05/2013 | 27           |
| Eupithecia centaureata                 | Lime-speck Pug           | insect - moth      | 08/06/2008 | 31/08/2013 | 43           |
| Eupithecia exiguata                    | Mottled Pug              | insect - moth      | 05/05/2008 | 02/07/2011 | 2            |
| Eupithecia assimilata                  | Currant Pug              | insect - moth      | 21/05/2009 | 31/07/2010 | 6            |
| Eupithecia absinthiata                 | Wormwood Pug             | insect - moth      | 26/06/2009 | -          | 1            |
| Eupithecia linariata                   | Toadflax Pug             | insect - moth      | 28/08/2010 | -          | 1            |
| Eupithecia icterata subsp. subfulvata  | Tawny Speckled Pug       | insect - moth      | 22/08/2008 | 04/09/2011 | 5            |
| Eupithecia intricata                   | Freyer's Pug             | insect - moth      | 01/06/2012 | -          | 1            |
| Eupithecia intricata subsp. arceuthata | Freyer's Pug             | insect - moth      | 20/06/2009 | 26/06/2010 | 3            |
| Eupithecia icterata                    | Tawny Speckled Pug       | insect - moth      | 16/07/2008 | 20/08/2012 | 4            |
| Eupithecia phoeniceata                 | Cypress Pug              | insect - moth      | 06/08/2008 | 29/08/2013 | 27           |
| Eupithecia succenturiata               | Bordered Pug             | insect - moth      | 29/08/2012 | 29/08/2013 | 2            |
| Eupithecia subfuscata                  | Grey Pug                 | insect - moth      | 08/08/2010 | 04/09/2010 | 3            |
| Eupithecia abbreviata                  | Brindled Pug             | insect - moth      | 21/04/2011 | 30/04/2011 | 3            |
| Ennomos autumnaria                     | Large Thorn              | insect - moth      | 22/08/2008 | 16/09/2012 | 10           |
| Eupithecia tantillaria                 | Dwarf Pug                | insect - moth      | 30/05/2008 | 01/06/2008 | 2            |
| Eupithecia tripunctaria                | White-spotted Pug        | insect - moth      | 16/07/2008 | 19/09/2010 | 3            |
| Eupithecia venosata                    | Netted Pug               | insect - moth      | 13/06/2009 | -          | 1            |
| Eupithecia vulgata                     | Common Pug               | insect - moth      | 14/07/2009 | 26/07/2012 | 9            |
| Eupithecia pulchellata                 | Foxglove Pug             | insect - moth      | 06/06/2008 | -          | 1            |

| Latin Name                               | Common Name             | Taxon Group   | First Date | Last Date  | No. of Rec's |
|--|-------------------------|---------------|------------|------------|--------------|
| Crocallis elinguaria                     | Scalloped Oak           | insect - moth | 03/07/2008 | 14/08/2012 | 26           |
| Camptogramma bilineata                   | Yellow Shell            | insect - moth | 30/07/2008 | 14/08/2012 | 13           |
| Catarhoe cuculata                        | Royal Mantle            | insect - moth | 23/07/2010 | -          | 1            |
| Chiasmia clathrata                       | Latticed Heath          | insect - moth | 17/08/2012 | -          | 1            |
| Chloroclysta siterata                    | Red-green Carpet        | insect - moth | 05/10/2010 | 23/10/2012 | 3            |
| Chloroclysta truncata                    | Common Marbled Carpet   | insect - moth | 01/06/2008 | 29/05/2011 | 23           |
| Chloroclystis v-ata                      | V-pug                   | insect - moth | 10/08/2009 | 28/07/2012 | 4            |
| Cidaria fulvata                          | Barred Yellow           | insect - moth | 15/06/2009 | 08/07/2010 | 2            |
| Colostygia pectinataria                  | Green Carpet            | insect - moth | 22/08/2008 | 26/08/2012 | 7            |
| Epirrhoe alternata                       | Common Carpet           | insect - moth | 02/08/2008 | 19/05/2012 | 7            |
| Cosmorhoe ocellata                       | Purple Bar              | insect - moth | 16/07/2008 | 31/08/2009 | 4            |
| Eulithis pyraliata                       | Barred Straw            | insect - moth | 25/06/2012 | -          | 1            |
| Electrophaes corylata                    | Broken-barred Carpet    | insect - moth | 01/06/2012 | -          | 1            |
| Ennomos alniaria                         | Canary-shouldered Thorn | insect - moth | 08/08/2008 | 11/09/2008 | 3            |
| Hypomecis punctinalis                    | Pale Oak Beauty         | insect - moth | 03/07/2010 | -          | 2            |
| Ennomos fuscantaria                      | Dusky Thorn             | insect - moth | 22/08/2008 | 28/08/2008 | 3            |
| Geometra papilionaria                    | Large Emerald           | insect - moth | 11/07/2008 | 13/07/2008 | 2            |
| Epirrhoe galiata                         | Galium Carpet           | insect - moth | 08/09/2008 | -          | 1            |
| Epirrita                                 | Indet. November Moth    | insect - moth | 23/10/2012 | -          | 1            |
| Eulithis prunata                         | Phoenix                 | insect - moth | 11/07/2008 | 20/07/2010 | 5            |
| Colotois pennaria                        | Feathered Thorn         | insect - moth | 04/09/2010 | 29/10/2011 | 4            |
| Phigalia pilosaria                       | Pale Brindled Beauty    | insect - moth | 28/02/2009 | 25/05/2009 | 2            |
| Menophra abruptaria                      | Waved Umber             | insect - moth | 24/04/2007 | 29/05/2010 | 7            |
| Opisthograptis luteolata                 | Brimstone Moth          | insect - moth | 10/09/2006 | 29/08/2013 | 66           |
| Scotopteryx bipunctaria                  | Chalk Carpet            | insect - moth | 17/08/2012 | -          | 1            |
| Scopula marginepunctata                  | Mullein Wave            | insect - moth | 06/08/2008 | 20/06/2013 | 14           |
| Scopula imitaria                         | Small Blood-vein        | insect - moth | 26/06/2004 | 05/07/2012 | 8            |
| Scopula floslactata                      | Cream Wave              | insect - moth | 25/05/2009 | 10/07/2010 | 3            |
| Rhodometra sacraria                      | Vestal                  | insect - moth | 10/09/2006 | 04/09/2011 | 3            |
| Hydriomena furcata                       | July Highflyer          | insect - moth | 27/06/2009 | 28/07/2012 | 4            |
| Philereme transversata subsp. britannica | Dark Umber              | insect - moth | 20/07/2010 | -          | 1            |
| Scotopteryx chenopodiata                 | Shaded Broad-bar        | insect - moth | 22/08/2008 | 25/07/2011 | 2            |
| Petrophora chlorosata                    | Brown Silver-line       | insect - moth | 29/06/2010 | -          | 1            |
| Perizoma albulata                        | Grass Rivulet           | insect - moth | 28/05/2009 | 04/06/2009 | 2            |
| Dolicharthria punctalis                  | Long-legged China-mark  | insect - moth | 27/06/2009 | 20/06/2013 | 2            |
| Campaea margaritata                      | Light Emerald           | insect - moth | 10/09/2006 | 16/09/2012 | 29           |
| Peribatodes rhomboidaria                 | Willow Beauty           | insect - moth | 21/08/1996 | 29/08/2013 | 128          |
| Pasiphila rectangulata                   | Green Pug               | insect - moth | 27/06/2004 | 25/06/2012 | 27           |
| Paradarisa consonaria                    | Square Spot             | insect - moth | 14/08/2012 | -          | 1            |
| Ourapteryx sambucaria                    | Swallow-tailed Moth     | insect - moth | 26/06/2004 | 17/07/2012 | 19           |
| Plagodis dolabraria                      | Scorched Wing           | insect - moth | 26/06/2009 | -          | 1            |
| Idaea fuscovenosa                        | Dwarf Cream Wave        | insect - moth | 07/07/2010 | 14/06/2011 | 4            |
| Hemistola chrysoprasaria                 | Small Emerald           | insect - moth | 24/06/2008 | 26/07/2012 | 10           |
| Hemithea aestivaria                      | Common Emerald          | insect - moth | 03/07/2008 | 24/07/2012 | 16           |

| Latin Name                  | Common Name                   | Taxon Group   | First Date | Last Date  | No. of Rec's |
|-----------------------------|-------------------------------|---------------|------------|------------|--------------|
| Horisme tersata             | Fern                          | insect - moth | 09/08/2010 | 29/08/2013 | 3            |
| Horisme vitalbata           | Small Waved Umber             | insect - moth | 02/08/2008 | 25/07/2011 | 12           |
| Hydrelia flammeolaria       | Small Yellow Wave             | insect - moth | 26/06/2009 | 02/07/2010 | 3            |
| Hylaea fasciaria            | Barred Red                    | insect - moth | 20/07/2010 | -          | 1            |
| Idaea aversata              | Riband Wave                   | insect - moth | 27/06/2004 | 29/08/2013 | 98           |
| Idaea aversata ab. remutata | Riband Wave (non-banded form) | insect - moth | 05/07/2011 | 15/08/2011 | 5            |
| Macaria alternata           | Sharp-angled Peacock          | insect - moth | 23/08/2008 | -          | 1            |
| Idaea dimidiata             | Single-dotted Wave            | insect - moth | 08/07/2008 | 15/08/2012 | 15           |
| Lomographa temerata         | Clouded Silver                | insect - moth | 07/06/2008 | 22/06/2012 | 9            |
| Idaea rusticata             | Least Carpet                  | insect - moth | 27/08/2010 | 05/07/2011 | 2            |
| Idaea seriata               | Small Dusty Wave              | insect - moth | 18/08/2008 | 29/08/2013 | 20           |
| Idaea subsericeata          | Satin Wave                    | insect - moth | 07/06/2008 | -          | 1            |
| Idaea trigeminata           | Treble Brown Spot             | insect - moth | 13/06/2009 | 01/06/2012 | 3            |
| Itame brunneata             | Rannoch Looper                | insect - moth | 09/06/2011 | -          | 1            |
| Selenia dentaria            | Early Thorn                   | insect - moth | 23/04/2008 | 26/07/2012 | 10           |
| Lomaspilis marginata        | Clouded Border                | insect - moth | 20/07/2010 | -          | 2            |
| Gymnoscelis rufifasciata    | Double-striped Pug            | insect - moth | 21/08/1996 | 29/08/2013 | 51           |
| Idaea biselata              | Small Fan-footed Wave         | insect - moth | 16/07/2008 | 23/07/2010 | 2            |
| Crambus perlella            | Satin Grass-veneer            | insect - moth | 19/07/2009 | 20/08/2012 | 14           |
| Pyrausta despicata          | Straw-barred Pearl            | insect - moth | 26/06/2010 | 15/08/2012 | 2            |
| Coleophora albitarsella     | White-legged Case-bearer      | insect - moth | 14/08/2012 | -          | 1            |
| Coleophora pennella         | Bugloss Case-bearer           | insect - moth | 20/06/2013 | -          | 1            |
| Coleophora salicorniae      | Glasswort Case-bearer         | insect - moth | 06/05/2006 | -          | 1            |
| Zeuzera pyrina              | Leopard Moth                  | insect - moth | 22/07/2008 | 06/08/2008 | 3            |
| Agriphila geniculea         | Elbow-stripe Grass-veneer     | insect - moth | 31/08/2009 | 16/09/2012 | 15           |
| Agriphila inquinatella      | Barred Grass-veneer           | insect - moth | 19/09/2010 | -          | 1            |
| Agriphila straminella       | Straw Grass-veneer            | insect - moth | 03/07/2011 | 14/08/2012 | 3            |
| Agriphila tristella         | Common Grass-veneer           | insect - moth | 23/08/2009 | 28/08/2012 | 7            |
| Catoptria falsella          | Chequered Grass-veneer        | insect - moth | 23/08/2009 | -          | 1            |
| Anthophila fabriciana       | Common Nettle-tap             | insect - moth | 28/05/2011 | -          | 1            |
| Crambus pascuella           | Inlaid Grass-veneer           | insect - moth | 26/06/2009 | 05/07/2012 | 24           |
| Diurnea fagella             | March Tubic                   | insect - moth | 25/03/2009 | 19/04/2013 | 9            |
| Donacaula forficella        | Pale Water-veneer             | insect - moth | 03/07/2009 | -          | 1            |
| Eudonia angustea            | Narrow-winged Grey            | insect - moth | 14/04/2009 | 20/06/2013 | 9            |
| Eudonia mercurella          | Small Grey                    | insect - moth | 18/07/2009 | 08/07/2010 | 4            |
| Eurrhypara hortulata        | Small Magpie                  | insect - moth | 10/06/2008 | 26/07/2012 | 22           |
| Evergestis forficalis       | Garden Pebble                 | insect - moth | 09/08/2008 | 05/07/2012 | 9            |
| Nomophila noctuella         | Rush Veneer                   | insect - moth | 26/07/2009 | 23/10/2012 | 12           |
| Ostrinia nubilalis          | European Corn-borer           | insect - moth | 10/07/2010 | -          | 1            |
| Phlyctaenia coronata        | Elder Pearl                   | insect - moth | 11/07/2008 | 18/08/2012 | 35           |
| Pleuroptya ruralis          | Mother of Pearl               | insect - moth | 27/07/2008 | 11/08/2012 | 24           |
| Ebulea crocealis            | Ochreous Pearl                | insect - moth | 28/08/2008 | -          | 1            |
| Chrysoteuchia culmella      | Garden Grass-veneer           | insect - moth | 26/06/2009 | 11/07/2013 | 40           |
| Lithosia quadra             | Four-spotted Footman          | insect - moth | 11/09/2008 | -          | 1            |

| Latin Name                                | Common Name             | Taxon Group   | First Date | Last Date  | No. of Rec's |
|---|-------------------------|---------------|------------|------------|--------------|
| Thera britannica                          | Spruce Carpet           | insect - moth | 21/05/2010 | 05/07/2012 | 2            |
| Laothoe populi                            | Poplar Hawk-moth        | insect - moth | 18/07/2008 | 26/07/2012 | 12           |
| Adela croesella                           | Small Barred Long-horn  | insect - moth | 19/05/2012 | -          | 1            |
| Adela reaumurella                         | Green Long-horn         | insect - moth | 12/05/2012 | -          | 1            |
| Alucita hexadactyla                       | Twenty-plume Moth       | insect - moth | 06/04/2009 | 03/07/2011 | 3            |
| Arctia caja                               | Garden Tiger            | insect - moth | 06/05/2003 | 28/08/2012 | 17           |
| Diaphora mendica                          | Muslin Moth             | insect - moth | 21/04/2007 | 22/05/2012 | 19           |
| Eilema complana                           | Scarce Footman          | insect - moth | 30/07/2008 | 15/07/2012 | 7            |
| Eilema depressa                           | Buff Footman            | insect - moth | 08/08/2008 | -          | 1            |
| Eilema griseola                           | Dingy Footman           | insect - moth | 27/07/2008 | 20/08/2012 | 16           |
| Choreutis pariana                         | Apple Leaf Skeletonizer | insect - moth | 29/09/2011 | 01/10/2011 | 2            |
| Eilema sororcula                          | Orange Footman          | insect - moth | 28/05/2009 | 29/05/2010 | 3            |
| Pyrausta purpuralis                       | Common Purple & Gold    | insect - moth | 07/06/2008 | 17/08/2012 | 28           |
| Miltochrista miniata                      | Rosy Footman            | insect - moth | 27/07/2008 | -          | 1            |
| Phragmatobia fuliginosa                   | Ruby Tiger              | insect - moth | 25/04/2011 | 26/07/2012 | 5            |
| Phragmatobia fuliginosa subsp. fuliginosa | Ruby Tiger              | insect - moth | 13/07/2008 | 31/07/2010 | 10           |
| Spilosoma lubricipeda                     | White Ermine            | insect - moth | 07/06/2008 | 29/05/2011 | 5            |
| Spilosoma luteum                          | Buff Ermine             | insect - moth | 27/06/2004 | 29/08/2013 | 68           |
| Tyria jacobaeae                           | Cinnabar                | insect - moth | 26/06/2004 | 08/07/2010 | 10           |
| Argyresthia brockeella                    | Gold-ribbon Argent      | insect - moth | 08/07/2010 | -          | 1            |
| Argyresthia trifasciata                   | Triple-barred Argent    | insect - moth | 26/05/2012 | -          | 1            |
| Oegoconia                                 |                         | insect - moth | 03/07/2011 | 01/08/2011 | 2            |
| Blastobasis adustella                     | Dingy Dowd              | insect - moth | 01/08/2011 | 05/09/2012 | 14           |
| Eilema lurideola                          | Common Footman          | insect - moth | 28/06/2008 | 28/07/2012 | 33           |
| Alcis repandata subsp. repandata          | Mottled Beauty          | insect - moth | 30/05/2008 | -          | 1            |
| Pyrausta aurata                           | Small Purple & Gold     | insect - moth | 31/08/2005 | 22/08/2012 | 7            |
| Rivula sericealis                         | Straw Dot               | insect - moth | 07/06/2008 | 28/08/2012 | 21           |
| Scoliopteryx libatrix                     | Herald                  | insect - moth | 12/04/2009 | 25/04/2013 | 4            |
| Zanclognatha tarsipennalis                | Fan-foot                | insect - moth | 26/06/2009 | 02/07/2011 | 6            |
| Eriocrania subpurpurella                  | Common Oak Purple       | insect - moth | 22/03/2012 | -          | 1            |
| Athrips mouffetella                       | Dotted Grey Groundling  | insect - moth | 08/07/2010 | -          | 1            |
| Dichomeris marginella                     | Juniper Webber          | insect - moth | 13/06/2009 | 05/07/2012 | 20           |
| Scrobipalpa salinella                     | Sea-aster Groundling    | insect - moth | 31/12/1970 | -          | 1            |
| Scrobipalpa suaedella                     | Sea-blite Groundling    | insect - moth | 31/12/1886 | -          | 1            |
| Abraxas grossulariata                     | Magpie                  | insect - moth | 27/06/2004 | 26/07/2012 | 7            |
| Orgyia antiqua                            | Vapourer                | insect - moth | 01/07/2008 | 30/09/2011 | 4            |
| Agriopis marginaria                       | Dotted Border           | insect - moth | 09/03/2012 | -          | 1            |
| Lygephila pastinum                        | Blackneck               | insect - moth | 11/07/2008 | 03/07/2011 | 4            |
| Alsophila aescularia                      | March Moth              | insect - moth | 21/03/2009 | 15/03/2011 | 4            |
| Anticlea derivata                         | Streamer                | insect - moth | 26/04/2008 | 13/04/2011 | 3            |
| Apeira syringaria                         | Lilac Beauty            | insect - moth | 10/06/2008 | 20/06/2009 | 2            |
| Aplocera efformata                        | Lesser Treble-bar       | insect - moth | 19/05/2012 | 26/07/2012 | 2            |
| Aplocera plagiata                         | Treble-bar              | insect - moth | 23/08/2009 | 30/07/2011 | 2            |
| Apocheima hispidaria                      | Small Brindled Beauty   | insect - moth | 28/02/2009 | -          | 1            |

| Latin Name                    | Common Name            | Taxon Group   | First Date | Last Date  | No. of Rec's |
|-------------------------------|------------------------|---------------|------------|------------|--------------|
| Aspitates ochrearia           | Yellow Belle           | insect - moth | 10/06/2009 | 14/09/2010 | 2            |
| Biston betularia              | Peppered Moth          | insect - moth | 30/05/2008 | 15/07/2012 | 15           |
| Biston strataria              | Oak Beauty             | insect - moth | 16/07/2008 | -          | 1            |
| Cabera exanthemata            | Common Wave            | insect - moth | 08/07/2010 | 10/07/2010 | 2            |
| Acasis viretata               | Yellow-barred Brindle  | insect - moth | 08/06/2008 | 20/08/2012 | 11           |
| Elachista argentella          | Swan-feather Dwarf     | insect - moth | 01/06/2012 | -          | 1            |
| Udea ferrugalis               | Rusty Dot              | insect - moth | 14/08/2009 | 06/12/2011 | 6            |
| Udea olivalis                 | Olive Pearl            | insect - moth | 04/06/2009 | 25/06/2012 | 10           |
| Udea prunalis                 | Dusky Pearl            | insect - moth | 14/07/2009 | 26/07/2012 | 8            |
| Tinagma ocnerostomella        | Bugloss Spear-wing     | insect - moth | 20/06/2013 | -          | 1            |
| Cilix glaucata                | Chinese Character      | insect - moth | 02/05/2009 | 10/07/2010 | 4            |
| Habrosyne pyritoides          | Buff Arches            | insect - moth | 27/06/2004 | 08/07/2010 | 5            |
| Tethea ocularis               | Figure of Eighty       | insect - moth | 10/05/2011 | -          | 1            |
| Thyatira batis                | Peach Blossom          | insect - moth | 22/08/2008 | 27/06/2009 | 4            |
| Agonopterix alstromeriana     | Brown-spot Flat-body   | insect - moth | 16/04/2011 | -          | 1            |
| Agonopterix arenella          | Brindled Flat-body     | insect - moth | 01/06/2012 | -          | 1            |
| Phytometra viridaria          | Small Purple-barred    | insect - moth | 26/06/2009 | -          | 1            |
| Agonopterix subpropinquella   | Ruddy Flat-body        | insect - moth | 24/03/2010 | -          | 1            |
| Cabera pusaria                | Common White Wave      | insect - moth | 10/06/2009 | 26/06/2009 | 2            |
| Ethmia dodecea                | Dotted Ermel           | insect - moth | 10/07/2010 | -          | 1            |
| Ethmia quadrillella           | Comfrey Ermel          | insect - moth | 31/12/1981 | -          | 1            |
| Ethmia terminella             | Five-spot Ermel        | insect - moth | 20/06/2013 | -          | 1            |
| Catocala nupta                | Red Underwing          | insect - moth | 16/09/1994 | 21/09/2010 | 7            |
| Euclidia glyphica             | Burnet Companion       | insect - moth | 19/05/2012 | -          | 1            |
| Euproctis chrysorrhoea        | Brown-tail             | insect - moth | 28/06/2008 | 25/07/2013 | 16           |
| Euproctis similis             | Yellow-tail            | insect - moth | 27/07/2008 | 03/08/2011 | 5            |
| Herminia grisealis            | Small Fan-foot         | insect - moth | 01/06/2010 | -          | 1            |
| Hypena proboscidalis          | Snout                  | insect - moth | 10/06/2008 | 16/09/2012 | 18           |
| Laspeyria flexula             | Beautiful Hook-tip     | insect - moth | 30/07/2008 | 08/07/2010 | 2            |
| Agonopterix heracliana        | Common Flat-body       | insect - moth | 11/04/2011 | -          | 1            |
| Thera cupressata              | Cypress Carpet         | insect - moth | 10/06/2008 | 23/10/2012 | 18           |
| Paradrina clavipalpis         | Pale Mottled Willow    | insect - moth | 21/08/1996 | 31/08/2013 | 49           |
| Hofmannophila pseudospretella | Brown House-moth       | insect - moth | 01/07/2009 | 16/09/2012 | 16           |
| Carcina quercana              | Long-horned Flat-body  | insect - moth | 01/07/2009 | 20/08/2012 | 7            |
| Plutella xylostella           | Diamond-back Moth      | insect - moth | 25/05/2009 | 20/06/2013 | 35           |
| Adaina microdactyla           | Hemp-agrimony Plume    | insect - moth | 01/06/2010 | 02/07/2010 | 2            |
| Amblyptilia acanthadactyla    | Beautiful Plume        | insect - moth | 09/04/2009 | 25/08/2012 | 16           |
| Amblyptilia punctidactyla     | Brindled Plume         | insect - moth | 29/03/2010 | -          | 1            |
| Emmelina monodactyla          | Common Plume           | insect - moth | 14/04/2009 | 25/04/2013 | 43           |
| Oidaematophorus lithodactyla  | Dusky Plume            | insect - moth | 27/06/2009 | -          | 1            |
| Platyptilia gonodactyla       | Triangle Plume         | insect - moth | 10/06/2009 | -          | 1            |
| Pterophorus pentadactyla      | White Plume Moth       | insect - moth | 03/07/2009 | 08/07/2010 | 3            |
| Acrobasis consociella         | Broad-barred Knot-horn | insect - moth | 05/07/2012 | 12/08/2012 | 3            |
| Aphomia sociella              | Bee Moth               | insect - moth | 24/06/2008 | 20/06/2013 | 12           |

| Latin Name              | Common Name                 | Taxon Group   | First Date | Last Date  | No. of Rec's |
|-------------------------|-----------------------------|---------------|------------|------------|--------------|
| Endrosis sarcitrella    | White-shouldered House-moth | insect - moth | 31/03/2010 | 14/08/2012 | 12           |
| Pyralis farinalis       | Meal Moth                   | insect - moth | 16/08/2008 | 02/07/2010 | 3            |
| Hyles gallii            | Bedstraw Hawk-moth          | insect - moth | 26/08/2012 | -          | 1            |
| Deilephila porcellus    | Small Elephant Hawk-moth    | insect - moth | 06/06/2008 | 05/07/2012 | 13           |
| Deilephila elpenor      | Elephant Hawk-moth          | insect - moth | 01/06/2008 | 22/07/2012 | 43           |
| Agrius convolvuli       | Convolvulus Hawk-moth       | insect - moth | 09/01/2003 | -          | 1            |
| Acherontia atropos      | Death's-head Hawk-moth      | insect - moth | 08/08/2003 | -          | 1            |
| Endotricha flammealis   | Rosy Tabby                  | insect - moth | 02/08/2008 | 17/08/2012 | 26           |
| Trachycera marmorea     | Marbled Knot-horn           | insect - moth | 01/08/2011 | -          | 1            |
| Euzophera pinguis       | Ash-bark Knot-horn          | insect - moth | 26/07/2009 | 20/08/2012 | 2            |
| Phycitodes binaevella   | Ermine Knot-horn            | insect - moth | 10/07/2012 | 24/07/2012 | 2            |
| Orthopygia glaucinalis  | Double-striped Tabby        | insect - moth | 04/08/2009 | 14/08/2009 | 2            |
| Nephopterix angustella  | Spindle Knot-horn           | insect - moth | 23/08/2009 | -          | 1            |
| Hyles euphorbiae        | Spurge Hawk-moth            | insect - moth | 10/06/2008 | -          | 1            |
| Homoeosoma sinuella     | Twin-barred Knot-horn       | insect - moth | 20/06/2013 | -          | 1            |
| Borkhausenia fuscescens | Small Dingy Tubic           | insect - moth | 14/08/2012 | -          | 1            |
| Trachycera suavella     | Thicket Knot-horn           | insect - moth | 03/07/2009 | 21/07/2011 | 3            |
| Meganola albula         | Kent Black Arches           | insect - moth | 20/07/2010 | 05/07/2012 | 2            |
| Peridroma saucia        | Pearly Underwing            | insect - moth | 29/05/2009 | -          | 1            |
| Phlogophora meticulosa  | Angle Shades                | insect - moth | 06/04/2007 | 16/09/2012 | 24           |
| Plusia festucae         | Gold Spot                   | insect - moth | 09/08/2008 | 01/09/2008 | 2            |
| Polymixis lichenea      | Feathered Ranunculus        | insect - moth | 08/10/2009 | -          | 1            |
| Rhizedra lutosa         | Large Wainscot              | insect - moth | 08/10/2009 | 04/09/2011 | 5            |
| Rusina ferruginea       | Brown Rustic                | insect - moth | 08/06/2009 | -          | 1            |
| Shargacucullia verbasci | Mullein                     | insect - moth | 02/07/1996 | 14/05/2011 | 5            |
| Thalpophila matura      | Straw Underwing             | insect - moth | 08/08/2008 | 28/08/2012 | 27           |
| Tholera decimalis       | Feathered Gothic            | insect - moth | 31/08/2009 | 04/09/2011 | 7            |
| Xanthia aurago          | Barred Sallow               | insect - moth | 08/10/2008 | 05/10/2010 | 3            |
| Xanthia icteritia       | Sallow                      | insect - moth | 08/10/2009 | 27/09/2011 | 2            |
| Xanthia togata          | Pink-barred Sallow          | insect - moth | 01/10/2011 | -          | 1            |
| Xestia c-nigrum         | Setaceous Hebrew Character  | insect - moth | 21/08/1996 | 31/08/2013 | 75           |
| Esperia sulphurella     | Sulphur Tubic               | insect - moth | 17/05/2011 | -          | 1            |
| Furcula furcula         | Sallow Kitten               | insect - moth | 28/04/2007 | 27/07/2008 | 2            |
| Batia lunaris           | Lesser Tawny Tubic          | insect - moth | 05/07/2011 | -          | 1            |
| Pterostoma palpina      | Pale Prominent              | insect - moth | 31/07/2010 | -          | 1            |
| Pheosia tremula         | Swallow Prominent           | insect - moth | 24/07/2009 | 25/08/2012 | 2            |
| Pheosia gnoma           | Lesser Swallow Prominent    | insect - moth | 15/08/2011 | -          | 1            |
| Phalera bucephala       | Buff-tip                    | insect - moth | 26/06/2004 | 05/07/2012 | 7            |
| Xestia xanthographa     | Square-spot Rustic          | insect - moth | 21/08/1996 | 31/08/2013 | 54           |
| Notodonta dromedarius   | Iron Prominent              | insect - moth | 16/04/2009 | -          | 1            |
| Xylocampa areola        | Early Grey                  | insect - moth | 06/04/2007 | 25/04/2013 | 49           |
| Drymonia ruficornis     | Lunar Marbled Brown         | insect - moth | 02/05/2008 | -          | 1            |
| Clostera curtula        | Chocolate-tip               | insect - moth | 01/05/2009 | 02/05/2009 | 2            |
| Cerura vinula           | Puss Moth                   | insect - moth | 31/12/1995 | 01/06/2012 | 2            |

| Latin Name                | Common Name                  | Taxon Group   | First Date | Last Date  | No. of Rec's |
|---------------------------|------------------------------|---------------|------------|------------|--------------|
| Nola cucullatella         | Short-cloaked Moth           | insect - moth | 10/07/2010 | -          | 2            |
| Nola confusalis           | Least Black Arches           | insect - moth | 21/04/2009 | 11/05/2011 | 5            |
| Smerinthus ocellata       | Eyed Hawk-moth               | insect - moth | 20/06/2009 | 05/07/2012 | 2            |
| Notodonta ziczac          | Pebble Prominent             | insect - moth | 21/04/2007 | 26/07/2009 | 4            |
| Pseudargyrotoza conwagana | Yellow-spot Twist            | insect - moth | 02/06/2009 | 22/06/2012 | 6            |
| Cydia splendana           | Marbled Piercer              | insect - moth | 14/08/2012 | -          | 1            |
| Ditula angustiorana       | Red-barred Tortrix           | insect - moth | 26/07/2009 | 05/07/2012 | 4            |
| Endothenia gentianaeana   | Teasel Marble                | insect - moth | 20/06/2013 | -          | 1            |
| Epiblema cynosbatella     | Yellow-faced Bell            | insect - moth | 25/05/2009 | 05/06/2010 | 2            |
| Epiblema uddmanniana      | Bramble Shoot Moth           | insect - moth | 04/06/2009 | 25/06/2012 | 6            |
| Epinotia bilunana         | Crescent Bell                | insect - moth | 04/06/2009 | -          | 1            |
| Epinotia nisella          | Grey Poplar Bell             | insect - moth | 14/08/2012 | -          | 1            |
| Epiphyas postvittana      | Light Brown Apple Moth       | insect - moth | 22/08/2008 | 20/06/2013 | 136          |
| Eucosma campoliliana      | Marbled Bell                 | insect - moth | 05/07/2011 | -          | 1            |
| Gynnidomorpha alismana    | Water-plantain Conch         | insect - moth | 31/12/1970 | -          | 1            |
| Hedya nubiferana          | Marbled Orchard Tortrix      | insect - moth | 22/06/2012 | -          | 1            |
| Lozotaenia forsterana     | Large Ivy Twist              | insect - moth | 18/07/2010 | 30/06/2012 | 4            |
| Lozotaeniodes formosanus  | Orange Pine Twist            | insect - moth | 20/06/2009 | 28/07/2012 | 10           |
| Macroglossum stellatarum  | Humming-bird Hawk-moth       | insect - moth | 09/01/2003 | 08/09/2011 | 17           |
| Yponomeuta evonymella     | Bird-cherry Ermine           | insect - moth | 01/07/2009 | 14/07/2009 | 3            |
| Zygaena trifolii          | Five-spot Burnet             | insect - moth | 16/06/2007 | -          | 1            |
| Zygaena filipendulae      | Six-spot Burnet              | insect - moth | 24/07/2010 | -          | 1            |
| Ypsolopha sequella        | Pied Smudge                  | insect - moth | 01/07/2009 | -          | 1            |
| Ypsolopha scabrella       | Wainscot Smudge              | insect - moth | 25/07/2011 | -          | 1            |
| Yponomeuta sedella        | Grey Ermine                  | insect - moth | 26/06/2009 | -          | 1            |
| Pandemis corylana         | Chequered Fruit-tree Tortrix | insect - moth | 25/08/2008 | 22/08/2012 | 2            |
| Yponomeuta malinellus     | Apple Ermine                 | insect - moth | 14/07/2009 | 20/07/2010 | 4            |
| Phtheochroa rugosana      | Rough-winged Conch           | insect - moth | 26/05/2010 | -          | 1            |
| Yponomeuta                |                              | insect - moth | 26/06/2009 | -          | 1            |
| Cedestis gysseleniella    | Gold Pine Ermel              | insect - moth | 26/06/2010 | -          | 1            |
| Tortrix viridana          | Green Oak Tortrix            | insect - moth | 08/06/2008 | 14/06/2011 | 12           |
| Tortricodes alternella    | Winter Shade                 | insect - moth | 28/02/2009 | 13/03/2010 | 2            |
| Syndemis musculana        | Dark-barred Twist            | insect - moth | 21/04/2011 | 26/05/2012 | 4            |
| Crocidosema plebejana     | Southern Bell                | insect - moth | 20/06/2013 | -          | 1            |
| Yponomeuta padella        | Orchard Ermine               | insect - moth | 20/07/2010 | -          | 1            |
| Acleris comariana         | Strawberry Tortrix           | insect - moth | 30/08/2010 | -          | 1            |
| Cydia pomonella           | Codling Moth                 | insect - moth | 01/06/2010 | 14/08/2012 | 6            |
| Aethes francillana        | Long-barred Yellow Conch     | insect - moth | 11/08/2012 | -          | 1            |
| Aethes cnicana            | Thistle Conch                | insect - moth | 20/07/2010 | -          | 1            |
| Acleris variegana         | Garden Rose Tortrix          | insect - moth | 31/08/2009 | 03/09/2012 | 8            |
| Acleris sparsana          | Ashy Button                  | insect - moth | 14/10/2011 | -          | 1            |
| Agapeta zoegana           | Knapweed Conch               | insect - moth | 04/09/2012 | -          | 1            |
| Acleris forsskaleana      | Maple Button                 | insect - moth | 19/07/2009 | 21/07/2011 | 11           |
| Aleimma loeflingiana      | Yellow Oak Button            | insect - moth | 26/06/2009 | 29/06/2010 | 2            |

| Latin Name                 | Common Name               | Taxon Group   | First Date | Last Date  | No. of Rec's |
|----------------------------|---------------------------|---------------|------------|------------|--------------|
| Tinea trinotella           | Bird's-nest Moth          | insect - moth | 01/06/2010 | -          | 1            |
| Nemapogon cloacella        | Cork Moth                 | insect - moth | 26/05/2012 | -          | 1            |
| Monopis obviella           | Yellow-backed Clothes     | insect - moth | 22/05/2012 | -          | 1            |
| Monopis crocicapitella     | Pale-backed Clothes       | insect - moth | 20/06/2013 | -          | 1            |
| Sphinx ligustri            | Privet Hawk-moth          | insect - moth | 26/06/2004 | 28/07/2012 | 22           |
| Galleria mellonella        | Wax Moth                  | insect - moth | 28/07/2009 | 31/07/2010 | 2            |
| Acleris schalleriana       | Viburnum Button           | insect - moth | 17/07/2012 | -          | 1            |
| Celypha striana            | Barred Marble             | insect - moth | 14/08/2009 | 14/08/2012 | 3            |
| Mimas tiliae               | Lime Hawk-moth            | insect - moth | 30/05/2008 | 18/06/2012 | 3            |
| Cochylis roseana           | Rosy Conch                | insect - moth | 29/06/2010 | -          | 1            |
| Cochylis hybridella        | White-bodied Conch        | insect - moth | 20/06/2013 | -          | 1            |
| Cochylis atricapitana      | Black-headed Conch        | insect - moth | 23/05/2009 | 20/06/2013 | 8            |
| Cnephasia stephensiana     | Grey Tortrix              | insect - moth | 08/07/2010 | 10/07/2010 | 2            |
| Agapeta hamana             | Common Yellow Conch       | insect - moth | 01/07/2009 | -          | 1            |
| Clepsis spectrana          | Cyclamen Tortrix          | insect - moth | 10/06/2009 | -          | 1            |
| Cydia amplana              | Vagrant Piercer           | insect - moth | 15/08/2012 | 08/09/2012 | 6            |
| Celypha lacunana           | Common Marble             | insect - moth | 25/04/2011 | 25/08/2012 | 2            |
| Celypha cespitana          | Thyme Marble              | insect - moth | 13/06/2009 | -          | 1            |
| Cacoecimorpha pronubana    | Carnation Tortrix         | insect - moth | 20/06/2013 | -          | 1            |
| Archips xylosteana         | Variegated Golden Tortrix | insect - moth | 25/07/2011 | -          | 1            |
| Archips podana             | Large Fruit-tree Tortrix  | insect - moth | 15/06/2009 | 05/07/2012 | 2            |
| Ancylis achatana           | Triangle-marked Roller    | insect - moth | 01/06/2012 | -          | 1            |
| Cnephasia incertana        | Light Grey Tortrix        | insect - moth | 10/06/2009 | -          | 1            |
| Diachrysia chrysitis       | Burnished Brass           | insect - moth | 26/06/2004 | 16/09/2012 | 12           |
| Agrotis puta               | Shuttle-shaped Dart       | insect - moth | 21/08/1996 | 31/08/2013 | 89           |
| Agrotis ipsilon            | Dark Sword-grass          | insect - moth | 08/08/2008 | 31/08/2013 | 8            |
| Agrotis exclamationis      | Heart & Dart              | insect - moth | 14/06/1996 | 29/08/2013 | 112          |
| Agrotis clavis             | Heart & Club              | insect - moth | 26/06/2004 | 29/08/2012 | 48           |
| Agrochola macilenta        | Yellow-line Quaker        | insect - moth | 05/10/2010 | -          | 1            |
| Agrochola lychnidis        | Beaded Chestnut           | insect - moth | 01/10/2008 | 02/11/2012 | 17           |
| Acronicta rumicis          | Knot Grass                | insect - moth | 18/07/2008 | 20/08/2012 | 8            |
| Acronicta megacephala      | Poplar Grey               | insect - moth | 24/04/2009 | 31/07/2010 | 6            |
| Acronicta aceris           | Sycamore                  | insect - moth | 01/07/2009 | 14/06/2011 | 3            |
| Acronicta                  |                           | insect - moth | 01/06/2008 | 25/08/2012 | 36           |
| Abrostola triplasia        | Dark Spectacle            | insect - moth | 11/09/2008 | 23/08/2009 | 6            |
| Abrostola tripartita       | Spectacle                 | insect - moth | 02/09/2007 | 14/08/2012 | 19           |
| Stigmella suberivora       | Holm-oak Pigmy            | insect - moth | 02/01/2012 | -          | 1            |
| Cameraria ohridella        | Horse-Chestnut Leaf-miner | insect - moth | 08/05/2011 | 26/05/2011 | 3            |
| Lasiocampa quercus         | Oak Eggar                 | insect - moth | 20/08/2012 | -          | 2            |
| Calophasia lunula          | Toadflax Brocade          | insect - moth | 01/06/2007 | 20/07/2010 | 8            |
| Phyllonorycter messaniella | Garden Midget             | insect - moth | 02/01/2012 | -          | 2            |
| Hepialus humuli            | Ghost Moth                | insect - moth | 26/07/2012 | -          | 1            |
| Hepialus lupulinus         | Common Swift              | insect - moth | 06/06/2008 | 18/06/2012 | 14           |
| Hepialus sylvina           | Orange Swift              | insect - moth | 30/08/1994 | 16/09/2012 | 30           |

| Latin Name                   | Common Name                          | Taxon Group   | First Date | Last Date  | No. of Rec's |
|------------------------------|--------------------------------------|---------------|------------|------------|--------------|
| Stigmella microtheriella     | Nut-tree Pigmy                       | insect - moth | 25/09/2011 | -          | 1            |
| Euthrix potatoria            | Drinker                              | insect - moth | 26/06/2009 | 31/07/2010 | 2            |
| Stigmella aurella            | Golden Pigmy                         | insect - moth | 19/05/2012 | -          | 1            |
| Malacosoma neustria          | Lackey                               | insect - moth | 05/07/2008 | 26/07/2012 | 27           |
| Lyonetia clerkella           | Apple Leaf Miner                     | insect - moth | 11/08/2012 | 15/08/2012 | 4            |
| Mompha subbistrigella        | Garden Cosmet                        | insect - moth | 09/01/2012 | -          | 1            |
| Discestra trifolii           | Nutmeg                               | insect - moth | 08/08/1995 | 25/07/2011 | 7            |
| Diarsia rubi                 | Small Square-spot                    | insect - moth | 08/06/2008 | 20/09/2008 | 3            |
| Allophyes oxyacanthae        | Green-brindled Crescent              | insect - moth | 01/10/2011 | 14/10/2011 | 2            |
| Incurvaria masculella        | Feathered Bright                     | insect - moth | 15/05/2010 | 21/05/2010 | 4            |
| Cosmia trapezina             | Dun-bar                              | insect - moth | 30/07/2008 | 24/07/2012 | 16           |
| Agrotis puta subsp. puta     | Shuttle-shaped Dart                  | insect - moth | 30/07/2008 | -          | 1            |
| Cucullia umbratica           | Shark                                | insect - moth | 13/06/2009 | 28/06/2012 | 9            |
| Cucullia asteris             | Star-wort                            | insect - moth | 06/05/2003 | -          | 1            |
| Cryphia muralis form muralis | Marbled Green                        | insect - moth | 11/08/2012 | -          | 1            |
| Cryphia muralis              | Marbled Green                        | insect - moth | 02/08/2008 | 29/08/2012 | 18           |
| Axylia putris                | Flame                                | insect - moth | 27/06/2009 | 12/08/2012 | 11           |
| Craniophora ligustri         | Coronet                              | insect - moth | 22/07/2008 | 15/08/2011 | 4            |
| Panolis flammea              | Pine Beauty                          | insect - moth | 29/04/2010 | -          | 1            |
| Colocasia coryli             | Nut-tree Tussock                     | insect - moth | 24/04/2007 | 15/04/2011 | 23           |
| Chortodes elymi              | Lyme Grass                           | insect - moth | 31/12/1981 | -          | 1            |
| Charanyca trigrammica        | Treble Lines                         | insect - moth | 30/05/2008 | 29/05/2011 | 24           |
| Celaena leucostigma          | Crescent                             | insect - moth | 26/08/2012 | -          | 1            |
| Caradrina morpheus           | Mottled Rustic                       | insect - moth | 09/08/2008 | 05/07/2011 | 9            |
| Caradrina kadenii            | Clancy's Rustic                      | insect - moth | 03/07/2009 | -          | 1            |
| Cryphia domestica            | Marbled Beauty                       | insect - moth | 21/08/1996 | 18/08/2012 | 12           |
| Apamea monoglypha            | Dark Arches                          | insect - moth | 28/06/2008 | 22/08/2012 | 84           |
| Caloptilia semifascia        | Maple Slender                        | insect - moth | 01/04/2011 | -          | 1            |
| Amphipoea                    | Indet. Ear Moth                      | insect - moth | 03/09/2011 | 14/08/2012 | 3            |
| Amphipoea oculea             | Ear Moth                             | insect - moth | 14/07/2009 | 29/08/2012 | 6            |
| Amphipyra                    |                                      | insect - moth | 21/08/1996 | 21/07/2011 | 2            |
| Amphipyra tragopoginis       | Mouse Moth                           | insect - moth | 21/08/1996 | -          | 1            |
| Hypsopygia costalis          | Gold Triangle                        | insect - moth | 01/07/2009 | 20/07/2010 | 3            |
| Apamea lithoxylaea           | Light Arches                         | insect - moth | 06/06/2008 | 18/07/2010 | 9            |
| Agrotis segetum              | Turnip Moth                          | insect - moth | 16/08/2008 | 31/08/2013 | 25           |
| Apamea remissa               | Dusky Brocade                        | insect - moth | 14/06/1996 | 14/06/2011 | 4            |
| Apamea sublustris            | Reddish Light Arches                 | insect - moth | 18/07/2010 | -          | 1            |
| Aporophyla lutulenta         | Deep-brown Dart                      | insect - moth | 25/09/2006 | 04/10/2008 | 3            |
| Aporophyla nigra             | Black Rustic                         | insect - moth | 25/09/2006 | 01/10/2011 | 10           |
| Arenostola phragmitidis      | Fen Wainscot                         | insect - moth | 26/07/2009 | -          | 1            |
| Autographa gamma             | Silver Y                             | insect - moth | 05/06/1988 | 06/10/2012 | 82           |
| Anaplectoides prasina        | Green Arches                         | insect - moth | 09/06/2011 | -          | 1            |
| Noctua janthe                | Lesser Broad-bordered Yellow Underwi | insect - moth | 21/08/1996 | 29/08/2013 | 42           |
| Mesapamea secalis            | Common Rustic                        | insect - moth | 21/08/1996 | 31/08/2009 | 18           |

| Latin Name               | Common Name                     | Taxon Group   | First Date | Last Date  | No. of Rec's |
|--------------------------|---------------------------------|---------------|------------|------------|--------------|
| Mesoligia furuncula      | Cloaked Minor                   | insect - moth | 08/08/2010 | 14/08/2012 | 4            |
| Mesoligia literosa       | Rosy Minor                      | insect - moth | 27/08/2010 | -          | 1            |
| Mormo maura              | Old Lady                        | insect - moth | 22/08/2011 | 31/08/2013 | 2            |
| Mythimna albipuncta      | White-point                     | insect - moth | 04/09/2006 | 31/08/2013 | 33           |
| Mythimna conigera        | Brown-line Bright-eye           | insect - moth | 26/07/2009 | 29/08/2013 | 4            |
| Mythimna ferrago         | Clay                            | insect - moth | 27/07/2008 | 31/08/2013 | 14           |
| Mythimna impura          | Smoky Wainscot                  | insect - moth | 18/07/2009 | 01/07/2011 | 10           |
| Mythimna I-album         | L-album Wainscot                | insect - moth | 10/09/2006 | 23/10/2012 | 66           |
| Mythimna pallens         | Common Wainscot                 | insect - moth | 30/08/1994 | 31/08/2013 | 36           |
| Mythimna unipuncta       | American Wainscot               | insect - moth | 08/07/2010 | -          | 1            |
| Naenia typica            | Gothic                          | insect - moth | 17/07/2010 | -          | 2            |
| Noctua comes             | Lesser Yellow Underwing         | insect - moth | 02/09/2006 | 31/08/2013 | 69           |
| Gracillaria syringella   | Common Slender                  | insect - moth | 15/04/2011 | 22/04/2011 | 2            |
| Oligia strigilis         | Marbled Minor                   | insect - moth | 30/05/2008 | 15/06/2009 | 18           |
| Orthosia incerta         | Clouded Drab                    | insect - moth | 23/03/2009 | 22/03/2012 | 2            |
| Orthosia gracilis        | Powdered Quaker                 | insect - moth | 16/04/2009 | 06/04/2010 | 3            |
| Orthosia gothica         | Hebrew Character                | insect - moth | 06/04/2007 | 25/04/2013 | 41           |
| Orthosia cruda           | Small Quaker                    | insect - moth | 30/05/2008 | 03/05/2013 | 22           |
| Orthosia cerasi          | Common Quaker                   | insect - moth | 09/04/2007 | 12/04/2013 | 41           |
| Noctua fimbriata         | Broad-bordered Yellow Underwing | insect - moth | 08/09/2008 | 17/08/2012 | 10           |
| Oligia versicolor        | Rufous Minor                    | insect - moth | 28/06/2008 | 29/06/2010 | 3            |
| Noctua interjecta        | Least Yellow Underwing          | insect - moth | 08/08/2010 | 11/08/2012 | 3            |
| Oligia latruncula        | Tawny Marbled Minor             | insect - moth | 06/06/2008 | 14/06/2011 | 10           |
| Oligia fasciuncula       | Middle-barred Minor             | insect - moth | 13/06/2009 | 20/06/2013 | 3            |
| Oligia                   |                                 | insect - moth | 01/06/2010 | 20/06/2013 | 18           |
| Ochropleura plecta       | Flame Shoulder                  | insect - moth | 02/05/2008 | 31/08/2013 | 32           |
| Noctua pronuba           | Large Yellow Underwing          | insect - moth | 21/08/1996 | 31/08/2013 | 131          |
| Melanchra persicariae    | Dot Moth                        | insect - moth | 16/07/2008 | 23/07/2010 | 4            |
| Omphaloscelis lunosa     | Lunar Underwing                 | insect - moth | 10/09/2006 | 23/10/2012 | 29           |
| Eremobia ochroleuca      | Dusky Sallow                    | insect - moth | 13/07/2008 | 15/08/2012 | 12           |
| Mesapamea didyma         | Lesser Common Rustic            | insect - moth | 06/08/2008 | 23/08/2009 | 6            |
| Hadena perplexa          | Tawny Shears                    | insect - moth | 26/06/2004 | 10/05/2011 | 2            |
| Hadena confusa           | Marbled Coronet                 | insect - moth | 13/06/2009 | -          | 1            |
| Hadena bicruris          | Lychnis                         | insect - moth | 03/07/2008 | 23/07/2010 | 2            |
| Hada plebeja             | Shears                          | insect - moth | 11/06/2008 | 01/06/2012 | 20           |
| Hadena rivularis         | Campion                         | insect - moth | 30/05/2008 | 12/08/2012 | 16           |
| Euplexia lucipara        | Small Angle Shades              | insect - moth | 14/06/2011 | -          | 1            |
| Hecatera bicolorata      | Broad-barred White              | insect - moth | 24/06/2008 | 14/08/2009 | 4            |
| Thera obeliscata         | Grey Pine Carpet                | insect - moth | 01/06/2010 | 17/07/2010 | 4            |
| Timandra comae           | Blood-Vein                      | insect - moth | 26/07/2008 | 29/08/2012 | 16           |
| Xanthorhoe fluctuata     | Garden Carpet                   | insect - moth | 30/05/2008 | 29/08/2013 | 60           |
| Xanthorhoe montanata     | Silver-ground Carpet            | insect - moth | 25/05/2009 | 31/05/2009 | 3            |
| Xanthorhoe spadicearia   | Red Twin-spot Carpet            | insect - moth | 22/04/2009 | 14/08/2010 | 7            |
| Acrolepiopsis assectella | Leek Moth                       | insect - moth | 25/03/2012 | 08/04/2012 | 2            |

| Latin Name                      | Common Name             | Taxon Group                 | First Date | Last Date  | No. of Rec's |
|---------------------------------|-------------------------|-----------------------------|------------|------------|--------------|
| Eupsilia transversa             | Satellite               | insect - moth               | 27/03/2010 | 27/02/2011 | 3            |
| Lacanobia thalassina            | Pale-shouldered Brocade | insect - moth               | 01/07/2009 | -          | 1            |
| Mamestra brassicae              | Cabbage Moth            | insect - moth               | 10/09/2006 | 04/09/2012 | 42           |
| Macdunnoughia confusa           | Dewick's Plusia         | insect - moth               | 01/10/2008 | -          | 1            |
| Luperina testacea               | Flounced Rustic         | insect - moth               | 30/08/1994 | 31/08/2013 | 34           |
| Lithophane leautieri            | Blair's Shoulder-knot   | insect - moth               | 05/10/2010 | 22/10/2011 | 6            |
| Hadena perplexa subsp. perplexa | Tawny Shears            | insect - moth               | 08/08/2010 | -          | 2            |
| Lacanobia w-latinum             | Light Brocade           | insect - moth               | 06/06/2008 | 07/06/2008 | 2            |
| Mesapamea                       |                         | insect - moth               | 03/07/2010 | 31/08/2013 | 40           |
| Lacanobia suasa                 | Dog's Tooth             | insect - moth               | 17/07/2010 | 02/07/2011 | 4            |
| Lacanobia oleracea              | Bright-Line Brown-Eye   | insect - moth               | 21/08/1996 | 29/08/2013 | 87           |
| Hoplodrina blanda               | Rustic                  | insect - moth               | 10/06/2008 | 31/08/2013 | 56           |
| Hoplodrina ambigua              | Vine's Rustic           | insect - moth               | 21/08/1996 | 31/08/2013 | 58           |
| Hoplodrina alsines              | Uncertain               | insect - moth               | 08/06/2008 | 29/08/2012 | 66           |
| Heliothis peltigera             | Bordered Straw          | insect - moth               | 25/09/2006 | -          | 1            |
| Lithophane hepatica             | Pale Pinion             | insect - moth               | 12/10/2009 | 26/04/2010 | 3            |
| Bibio marci                     | St Marks Fly            | insect - true fly (Diptera) | 27/04/2012 | -          | 1            |
| Sphaerophoria scripta           |                         | insect - true fly (Diptera) | 08/05/2001 | -          | 2            |
| Leucozona lucorum               |                         | insect - true fly (Diptera) | 08/05/2001 | -          | 2            |
| Merodon equestris               | Greater Bulb-Fly        | insect - true fly (Diptera) | 08/05/2001 | 29/05/2004 | 3            |
| Neoascia tenur                  |                         | insect - true fly (Diptera) | 08/05/2001 | -          | 2            |
| Parhelophilus frutetorum        |                         | insect - true fly (Diptera) | 08/05/2001 | -          | 2            |
| Platycheirus clypeatus agg.     |                         | insect - true fly (Diptera) | 08/05/2001 | -          | 2            |
| Helophilus pendulus             |                         | insect - true fly (Diptera) | 08/05/2001 | -          | 2            |
| Rhingia campestris              |                         | insect - true fly (Diptera) | 29/04/2007 | -          | 1            |
| Melanostoma scalare             |                         | insect - true fly (Diptera) | 08/05/2001 | -          | 2            |
| Syritta pipiens                 |                         | insect - true fly (Diptera) | 08/05/2001 | -          | 2            |
| Syrphus ribesii                 |                         | insect - true fly (Diptera) | 08/05/2001 | -          | 2            |
| Volucella inanis                |                         | insect - true fly (Diptera) | 31/12/1995 | -          | 1            |
| Nephrotoma appendiculata        |                         | insect - true fly (Diptera) | 29/04/2007 | -          | 1            |
| Aulagromyza cornigera           |                         | insect - true fly (Diptera) | 08/04/2012 | -          | 1            |
| Phytomyza ilicis                | Holly Leaf Gall Fly     | insect - true fly (Diptera) | 08/04/2012 | -          | 1            |
| Platycheirus albimanus          |                         | insect - true fly (Diptera) | 08/05/2001 | -          | 2            |
| Stratiomys potamida             | Banded General          | insect - true fly (Diptera) | 11/07/2004 | -          | 1            |
| Bombylius major                 | Dark-edged Bee-fly      | insect - true fly (Diptera) | 06/04/2007 | 06/04/2011 | 2            |
| Chironomidae                    | Non-biting midge        | insect - true fly (Diptera) | 13/09/1990 | -          | 2            |
| Chironomus plumosus             |                         | insect - true fly (Diptera) | 06/05/2006 | -          | 1            |
| Chironomus salinarius           |                         | insect - true fly (Diptera) | 29/09/1984 | -          | 1            |
| Myathropa florea                |                         | insect - true fly (Diptera) | 08/05/2001 | 29/04/2007 | 4            |
| Chloromyia formosa              | Broad Centurion         | insect - true fly (Diptera) | 11/07/2004 | -          | 1            |
| Eristalis tenax                 |                         | insect - true fly (Diptera) | 08/05/2001 | 25/07/2013 | 4            |
| Cheilosia albitarsis            |                         | insect - true fly (Diptera) | 08/05/2001 | -          | 2            |
| Eristalis intricarius           |                         | insect - true fly (Diptera) | 08/05/2001 | -          | 2            |
| Cheilosia vernalis              |                         | insect - true fly (Diptera) | 29/04/2007 | -          | 1            |

| Latin Name                          | Common Name                 | Taxon Group                 | First Date | Last Date  | No. of Rec's |
|-------------------------------------|-----------------------------|-----------------------------|------------|------------|--------------|
| Epistrophe eligans                  |                             | insect - true fly (Diptera) | 29/04/2007 | -          | 1            |
| Episyrphus balteatus                | Marmalade Hoverfly          | insect - true fly (Diptera) | 08/05/2001 | 03/06/2013 | 6            |
| Eristalis arbustorum                |                             | insect - true fly (Diptera) | 08/05/2001 | -          | 2            |
| Cheilosia proxima                   |                             | insect - true fly (Diptera) | 29/04/2007 | -          | 1            |
| Empis tessellata                    |                             | insect - true fly (Diptera) | 02/06/2013 | -          | 1            |
| Eristalis pertinax                  |                             | insect - true fly (Diptera) | 08/05/2001 | -          | 2            |
| Nomada marshamella                  | Marsham's Nomad Bee         | insect - hymenopteran       | 29/04/2007 | -          | 1            |
| Osmia (Helicosmia) aurulenta        | Gold-Fringed Mason Bee      | insect - hymenopteran       | 14/06/1988 | -          | 1            |
| Osmia (Osmia) bicornis              | Red Mason Bee               | insect - hymenopteran       | 31/05/2003 | 17/04/2015 | 3            |
| Cerceris rybyensis                  | Ornate Tailed Digger Wasp   | insect - hymenopteran       | 28/06/1993 | -          | 2            |
| Athalia rosae                       |                             | insect - hymenopteran       | 29/04/2007 | -          | 1            |
| Trichrysis cyanea                   |                             | insect - hymenopteran       | 27/04/2007 | -          | 1            |
| Nomada goodeniana                   | Gooden's Nomad Bee          | insect - hymenopteran       | 29/04/2007 | -          | 1            |
| Myrmica ruginodis                   |                             | insect - hymenopteran       | 30/09/2004 | -          | 1            |
| Megachile (Megachile) centuncularis | Patchwork Leaf-Cutter Bee   | insect - hymenopteran       | 01/07/1979 | -          | 1            |
| Lasioglossum (Evylaeus) villosulum  | Shaggy Mining Bee           | insect - hymenopteran       | 01/01/1910 | -          | 1            |
| Colletes (Colletes) hederae         |                             | insect - hymenopteran       | 19/09/2014 | -          | 1            |
| Bombus (Pyrobombus) hypnorum        | Tree Bumblebee              | insect - hymenopteran       | 29/06/2013 | -          | 1            |
| Bombus (Melanobombus) lapidarius    | Large Red Tailed Bumble Bee | insect - hymenopteran       | 01/05/1974 | -          | 1            |
| Bombus (Bombus) terrestris          | Buff-Tailed Bumble Bee      | insect - hymenopteran       | 27/12/2007 | 09/01/2015 | 2            |
| Apis mellifera                      | Honey Bee                   | insect - hymenopteran       | 25/06/2004 | 03/06/2013 | 3            |
| Andrena (Zonandrena) flavipes       | Yellow Legged Mining Bee    | insect - hymenopteran       | 28/06/1993 | 29/04/2007 | 4            |
| Andrena (Hoplandrena) scotica       |                             | insect - hymenopteran       | 29/04/2007 | -          | 1            |
| Nomada fucata                       |                             | insect - hymenopteran       | 07/05/2005 | -          | 1            |
| Lasius flavus                       | Yellow Meadow Ant           | insect - hymenopteran       | 27/04/2012 | -          | 1            |
| Asterias rubens                     | Common starfish             | echinoderm                  | 14/02/2013 | -          | 1            |
| Gasterosteus aculeatus              | Three-spined Stickleback    | bony fish (Actinopterygii)  | 31/12/1983 | 17/09/1997 | 4            |
| Anguilla anguilla                   | European Eel                | bony fish (Actinopterygii)  | 17/09/1997 | -          | 1            |
| Rana temporaria                     | Common Frog                 | amphibian                   | 01/01/1988 | 31/03/2012 | 148          |
| Triturus cristatus                  | Great Crested Newt          | amphibian                   | 08/03/1992 | 01/01/1993 | 12           |
| Lissotriton helveticus              | Palmate Newt                | amphibian                   | 08/03/1992 | 31/12/2002 | 12           |
| Bufo bufo                           | Common Toad                 | amphibian                   | 01/01/1988 | 26/08/2010 | 30           |
| Lissotriton vulgaris                | Smooth Newt                 | amphibian                   | 01/01/1988 | 31/03/2012 | 31           |
| Vipera berus                        | Adder                       | reptile                     | 22/04/1990 | 31/08/2001 | 9            |
| Anguis fragilis                     | Slow-worm                   | reptile                     | 01/08/1988 | 24/04/2014 | 81           |
| Natrix natrix                       | Grass Snake                 | reptile                     | 01/01/1990 | 03/06/2013 | 25           |
| Podarcis muralis                    | Wall Lizard                 | reptile                     | 31/12/2002 | 06/09/2010 | 2            |
| Zootoca vivipara                    | Common Lizard               | reptile                     | 01/01/1988 | 30/06/2011 | 28           |
| Emydidae                            |                             | reptile                     | 26/10/2001 | -          | 1            |
| Trachemys scripta                   | Red-eared Terrapin          | reptile                     | 23/07/2012 | -          | 1            |
| Tursiops truncatus                  | Bottle-Nosed Dolphin        | marine mammal               | 08/07/1921 | 03/05/2007 | 7            |
| Delphinus delphis                   | Common Dolphin              | marine mammal               | 21/03/2005 | -          | 1            |
| Phoca vitulina                      | Common Seal                 | marine mammal               | 15/06/2008 | 08/04/2013 | 4            |
| Halichoerus grypus                  | Grey Seal                   | marine mammal               | 31/08/2012 | 07/07/2013 | 2            |

| Latin Name                | Common Name                 | Taxon Group        | First Date | Last Date  | No. of Rec's |
|---------------------------|-----------------------------|--------------------|------------|------------|--------------|
| Oryctolagus cuniculus     | European Rabbit             | terrestrial mammal | 01/06/1999 | 15/11/2014 | 15           |
| Myotis                    | Unidentified Bat            | terrestrial mammal | 27/09/2014 | -          | 1            |
| Sciurus carolinensis      | Eastern Grey Squirrel       | terrestrial mammal | 14/07/1984 | 06/01/2015 | 28           |
| Rattus rattus             | Black Rat                   | terrestrial mammal | 31/12/1880 | 31/12/1898 | 2            |
| Myodes glareolus          | Bank Vole                   | terrestrial mammal | 30/06/2011 | -          | 1            |
| Mus musculus              | House Mouse                 | terrestrial mammal | 30/10/2012 | 05/07/2013 | 2            |
| Arvicola amphibius        | European Water Vole         | terrestrial mammal | 31/12/1990 | -          | 2            |
| Apodemus sylvaticus       | Wood Mouse                  | terrestrial mammal | 28/12/1965 | 12/01/2012 | 2            |
| Pipistrellus pipistrellus | Common Pipistrelle (45 kHz) | terrestrial mammal | 02/08/2010 | 27/09/2014 | 21           |
| Capreolus capreolus       | Roe Deer                    | terrestrial mammal | 01/06/1999 | 20/11/2011 | 3            |
| Vulpes vulpes             | Red Fox                     | terrestrial mammal | 31/05/1961 | 11/11/2014 | 59           |
| Mustela erminea           | Stoat                       | terrestrial mammal | 25/12/1965 | -          | 1            |
| Chiroptera                | Bat sp.                     | terrestrial mammal | 01/11/1978 | 27/09/2014 | 10           |
| Eptesicus serotinus       | Serotine                    | terrestrial mammal | 26/07/1999 | 26/09/2014 | 4            |
| Nyctalus noctula          | Noctule Bat                 | terrestrial mammal | 26/09/2014 | -          | 1            |
| Pipistrellus              | Pipstrelle sp.              | terrestrial mammal | 21/08/1994 | 01/07/2013 | 18           |
| Talpa europaea            | European Mole               | terrestrial mammal | 31/07/2012 | 07/08/2012 | 2            |
| Pipistrellus pygmaeus     | Soprano Pipstrelle (55 kHz) | terrestrial mammal | 23/07/1998 | 27/09/2014 | 24           |
| Plecotus auritus          | Brown Long-eared Bat        | terrestrial mammal | 17/10/2011 | -          | 1            |
| Plecotus austriacus       | Grey Long-eared Bat         | terrestrial mammal | 06/10/1998 | -          | 1            |
| Erinaceus europaeus       | West European Hedgehog      | terrestrial mammal | 03/07/1969 | 25/09/2014 | 19           |
| Neomys fodiens            | Eurasian Water Shrew        | terrestrial mammal | 02/06/2005 | -          | 1            |
| Sorex araneus             | Eurasian Common Shrew       | terrestrial mammal | 11/06/2001 | 02/10/2014 | 2            |
| Myotis daubentonii        | Daubenton's Bat             | terrestrial mammal | 02/08/1997 | 05/08/2009 | 3            |

## **Sussex Environmental Survey Directory**

Report on behalf of Vicky Hale (PJC Ecology) regarding land at New Salts Farm, Shoreham + 2km buffer.

Our Ref: ESD/15/443

Date: 23-Jun-15

The Sussex Environmental Survey Directory (ESD) was initiated in 1990 as a tool to report on biological surveys that had taken place in Sussex. The directory now contains information on over 2,000 surveys covering over 22,000 sites. This report details what surveys have been carried out on specific sites and directs the enquirer to where this information is held. The Record Centre does not hold copies of all the reports that it refers enquirers to, but simply directs the enquirer to organisations or individuals who do.

The directory is updated on a weekly basis and also contains summary data on the county's ornithological data, (courtesy of the Sussex Ornithological Society) and on the county's geological sites (courtesy of the Booth Museum).

| Survey Name      | Lancing Ring LNR Management Plan - (3646)   |
|------------------|---|
|                  |   |
| Survey Author    | Adur District Council, SUSSEX DOWNS CONSERVATION BOARD  |
| Survey Comment   | Lancing ring has been designated both a Local Nature reserve and a Site of Significant<br>Importance for its wildlife and associated habitats by West Sussex County Council   |
| Date             | April 2004  |
| Site Name        | Lancing Ring LNR TQ185063   |
| Site Comment     | An area of mainly neutral grassland tending towards acid grassland at the summit. There are are areas of scrub. The site lies on a gentle south-facing slope just north of Lancing. It was declared as an LNR by Adur District Council in 1992. Much of site overlaps with SNCI Ad02. |
| Copies Available | SxBRC Digital   |
|                  |   |
| Survey Name      | Applesham Farm LEAF - (3652)  |
|                  |   |
| Survey Author    | Christopher Passmore  |
| Survey Comment   | Leaf any ironment and farming, dovelops and promotes integrated eren management   |

| Survey Comment   | Lear environment and raming, develops and promotes integrated crop management. |          |
|------------------|--|----------|
| Date             | 2003   |          |
| Site Name        | Applesham Farm/Lancing Hill (Steep Down to Cow Bottom)                         | TQ183068 |
| Site Comment     |  |          |
| Copies Available | SxBRC Digital  |          |

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| Survey Name      | Golf Course at New Monks Farm - (3794)   |
|------------------|--|
| Sumay Arith or   |  |
| Survey Author    | ACTA, ECOSA  |
| Survey Comment   | This document sets out management proposalsfor the golf course at New Monks Farm, Lancing.<br>The site is on former arable land immediately to the south of the A27 on the Sussex Coastal<br>plain and occupies 32ha.  |
| Date             | 2002   |
| Site Name        | New Monks Farm, Lancing Brooks TQ193052  |
| Site Comment     | A series of arable fields crossed by ditches of variable wetness and bordered by hedges; tree belts and fences. Some scarce species present.   |
| Copies Available | SxBRC Digital  |
|                  |  |
| Survey Name      | Shoreham Airport Environmental Impact Survey Final Report - (3795)   |
| Survey Author    | Consultants in Environmental Sciences I t  |
| Survey Aution    | Consultants in Environmental Sciences Lt   |
| Survey Comment   | Shorenam Airport wisnes to increase the number of annual aircraft movementas from 75,000 to 100,000. In order to accommodate the increase in aircraft movements, Consultants in Envrironmental Ltd (CES) were appointed to provide an assessment of the environmental impacts in aircraft movements.           |
| Date             | 2000   |
| Site Name        | Shoreham Airport (pSNCI) TQ203055  |
| Site Comment     | Potential SNCI. There are arable crops being grown on the adjacent lands (i.e. over the Old Saltworks). Most of the airport's grassland was very closely mown and appeared to be of little botanical interest. Clippings had been left on site and this had probably contributed to the low species diversity. |
| Copies Available | SxBRC Digital  |
|                  |  |
| Survey Name      | Shoreham Airport Environmental Impact Survey Final Report - (3795)   |
| Survey Author    | Consultants in Environmental Sciences I t  |
| Survey Aution    | Sharaham Airport wichon to increase the number of annual aircraft movementee from 75 000 to  |
| Survey Comment   | 100,000. In order to accommodate the increase in aircraft movements, Consultants in<br>Envrironmental Ltd (CES) were appointed to provide an assessment of the environmental<br>impacts in aircraft movements.   |
| Date             | 2000   |
| Site Name        | Shoreham Airport (NW Corner of) TQ198057   |
| Site Comment     | North-west corner of Shoreham Airport being redeveloped for helicopter landing. Reptiles translocated outside perimeter fence.   |
| Copies Available | SxBRC Digital  |

| Survey Name      | New Sea-Anemone (Edwardsia ivelli) from a Brackish Lagoon in Sussex - (98)   |      |
|------------------|--|------|
| Survey Author    | MANUEL, R. L.  |      |
| Survey Comment   | The location and description of a new sea-anemone to Britain found during an ecological sur by Mr. Richard Ivell, at Widewater Lagoon. | vey, |
| Date             | 9.73   |      |
| Site Name        | Widewater Lagoon, Lancing TQ20   | 0042 |
| Site Comment     | Site relates to the actual water body.   |      |
| Copies Available | EN, WSCC   |      |

| Survey Name      | Widewater Ornithological Survey - (138)   |          |
|------------------|---|----------|
| Survey Author    | NEWNHAM Dr. John.   |          |
| Survey Comment   | Additional ornithological records data from Widewater Lagoon. (S.D.O.S. stands for Sh District Ornithological Society). | noreham  |
| Date             | 1982  |          |
| Site Name        | Widewater Lagoon, Lancing   | TQ200042 |
| Site Comment     | Site relates to the actual water body.  |          |
| Copies Available | EN  |          |
|                  |   |          |

| Survey Name      | Widewater Lagoon and Beach SNCI Survey, Shoreham by Sea - (139)  |                    |
|------------------|--|--------------------|
| Survey Author    | BISHOP, George and Betty   |                    |
| Survey Comment   | This report consists of a species list of plants. At WSCC it is attached to a letter from Edgar of EN. (Since this report the Bishops have been doing a continuous survey of th and more information can be sought from them). | Mr. R.<br>is area  |
| Date             | 1980 - 1981  |                    |
| Site Name        | Widewater Lagoon, Lancing - SNCI Ad4   | TQ199042           |
| Site Comment     | A classic, isolated, shingle pit, brackish lagoon with houses on the north side and is se from the sea on the south by a broad shingle bank. It has shingle flora merging into sa vegetation.                                  | parated<br>Itmarsh |
| Copies Available | EN, WSCC   |                    |

| Survey Name      | Widewater Lagoon and Beach SNCI Survey, Shoreham by Sea - (139)  |   |
|------------------|--|---|
|                  |  |   |
| Survey Author    | BISHOP, George and Betty   |   |
| Survey Comment   | This report consists of a species list of plants. At WSCC it is attached to a letter from Mr. R. Edgar of EN. (Since this report the Bishops have been doing a continuous survey of this area and more information can be sought from them). |   |
| Date             | 1980 - 1981  |   |
| Site Name        | Shoreham Beach - SNCI Ad03 TQ21704   | 4 |
| Site Comment     | The main interest is the highly specialised shingle flora. The vegetated areas are in two strips about 3km. long and has both the pioneer and the intermediate community.  |   |
| Copies Available | EN, WSCC   |   |
|                  |  | - |
| Survey Name      | Conservation Policy for Widewater 1984 - (166)   |   |

| Survey Author    | ISMAY, E.   |                                |
|------------------|---|--------------------------------|
| Survey Comment   | The Conservation Policy includes a short history of Widewater Lagoon, a plant list, a b list of fauna and work envisaged to be carried out by the Manpower Services. It incorpore everything in the 1992 Conservation Policy which is not separately on the ESD. Lower Valley Survey No.27. | ird list, a<br>orates<br>River |
| Date             | -   |                                |
| Site Name        | Widewater Lagoon, Lancing   | TQ200042                       |
| Site Comment     | Site relates to the actual water body.  |                                |
| Copies Available | WSCC  |                                |

| Survey Name      | Survey of Unimproved Neutral Grassland in West Sussex (Vol 1) - (328)   |         |
|------------------|---|---------|
|                  |   |         |
| Survey Author    | BARTON, J., FISHER, K.B.  |         |
| Survey Comment   | A standard NVC survey and assessment of unimproved neutral grassland sites in West Lower River Valley Survey No. 20. (Phase I/II). [SxBRC copy held in H2a box].  | Sussex. |
| Date             | 1987  |         |
| Site Name        | Ladywell Stream - Unimproved Neutral Grassland Site T   | Q195068 |
| Site Comment     | A heavily grazed field which is a good example of (NVC) MG6 pasture with patches of (NMG10 'Holcus lanatus - Juncus inflexus' sub-community and a bank with the 'Trisetum flavescens' sub-community of (NVC) MG6. | IVC)    |
| Copies Available | EN, SxBRC Boxes, WSCC   |         |

| Survey Name      | Flourishing Colony of Vivaporous Lizards - (339)  |         |
|------------------|---|---------|
| Survey Author    | HASLEWOOD, G. A. D.   |         |
| Survey Comment   | A letter describing the colony on the beach of Upper Shoreham Harbour. [SxBRC copy under TQ20]. | filed   |
| Date             | 1977-1981   |         |
| Site Name        | Beach of Upper Shoreham Harbour T   | Q211047 |
| Site Comment     |   |         |
| Copies Available | SxBRC File Cabs   |         |

| Survey Name      | Land at Shoreham Beach Survey - (340)   |          |
|------------------|---|----------|
| Survey Author    | STEWART, J.G.   |          |
| Survey Comment   | A species list of herbs found on the site in a single brief site visit. [SxBRC copy filed un TQ20]. | nder     |
| Date             | 4.7.80  |          |
| Site Name        | Shoreham Beach (Land at Beach Road Junction).   | TQ214045 |
| Site Comment     | Small area of coastal land.   |          |
| Copies Available | SxBRC File Cabs   |          |

| Survey Name                             | Informal Plan for Shoreham Harbour - (371)  |   |
|---|---|---|
| Survey Author<br>Survey Comment<br>Date | NEWNHAM Dr. John.<br>The basis of this survey is the informal plan for Shoreham Harbour and contains comr<br>the plan. It relates to the proposed marina development. Largely wading birds records<br>Plover; Dunlin and Redshank 1977-82) and casual records of unusual bird species. Lo<br>Valley Survey No.32. Some information held in EN/SSSI File, plus correspondence fro<br>Griffiths.<br>1976-1982 | nents on<br>(Ringed<br>ower River<br>om Ann |
| Site Name                               | Shoreham Harbour Site A   | TQ200059                                    |
| Site Comment                            | Grassland and open water  |   |
| Copies Available                        | WSCC, EN/SSSI/SCI   |   |

| Survey Name      | Informal Plan for Shoreham Harbour - (371)  |               |
|------------------|---|---------------|
| Survey Author    | NEWNHAM Dr. John.   |               |
| Survey Comment   | The basis of this survey is the informal plan for Shoreham Harbour and contains comments o the plan. It relates to the proposed marina development. Largely wading birds records (Ringer Plover; Dunlin and Redshank 1977-82) and casual records of unusual bird species. Lower Riv Valley Survey No.32. Some information held in EN/SSSI File, plus correspondence from Ann Griffiths. | n<br>d<br>ver |
| Date             | 1976-1982   |               |
| Site Name        | Shoreham Harbour Site B TQ203   | 8049          |
| Site Comment     | Grassland and open water  |               |
| Copies Available | WSCC, EN/SSSI/SCI   |               |

| Survey Name      | Informal Plan for Shoreham Harbour - (371)  |   |
|------------------|---|---|
| Survey Author    | NEWNHAM Dr. John.   |   |
| Survey Comment   | The basis of this survey is the informal plan for Shoreham Harbour and contains common the plan. It relates to the proposed marina development. Largely wading birds records Plover; Dunlin and Redshank 1977-82) and casual records of unusual bird species. Lo Valley Survey No.32. Some information held in EN/SSSI File, plus correspondence for Griffiths. | nents on<br>(Ringed<br>ower River<br>om Ann |
| Date             | 1976-1982   |   |
| Site Name        | Shoreham Harbour Site C   | TQ225045                                    |
| Site Comment     | A coastline   |   |
| Copies Available | WSCC, EN/SSSI/SCI   |   |

| Survey Name      | Informal Plan for Shoreham Harbour - (371)  |  |
|------------------|---|--|
|                  |   |  |
| Survey Author    | NEWNHAM Dr. John.   |  |
| Survey Comment   | The basis of this survey is the informal plan for Shoreham Harbour and contains common the plan. It relates to the proposed marina development. Largely wading birds records Plover; Dunlin and Redshank 1977-82) and casual records of unusual bird species. Loc Valley Survey No.32. Some information held in EN/SSSI File, plus correspondence from Griffiths. | nents on<br>(Ringed<br>wer River<br>om Ann |
| Date             | 1976-1982   |  |
| Site Name        | Shoreham Harbour Site D   | TQ218049                                   |
| Site Comment     |   |  |
| Copies Available | WSCC, EN/SSSI/SCI   |  |

| Survey Name                      | West Sussex Potential SNCI Project - (397)   |
|----------------------------------|--|
| Survey Author                    | FINCH. Marion. CLARK. Louise   |
| Survey Comment                   | A survey of potential SNCIs to assess their significance. Incidental records of mammals, birds, butterflies and moths, and ferns/bryophytes/lichens were included. ONLY West Sussex covered in the survey. Where relevant, info. In EN/SSSI Files. NB: some sites listed below have since been designated, and are now named accordingly. 1990-3.92  |
| Site Name                        | Widewater Lagoon, Lancing - SNCI Ad4 TQ199042  |
| Site Comment<br>Copies Available | A classic, isolated, shingle pit, brackish lagoon with houses on the north side and is separated from the sea on the south by a broad shingle bank. It has shingle flora merging into saltmarsh vegetation.<br>WSCC, EN/SSSI/SCI   |
| Survey Name                      | West Sussex Potential SNCI Project - (397)   |
| Survey Author                    | FINCH, Marion, CLARK, Louise   |
| Survey Comment                   | A survey of potential SNCIs to assess their significance. Incidental records of mammals, birds, butterflies and moths, and ferns/bryophytes/lichens were included. ONLY West Sussex covered in the survey. Where relevant, info. In EN/SSSI Files. NB: some sites listed below have since been designated, and are now named accordingly.  |
| Date                             | 1990-3.92  |
| Site Name                        | Lancing Ring (pSNCI) TQ180065  |
| Site Comment<br>Copies Available | Potential SNCI. This site encompasses a range of habitats including developing ash woodland, scrub and areas of quite rank chalk grassland. Although few of these areas are particularly special, together they form a very interesting complex boasting a good range of species. Additionally; the site is an important landscape feature and is of considerable amenity value. There is much evidence of regular use by locals who have formed themselves into an active group concerned with conserving the site. Additional information for this site is available in a written report by Brighton Polytechnic (1988) Lancing Ring Management Plan. Also, species lists have been prepared by Lancing Ring conservation group and relevant information collected in documents prepared by Adur District Council on proposed management for this site. NB: Actual SNCI Ad02 site has different boundaries! Site also includes much of LNR site. |
|                                  |  |
| Survey Name                      | West Sussex Potential SNCI Project - (397)   |
| Survey Author                    | FINCH, Marion, CLARK, Louise   |
| Survey Comment                   | A survey of potential SNCIs to assess their significance. Incidental records of mammals, birds, butterflies and moths, and ferns/bryophytes/lichens were included. ONLY West Sussex covered in the survey. Where relevant, info. In EN/SSSI Files. NB: some sites listed below have since been designated, and are now named accordingly. 1990-3.92  |
| Site Name                        | Hill Barn Farm (Fields E of), Lancing (pSNCI) TQ184063   |
| Site Comment                     | Potential SNCI. A dry chalk grassland valley running eastwards which is grazed pasture.  |
| Copies Available                 | WSCC, EN/SSSI/SCI  |

| Survey Name      | West Sussex Potential SNCI Project - (397)  |    |
|------------------|---|----|
|                  |   |    |
| Survey Author    | FINCH, Marion, CLARK, Louise  |    |
| Survey Comment   | A survey of potential SNCIs to assess their significance. Incidental records of mammals, birds, butterflies and moths, and ferns/bryophytes/lichens were included. ONLY West Sussex covered in the survey. Where relevant, info. In EN/SSSI Files. NB: some sites listed below have since been designated, and are now named accordingly. | ł  |
| Date             | 1990-3.92   |    |
| Site Name        | Allotment Meadow & Woody Strip, Lancing (pSNCI) TQ1880  | 60 |
| Site Comment     | Potential SNCI. This site is situated on a north facing slope and consists of a grassland area bordered on three sides by a woody strip, very damaged by the 1987 storm. The grassland is quite rank but has some interesting species. However; there is much Ash seedling/sapling invasion. Is a part of Lancing Ring LNR.               |    |
| Copies Available | WSCC, EN/SSSI/SCI   |    |

| Survey Author    | FINCH, Marion, CLARK, Louise  |                    |
|------------------|---|--------------------|
| Survey Comment   | A survey of potential SNCIs to assess their significance. Incidental records of mammals, bir butterflies and moths, and ferns/bryophytes/lichens were included. ONLY West Sussex cov in the survey. Where relevant, info. In EN/SSSI Files. NB: some sites listed below have sir been designated, and are now named accordingly.  | ds,<br>ered<br>ice |
| Date             | 1990-3.92   |                    |
| Site Name        | Cow Bottom, Lancing (pSNCI) TQ1   | 88068              |
| Site Comment     | Potential SNCI. The site consists of two fields which are distinct from; but not physically separated from; the improved pasture around them. The fields occupy steep slopes and has only been partially improved. The western-most of the two is the most diverse; consisting of typical calcareous grassland and scattered scrub. Cow Bottom itself has remnants of unimproved chalk grassland; but these form a mosaic with improved pasture. Here; overall interest is lower than for the rest of the site; although higher than that of the surrounding grassland. | ve                 |
| Copies Available | WSCC, EN/SSSI/SCI   |                    |

West Sussex Potential SNCI Project - (397)

Survey Name

Ī

| Survey Name      | West Sussex Potential SNCI Project - (397)  |                                    |
|------------------|---|------------------------------------|
|                  |   |                                    |
| Survey Author    | FINCH, Marion, CLARK, Louise  |                                    |
| Survey Comment   | A survey of potential SNCIs to assess their significance. Incidental records of mammals butterflies and moths, and ferns/bryophytes/lichens were included. ONLY West Sussex in the survey. Where relevant, info. In EN/SSSI Files. NB: some sites listed below have been designated, and are now named accordingly. 1990-3.92 | s, birds,<br>c covered<br>/e since |
| Site Name        | Lensing College Difle Dange Area (nCNCI)  | TO405000                           |
| Site Marine      | Lancing College Rille Range Area (pSNCI)  | 10195068                           |
| Site Comment     | Potential SNCI. The site includes all the pasture and scrub north of Lancing College ar<br>of Ladywell Stream. The fields have been improved, but the scrub on the steep slope a<br>college remains fairly intact and some chalk grassland remains below the scrub to the<br>pond by Ladywell Spring has dried up.            | nd south<br>bove the<br>west. The  |
| Copies Available | WSCC, EN/SSSI/SCI   |                                    |

| Survey Name      | West Sussex Potential SNCI Project - (397)  |
|------------------|---|
| Survey Author    | FINCH Marion CLARK Louise   |
| Survey Comment   | A survey of potential SNCIs to assess their significance. Incidental records of mammals, birds, butterflies and moths, and ferns/bryophytes/lichens were included. ONLY West Sussex covered in the survey. Where relevant, info. In EN/SSSI Files. NB: some sites listed below have since been designated, and are now named accordingly. 1990-3.92 |
| Site Name        | Cuckoo Corner Fields & Ditches, Lancing (pSNCI) TQ203065  |
| Site Comment     | Potential SNCI. The site consists of a network of ditches and drains with arable fields. The ditches vary in terms of diversity of species. Several ditches have been filled in and the pond has silted up.   |
| Copies Available | WSCC, EN/SSSI/SCI   |
|                  |   |
| Survey Name      | West Sussex Potential SNCI Project - (397)  |
| Survey Author    | FINCH, Marion, CLARK, Louise  |
| Survey Comment   | A survey of potential SNCIs to assess their significance. Incidental records of mammals, birds, butterflies and moths, and ferns/bryophytes/lichens were included. ONLY West Sussex covered in the survey. Where relevant, info. In EN/SSSI Files. NB: some sites listed below have since been designated, and are now named accordingly.           |
| Date             | 1990-3.92   |
| Site Name        | Lancing College (Meadow South of) (pSNCI) TQ196062  |
| Site Comment     | Potential SNCI. A thin strip of scrubby woodland and grassland alongside a track and an area of chalk grassland. It also includes a small patch of storm-damaged woodland.  |
| Copies Available | WSCC, EN/SSSI/SCI   |
|                  |   |
| Survey Name      | West Sussex Potential SNCI Project - (397)  |
| Survey Author    | FINCH, Marion, CLARK, Louise  |
| Survey Comment   | A survey of potential SNCIs to assess their significance. Incidental records of mammals, birds, butterflies and moths, and ferns/bryophytes/lichens were included. ONLY West Sussex covered in the survey. Where relevant, info. In EN/SSSI Files. NB: some sites listed below have since been designated, and are now named accordingly.           |
| Site Name        | 1990-3.92   |
| Site Comment     | Potential SNCI. Consists of the pond, grazed fields and ditch system, south of the farm. The fields are rather poor, the pond is extremely diverse and the ditches are interesting. There is a small plantation.  |
| Copies Available | WSCC, EN/SSSI/SCI   |

| Survey Name      | West Sussex Potential SNCI Project - (397)  |
|------------------|---|
|                  |   |
| Survey Author    | FINCH, Marion, CLARK, Louise  |
| Survey Comment   | A survey of potential SNCIs to assess their significance. Incidental records of mammals, birds, butterflies and moths, and ferns/bryophytes/lichens were included. ONLY West Sussex covered in the survey. Where relevant, info. In EN/SSSI Files. NB: some sites listed below have since been designated, and are now named accordingly. |
| Date             | 1990-3.92   |
| Site Name        | Steyning Road Strip (pSNCI) TQ207068  |
| Site Comment     | Potential SNCI. This site comprises several fields of little botanical interest, some scrub and a small strip of reed bed which run along a wet ditch. Includes a part of Adur Estuary SSSI.  |
| Copies Available | WSCC, EN/SSSI/SCI   |
|                  |   |
| Survey Name      | West Sussex Potential SNCI Project - (397)  |
|                  |   |
| Survey Author    | FINCH, Marion, CLARK, Louise  |
| Survey Comment   | A survey of potential SNCIs to assess their significance. Incidental records of mammals, birds, butterflies and moths, and ferns/bryophytes/lichens were included. ONLY West Sussex covered in the survey. Where relevant, info. In EN/SSSI Files. NB: some sites listed below have since been designated, and are now named accordingly. |
| Date             | 1990-3.92   |
| Site Name        | Old Shoreham Bridge (West of) (pSNCI) TQ203059  |
| Site Comment     | Potential SNCI. The site consists of the northern edge of the airfield from Old Shoreham Bridge in the east to the scrub west of Honeyman's Farm, and two ditches on the track to Monk's Farm.  |
| Copies Available | WSCC, EN/SSSI/SCI   |
|                  |   |
| Survey Name      | West Sussex Potential SNCI Project - (397)  |
| Survey Author    | FINCH Marion CLARK Louise   |

| Survey Comment | mment A survey of potential SNCIs to assess their significance. Incidental records of mammals, to butterflies and moths, and ferns/bryophytes/lichens were included. ONLY West Sussex control in the survey. Where relevant, info. In EN/SSSI Files. NB: some sites listed below have subsen designated, and are now named accordingly. |                                |
|----------------|---|--------------------------------|
| Date           | 1990-3.92   |                                |
| Site Name      | Shoreham Airport (pSNCI)  | TQ203055                       |
| Site Comment   | Potential SNCI. There are arable crops being grown on the adjacent lands (i.e. over th Saltworks). Most of the airport's grassland was very closely mown and appeared to be botanical interest. Clippings had been left on site and this had probably contributed to t  | ne Old<br>of little<br>the low |

species diversity.

WSCC, EN/SSSI/SCI

**Copies Available** 

| Survey Name                      | West Sussex Potential SNCI Project - (397)  |                                     |
|----------------------------------|---|-------------------------------------|
|                                  |   |                                     |
| Survey Author                    | FINCH, Marion, CLARK, Louise  |                                     |
| Survey Comment                   | A survey of potential SNCIs to assess their significance. Incidental records of mamma butterflies and moths, and ferns/bryophytes/lichens were included. ONLY West Susse: in the survey. Where relevant, info. In EN/SSSI Files. NB: some sites listed below have been designated, and are now named accordingly. 1990-3.92 | ls, birds,<br>x covered<br>ve since |
| Site Name                        | New Salts Farm Meadows, Lancing (pSNCI)   | TQ203049                            |
| Site Comment<br>Copies Available | Potential SNCI. This site comprises some rough meadows, possibly semi-improved, we ditches dominated by common reed (Phragmites Communis) but is quite species-poor meadows and ditch edges are grazed. The site is of little botanical interest but suspect important for wintering birds.<br>WSCC, EN/SSSI/SCI            | vith<br>r. The<br>t it may be       |
| -                                |   |                                     |

| Survey Author    | FINCH, Marion, CLARK, Louise  |                                     |
|------------------|---|-------------------------------------|
| Survey Comment   | A survey of potential SNCIs to assess their significance. Incidental records of mamma butterflies and moths, and ferns/bryophytes/lichens were included. ONLY West Susses in the survey. Where relevant, info. In EN/SSSI Files. NB: some sites listed below have been designated, and are now named accordingly. | ls, birds,<br>x covered<br>ve since |
| Date             | 1990-3.92   |                                     |
| Site Name        | The Ham, Shoreham (pSNCI)   | TQ222051                            |
| Site Comment     | Potential SNCI. A small area of close-mown amenity grassland with swings at the eas<br>and seats placed on the edges. The site is enclosed by railings with a privet hedge are<br>There are some mature sycamores.  | tern end,<br>ound part.             |
| Copies Available | WSCC, EN/SSSI/SCI   |                                     |

West Sussex Potential SNCI Project - (397)

Survey Name

| Survey Name                      | West Sussex Potential SNCI Project - (397)  |
|----------------------------------|---|
| Survey Author                    | FINCH, Marion, CLARK, Louise  |
| Survey Comment                   | A survey of potential SNCIs to assess their significance. Incidental records of mammals, birds, butterflies and moths, and ferns/bryophytes/lichens were included. ONLY West Sussex covered in the survey. Where relevant, info. In EN/SSSI Files. NB: some sites listed below have since been designated, and are now named accordingly. 1990-3.92 |
| Site Name                        | Shoreham Vegetated Beach (pSNCI) TQ228045   |
| Site Comment<br>Copies Available | Potential SNCI. This is a large stretch of vegetated shingle situated on the upper, higher regions of the shingle beach to the west of Shoreham Harbour. The adjacent gardens also hold botanical importance. Most of site falls within Shoreham Beach SNCI Ad03. WSCC, EN/SSSI/SCI   |
|                                  |   |

| Survey Name      | West Sussex Potential SNCI Project - (397)   |     |
|------------------|--|-----|
|                  |  |     |
| Survey Author    | FINCH, Marion, CLARK, Louise   |     |
| Survey Comment   | A survey of potential SNCIs to assess their significance. Incidental records of mammals, birds, butterflies and moths, and ferns/bryophytes/lichens were included. ONLY West Sussex covere in the survey. Where relevant, info. In EN/SSSI Files. NB: some sites listed below have since been designated, and are now named accordingly. 1990-3.92 | d   |
| Site Name        | Shoreham Beach - SNCI Ad03 TQ2170  | )44 |
| Site Comment     | The main interest is the highly specialised shingle flora. The vegetated areas are in two strips about 3km. long and has both the pioneer and the intermediate community.  |     |
| Copies Available | WSCC, EN/SSSI/SCI  |     |
|                  |  |     |
| Survey Name      | Flora of Shoreham-by-Sea: A Species list - (484)   |     |
| Survey Author    | BISHOP, George and Betty   |     |
| Survey Comment   | Contains a brief description and an extensive plant species list including exotics\escapees. No locations of species given. Updated by additions 1985-2000 and omissions (1984).   |     |
| Date             | -  |     |
| Site Name        | Shoreham (Lancing to Portslade Area South of Railway) TQ2000   | )50 |

|                  | Chorenani (Lancing to Fonsiade Area Court of Raiway)            | 1 6 2 |
|------------------|---|-------|
| Site Comment     | Covers a range of habitats from the harbour to chalk grassland. |       |
| Copies Available | EN, WSCC  |       |
|                  |   |       |

| Survey Name                      | Chalk Grassland on South Downs of West Sussex - (499)   |           |
|----------------------------------|---|-----------|
| Survey Author                    | PAGE, Martin  |           |
| Survey Comment<br>Date           | Areas of chalk grassland were identified from aerial photographs. In each site random quadra were chosen and the vegetation described in detail. (WSCC have copies of some of the origin quadrat data). (Phase II). [SxBRC copy held in H3 box]. 7.81-12.81 | ts<br>ial |
| Site Name                        | Lancing Hill (Lancing Ring) (1981 Chalk Grassland Survey Area) TQ180  | 062       |
| Site Comment<br>Copies Available | An area of scrub; Beech woodland; rank chalk grassland and improved grassland around Lancing Ring to the north of Lancing. There is also a disused chalk pit. Site includes much of LNR and SNCI Ad02.<br>EN, SxBRC Boxes, WSCC                             |           |
| Copies Available                 | EN, SxBRC Boxes, WSCC   |           |

| Survey Name      | Designated SNCIs (in West Sussex) - (500)   |
|------------------|---|
| Survey Author    | WSCC  |
| Survey Comment   | All SNCIs in West Sussex are covered here. All sites have management prescriptions. Each site was surveyed botanically, but additional information on other groups is included where known. (A hand-book 'West Sussex Sites of Nature Conservation Importance' has been produced). (Phase II). In 1998 a further 26 new sites were added. In 2001 a further 23 new sites were added and 1 deleted. [NB: a number of additional sites are also included which are not designated, but which were presumably considered for designation at some stage, or which were at some time designated but which have since be deselected]. |
| Date             | 1990-   |
| Site Name        | Widewater Lagoon, Lancing - SNCI Ad4TQ199042  |
| Site Comment     | A classic, isolated, shingle pit, brackish lagoon with houses on the north side and is separated from the sea on the south by a broad shingle bank. It has shingle flora merging into saltmarsh vegetation.   |
| Copies Available | EN, SWT, WSCC   |

| Survey Name      | Designated SNCIs (in West Sussex) - (500)  |
|------------------|--|
| Survey Author    | WSCC   |
| Survey Comment   | All SNCIs in West Sussex are covered here. All sites have management prescriptions. Each site was surveyed botanically, but additional information on other groups is included where known. (A hand-book 'West Sussex Sites of Nature Conservation Importance' has been produced). (Phase II). In 1998 a further 26 new sites were added. In 2001 a further 23 new sites were added and 1 deleted. [NB: a number of additional sites are also included which are not designated, but which were presumably considered for designation at some stage, or which were at some time designated but which have since be deselected].  |
| Date             | 1990-  |
| Site Name        | Lancing Ring (pSNCI) TQ180065  |
| Site Comment     | Potential SNCI. This site encompasses a range of habitats including developing ash woodland, scrub and areas of quite rank chalk grassland. Although few of these areas are particularly special, together they form a very interesting complex boasting a good range of species. Additionally; the site is an important landscape feature and is of considerable amenity value. There is much evidence of regular use by locals who have formed themselves into an active group concerned with conserving the site. Additional information for this site is available in a written report by Brighton Polytechnic (1988) Lancing Ring Management Plan. Also, species lists have been prepared by Lancing Ring conservation group and relevant information collected in documents prepared by Adur District Council on proposed management for this site. NB: Actual SNCI Ad02 site has different boundaries! Site also includes much of LNR site. |
| Copies Available | EN, SWT, WSCC  |
|                  |  |

| Survey Name      | Designated SNCIs (in West Sussex) - (500)   |
|------------------|---|
|                  |   |
| Survey Author    | WSCC  |
| Survey Comment   | All SNCIs in West Sussex are covered here. All sites have management prescriptions. Each site was surveyed botanically, but additional information on other groups is included where known. (A hand-book 'West Sussex Sites of Nature Conservation Importance' has been produced). (Phase II). In 1998 a further 26 new sites were added. In 2001 a further 23 new sites were added and 1 deleted. [NB: a number of additional sites are also included which are not designated, but which were presumably considered for designation at some stage, or which were at some time designated but which have since be deselected]. |
| Date             | 1990-   |
| Site Name        | Shoreham Beach - SNCI Ad03 TQ217044   |
| Site Comment     | The main interest is the highly specialised shingle flora. The vegetated areas are in two strips about 3km. long and has both the pioneer and the intermediate community.   |
| Copies Available | EN, SWT, WSCC   |

| Survey Name      | Designated SNCIs (in West Sussex) - (500)  |   |
|------------------|--|---|
| Ourse Aurth an   | Weee   |   |
| Survey Author    | WSCC   |   |
| Survey Comment   | All SNCIs in West Sussex are covered here. All sites have management prescriptions. E site was surveyed botanically, but additional information on other groups is included where known. (A hand-book 'West Sussex Sites of Nature Conservation Importance' has been produced). (Phase II). In 1998 a further 26 new sites were added. In 2001 a further 23 new ere added and 1 deleted. [NB: a number of additional sites are also included which are designated, but which were presumably considered for designation at some stage, or which at some time designated but which have since be deselected]. | Each<br>e<br>ew sites<br>not<br>ch were |
| Date             | 1990-  |   |
| Site Name        | Lancing Ring - SNCI Ad02 TC  | 2180065                                 |
| Site Comment     | Site encompasses a range of habitats including unmanaged rank grassland, horse-grazed pasture, disused chalk pit, scrub and developing Ash woodland.   | d                                       |
| Copies Available | EN, SWT, WSCC  |   |

| <b>A</b> N       |   |           |
|------------------|---|-----------|
| Survey Name      | Widewater Lagoon Annual Monitoring Surveys - (503)  |           |
|                  |   |           |
| Survey Author    | JOYCE, Chris B  |           |
| Survey Comment   | Survey has been conducted since at least 2002. (data also available for 2001 from ES 2674). | SD survey |
| Date             | various   |           |
| Site Name        | Widewater Lagoon, Lancing   | TQ200042  |
| Site Comment     | Site relates to the actual water body.  |           |
| Copies Available | As contact  |           |
|                  |   |           |

|  | /New Salts Farm Survey, Lancing - (504)   |    |
|--|---|----|
| Survey Author HIT(                                 | CHINGS, S. P.   |    |
| Survey Comment A re<br>Valle                       | eport compiled as part of an objection to a planning application for this area. Lower River<br>ley Survey No.38. [SxBRC copy filed under TQ10].     |    |
| Site Name Sou                                      | uth Lancing Farmland (Old Salts to New Salts Farm) TQ2000   | 46 |
| Site Comment Plar<br>inter<br>Copies Available SxB | nning application for development put in in 1988. Typical farmland. Some ditches may be of<br>erest. Surveyed for SNCI.<br>BRC Digital, EN/SSSI/SCI |    |

| Survey Name      | Wintering Waterfowl Count Scheme - (506)   |                                |
|------------------|--|--------------------------------|
| Survey Author    | Various  |                                |
| Survey Comment   | WWT covers inland sites and some coastal areas and sites are counted for waterfowl, herons and Kingfishers every month over the winter. A summary of the results combine BTO's Estuary counts are published in "Wildfowl and Wetland Counts" each year. Infor sites can be obtained via the above contact. various | rails,<br>ed with<br>mation on |
| Site Name        | Widewater Lagoon, Lancing - SNCI Ad4   | TQ199042                       |
| Site Comment     | A classic, isolated, shingle pit, brackish lagoon with houses on the north side and is set from the sea on the south by a broad shingle bank. It has shingle flora merging into sal vegetation.  | parated<br>Itmarsh             |
| Copies Available | As contact   |                                |

| Survey Name      | Wintering Waterfowl Count Scheme - (506)   |   |
|------------------|--|---|
|                  |  |   |
| Survey Author    | Various  |   |
| Survey Comment   | WWT covers inland sites and some coastal areas and sites are counted for waterfowl, rails, herons and Kingfishers every month over the winter. A summary of the results combined with BTO's Estuary counts are published in "Wildfowl and Wetland Counts" each year. Information on sites can be obtained via the above contact. |   |
| Date             | various  |   |
| Site Name        | Brooklands Boating Lake, East Worthing TQ173035  | 5 |
| Site Comment     | A small boating lake between Lancing and Worthing.   |   |
| Copies Available | As contact   |   |
|                  |  |   |

| Survey Name      | Synopsis of Sussex Coast Bioaccumulation Data - Interim Report - (510)  |     |
|------------------|---|-----|
| Survey Author    | Unknown   |     |
| Survey Comment   | Analysis of accumulation of pollutants in marine algae and molluscs from several sites along the coast. The survey records the amounts of heavy metals and certain pesticide chemicals. (No exact site maps provided). Lower River Valley Survey No.35. | he  |
| Date             | 1981-85   |     |
| Site Name        | A259 Norfolk Bridge Mudflats, Shoreham TQ212  | 050 |
| Site Comment     | Important wildfowl - Wader area. R.S.P.B. reserve. Fairly high levels of DDT found in mussels<br>Habitat also includes mudflats.  | •   |
| Copies Available | WSCC  |     |

| Survey Name      | Feeding Ecology of Waders in Adur Estuary - (537)  |
|------------------|--|
| Survey Author    | PORTER, R. F.  |
| Survey Comment   | A study on aspects of the feeding ecology of Dunlin, Redshank and Ringed Plover on the River<br>Adur estuary. It studies the relationship between feeding densities and distribution of the waders<br>with the rich invertebrate fauna. Lower River Valley Survey No.31. (Phase III) |
| Duic             |  |
| Site Name        | Adur Estuary (A259 Norfolk Bridge to Shoreham Drawbridge) TQ213049   |
| Site Comment     | A large area of intertidal mudflats at Shoreham-by-Sea.  |
| Copies Available | EN   |

| Survey Name      | RSPB Reserves Dossier - (540)   |   |
|------------------|---|---|
| Cumulau Authon   |   |   |
| Survey Author    | R.S.P.B.  |   |
| Survey Comment   | The RSPB will hold information on these reserves such as breeding bird surveys, census work, annual reports, management plans and many others. As well as bird surveys the RSPB hold and initiate surveys on other groups. (EN hold annual survey reports for Pilsey Island). (Phase II/III). | l |
| Date             | -   |   |
| Site Name        | Lower Adur Estuary RSPB TQ21304   | 9 |
| Site Comment     | A small area of intertidal mudflats and river.  |   |
| Copies Available | RSPB, EN  |   |
|                  |   |   |
| Survey Name      | Botanical Survey of Unimproved Grassland on South Downs in West Sussex 1992 - (   | (549)   |
|------------------|---|---|
| Survey Author    | STEV/EN Graham  |   |
| Survey Author    |   |   |
| Survey Comment   | Areas of long-established grassland were surveyed botanically. Areas excluded were<br>pioneer communities on bare chalk in pits, road cuttings and areas recently re-establ<br>following scrub clearance. (Phase II). NB: since survey aimed to record area of unim<br>grassland on the downs, some sites are identified in report (and included below in site<br>if they were not surveyed as part of this study. [SxBRC (2 copies) held in H3 box].<br>05-10.92 | under 1ha.,<br>lished<br>proved<br>e list) even |
| Site Name        | Lancing Ring LNR  | TQ185063  |
| Site Comment     | An area of mainly neutral grassland tending towards acid grassland at the summit. Th areas of scrub. The site lies on a gentle south-facing slope just north of Lancing. It wa as an LNR by Adur District Council in 1992. Much of site overlaps with SNCI Ad02.  | ere are<br>s declared                           |
| Copies Available | EN, SXBRC Boxes, WSCC   |   |
|                  |   |   |
| Survey Name      | Widewater Lagoon - Current Status - (555)   |   |
| Survey Author    | SHEADER, A., SHEADER, M.  |   |
| Survey Comment   | A survey of Widewater to record the current condition of the lagoon and its biota and determine whether 'Edwardsia ivelli' was still present on the site. Lower River Valley S No.28. The sediment's organic content was measured and animals from a core samp identified. Samples were taken during dives along the length of the lagoon. (Phase II)   | to<br>Survey<br>ble                             |
| Date             | 8.90  |   |
| Site Name        | Widewater Lagoon, Lancing   | TQ200042  |
| Site Comment     | Site relates to the actual water body.  |   |
| Copies Available | EN, WSCC  |   |
|                  |   |   |
| Survey Name      | Salt Marsh Survey of Britain - Sussex - (571)   |   |
|                  |   |   |
| Survey Author    | BURD, Fiona.  |   |
| Survey Comment   | A national survey divided into county reports. Detailed reports, site record cards, sket<br>and species lists are given for each site. It also covers threats to the conservation of s<br>marshes. (Phase II). [SxBRC copy held in H7a box].  | ch maps<br>salt                                 |
| Date             | 8.85  |   |
| Site Name        | Adur Estuary SSSI   | TQ208056  |

Site CommentThis is one of only four significant areas of salt-marsh in Sussex. It holds unusual plants and is<br/>important for wintering wading birds. It is mainly river estuary and some salt-marsh.Copies AvailableEN, SxBRC Boxes, WSCC

| Survey Name      | Inventory to British Saltmarshes - Supplement No.5 - (572)  |
|------------------|---|
| Survey Author    | BURD, Fiona.  |
| Survey Comment   | This report summarises a survey of salt marshes in Britain and gives very basic information on the size of the different communities in them. This is Regional Supplement No. 5 of the Salt Marsh Survey of Great Britain. Lower River Valley Survey No.33. |
| Date             | 84-89   |
| Site Name        | Adur Estuary SSSI TQ208056  |
| Site Comment     | This is one of only four significant areas of salt-marsh in Sussex. It holds unusual plants and is important for wintering wading birds. It is mainly river estuary and some salt-marsh.  |
| Copies Available |   |

| Survey Name      | Harbours, Rias and Estuaries in Southern Britain: Minor South Coast Inlets - (573)   |  |
|------------------|--|--|
| Survey Author    | JOHNSTON, Charlotte. M.  |  |
| Survey Comment   | A survey of minor river estuaries in Hampshire, Isle of Wight and Sussex. (Only one site was surveyed in Sussex). The sublittoral and littoral zones were surveyed. The sediments were sampled and analysed for their sediment type and their faunal content. Species lists and detailed accounts are given for each site. Lower River Valley Survey No.29. (Phase II) |  |
| Date             | 1988   |  |
| Site Name        | Adur Estuary (Kingston Beach to Tidal Limit at Lancing College) TQ213049   |  |
| Site Comment     | Part SSSI;part RSPB reserve.Adur river estuary comprising the river and inter-tidal sand and<br>mudflats along it.   |  |
| Copies Available | EN   |  |

| Survey Name      | Directory of Saline Lagoons in England - (574)   |               |
|------------------|--|---------------|
| Survey Author    | SMITH, B. P., LAFFOLEY, D.   |               |
| Survey Comment   | A collation and summary of the data contained in a series of surveys of saline la Britain's coast. The initial surveys were carried out between 1984 and 1989. | igoons around |
| Date             | -  |               |
| Site Name        | Widewater Lagoon, Lancing  | TQ200042      |
| Site Comment     | Site relates to the actual water body.   |               |
| Copies Available | WSCC, EN   |               |

| Survey Name      | Survey of Brackish Coastal Lagoons, Sussex to Dorset (576)   |  |
|------------------|--|--|
| Survey Author    | SHEADER, A., SHEADER, M.   |  |
| Survey Comment   | This field report aims to produce a list of all the brackish lagoons from Weymouth (Do<br>Seaford and gives a description of each one with details of their flora and fauna. Tem<br>salinity and sediment characteristics were recorded as well. Part of a national survey.<br>Sussex sites are described here. Species lists are given for each site. The record she<br>given in a separate appendix. [SxBRC copy held in H7a box]. | orset) to<br>perature;<br>Only the<br>sets are |
| Date             | 1984-1985  |  |
| Site Name        | Widewater Lagoon, Lancing  | TQ200042                                       |
| Site Comment     | Site relates to the actual water body.   |  |
| Copies Available | EN, SxBRC Boxes, WSCC  |  |

| Survey Name      | Survey of Brackish Coastal Lagoons - (577)  |  |
|------------------|---|--|
| Survey Author    | SHEADER, A., SHEADER, M.  |  |
| Survey Comment   | This report covers brackish lagoons in Dorset, Hampshire and Sussex and is part of a survey to assess the current status of brackish lagoons around Britain. The survey cov information on seawater and freshwater input, temperature, salinity, sediment character Vegetation, macro-fauna, sediment and weed samples were taken for further analysis. River Valley Survey No.25. Photographs at each site were also taken. The site record included in a separate appendix. | national<br>rered<br>eristics.<br>Lower<br>I cards are |
| Date             | 9.84-3.85   |  |
| Site Name        | Widewater Lagoon, Lancing   | TQ200042   |
| Site Comment     | Site relates to the actual water body.  |  |
| Copies Available | EN  |  |

| Survey Name      | Vegetated Shingle Survey of the Sussex Coast - (603)   |    |
|------------------|--|----|
| Survey Author    | WILLIAMS, P. R., COOKE, R. J.  |    |
| Survey Comment   | A survey to identify all areas of vegetated shingle along the Sussex coast so that the NRA can avoid these during emergency sea defence work. Only the areas of significance were included in this survey and species lists were usually compiled. Only the non-SSSI's were actually surveyed. (Phase II). [SxBRC copy held in H7b box]. |    |
| Site Name        | Shoreham Beach - SNCI Ad03 TQ2170  | 44 |
| Site Comment     | The main interest is the highly specialised shingle flora. The vegetated areas are in two strips about 3km. long and has both the pioneer and the intermediate community.  |    |
| Copies Available | EN, SxBRC Boxes, WSCC  |    |

| Survey Author WILLIAMS, P. R., COOKE, R. J.  |     |
|--|-----|
| <b>Survey Comment</b> A survey to identify all areas of vegetated shingle along the Sussex coast so that the NRA can avoid these during emergency sea defence work. Only the areas of significance were includer in this survey and species lists were usually compiled. Only the non-SSSI's were actually surveyed. (Phase II). [SxBRC copy held in H7b box]. | b   |
| <b>Date</b> 07.93  |     |
| Site NameLancing Beach Vegetated ShingleTQ185  | 037 |
| Site Comment A 150m. strip of basic shingle pioneer community. It should not be disturbed if it is to develop.   |     |
| Copies Available EN, SxBRC Boxes, WSCC   |     |

| Survey Name                      | Vegetated Shingle Survey of the Sussex Coast - (603)   |     |
|----------------------------------|--|-----|
| Survey Author                    | WILLIAMS, P. R., COOKE, R. J.  |     |
| Survey Comment                   | A survey to identify all areas of vegetated shingle along the Sussex coast so that the NRA can avoid these during emergency sea defence work. Only the areas of significance were included in this survey and species lists were usually compiled. Only the non-SSSI's were actually surveyed. (Phase II). [SxBRC copy held in H7b box]. | d   |
| Date                             | 07.93  |     |
| Site Name                        | Widewater Vegetated Shingle TQ196  | 041 |
| Site Comment<br>Copies Available | A 550M. strip of good vegetated shingle representing both the pioneer and the intermediate community types.<br>EN, SxBRC Boxes, WSCC   |     |

| Survey Name      | RDB Plants - CONFIDENTIAL - (606)   |
|------------------|---|
| Survey Author    | FITZGERALD, R.  |
| Survey Comment   | Site surveys for Red Data Book plants. Many sites are monitored from year to year. Rare Plants Project.   |
| Date             | 1985-1987   |
| Site Name        | Shoreham Vegetated Beach (pSNCI) TQ228045   |
| Site Comment     | Potential SNCI. This is a large stretch of vegetated shingle situated on the upper, higher regions of the shingle beach to the west of Shoreham Harbour. The adjacent gardens also hold botanical importance. Most of site falls within Shoreham Beach SNCI Ad03. |
| Copies Available |   |

| Survey Name                      | Adur Estuary: Survey of its Marine Flora & Fauna 1960-92 - (615)  |
|----------------------------------|---|
| Survey Author                    | BARKER, J. S.   |
| Survey Comment                   | Species lists, descriptions and comments on rareness. It is a long term study of this area. Lower River Valley Survey No.30. (At EN it is kept in the Adur Estuary SSSI Scientific file. Adur Valley Project also hold a copy). (Phase II). Records are given with reference to 3 zonations within the estuary, each treated as a separate site. [SxBRC copy filed under TQ20]. |
| Site Name                        | Adur Estuary (Shoreham Harbour: A259 Norfolk Bridge to Sussex Wharf) TQ215049   |
| Site Comment<br>Copies Available | Estuary between A259 Norfolk Bridge in the west, and Sussex Wharf in the east.<br>EN, SxBRC File Cabs   |

| Survey Name      | Adur Estuary: Survey of its Marine Flora & Fauna 1960-92 - (615)   |                       |
|------------------|--|-----------------------|
|                  |  |                       |
| Survey Author    | BARKER, J. S.  |                       |
| Survey Comment   | Species lists, descriptions and comments on rareness. It is a long term study of this area. L<br>River Valley Survey No.30. (At EN it is kept in the Adur Estuary SSSI Scientific file. Adur Va<br>Project also hold a copy). (Phase II). Records are given with reference to 3 zonations within<br>estuary, each treated as a separate site. [SxBRC copy filed under TQ20]. | ower<br>lley<br>n the |
| Date             | 1960-1992  |                       |
| Site Name        | Adur Estuary (A259 Norfolk Bridge to A27 Fly-over) TQ2   | 07057                 |
| Site Comment     | Adur estuary south from A27 overpass to A259 Norfolk Bridge.   |                       |
| Copies Available | EN, SxBRC File Cabs  |                       |
|                  |  |                       |

| Survey Name      | FWAG Visit to Applesham Farm - (633)  |          |
|------------------|---|----------|
| Survey Author    |   |          |
| Survey Author    | WHELON, D. J., SWASH, Andy  |          |
| Survey Comment   | A survey to identify the plant and butterfly species present and to sample areas with quadrats.(This is held on file 'DA01/5-2 - Chalk Grassland - Vol I' at EN). (Phase II). [ copy filed under TQ10]. | SxBRC    |
| Date             | 7.86  |          |
| Site Name        | Applesham Farm/Lancing Hill (Steep Down to Cow Bottom)  | TQ183068 |
| Site Comment     |   |          |
| Copies Available | EN, SxBRC Digital   |          |

| Survey Name            | Birds of Estuarine Enquiry - (654)   |         |
|------------------------|--|---------|
| Survey Author          | Various  |         |
| Survey Comment<br>Date | A summary of the results of surveys, combined with WWT's wintering waterfowl counts, are published annually in 'Wildfowl and Wader Counts'. Information on sites can be obtained via the above contact. BTO covers estuaries and sites are counted each month in the winter for waders NOV-MARCH | ;<br>5. |
| Site Name              | Adur Estuary SSSI TQ20805  | 56      |
| Site Comment           | This is one of only four significant areas of salt-marsh in Sussex. It holds unusual plants and is important for wintering wading birds. It is mainly river estuary and some salt-marsh.   |         |
| Copies Available       | As contact   |         |

| Survey Name      | A27 Worthing/Lancing Improvement - Environmental Statement - (740)  |          |
|------------------|---|----------|
| Survey Author    | CHRIS BLANDFORD ASSOC.  |          |
| Survey Comment   | The ecological survey is an appendix to the statement. It identifies areas of semi-natural vegetation and mature conservation significance, giving botanical species lists and a very brief description of most sites. Appendices detail Cissbury Ring and Lancing Ring. (Phase II) |          |
| Date             | 6.90  |          |
| Site Name        | Hill Barn Farm (Fields E of), Lancing (pSNCI)   | TQ184063 |
| Site Comment     | Potential SNCI. A dry chalk grassland valley running eastwards which is grazed pasture.   |          |
| Copies Available | SxBRC Digital   |          |

| Survey Name      | A27 Worthing/Lancing Improvement - Environmental Statement - (740)  |       |
|------------------|---|-------|
|                  |   |       |
| Survey Author    | CHRIS BLANDFORD ASSOC.  |       |
| Survey Comment   | The ecological survey is an appendix to the statement. It identifies areas of semi-natural vegetation and mature conservation significance, giving botanical species lists and a very brief description of most sites. Appendices detail Cissbury Ring and Lancing Ring. (Phase II)   |       |
| Date             | 6.90  |       |
| Site Name        | Allotment Meadow & Woody Strip, Lancing (pSNCI) TQ1   | 88060 |
| Site Comment     | Potential SNCI. This site is situated on a north facing slope and consists of a grassland area bordered on three sides by a woody strip, very damaged by the 1987 storm. The grassland is quite rank but has some interesting species. However; there is much Ash seedling/sapling invasion. Is a part of Lancing Ring LNR. |       |
| Copies Available | SxBRC Digital   |       |

| Survey Name      | A27 Worthing/Lancing Improvement - Environmental Statement - (740)   |     |
|------------------|--|-----|
| Survey Author    | CHRIS BLANDFORD ASSOC.   |     |
| Survey Comment   | The ecological survey is an appendix to the statement. It identifies areas of semi-natural vegetation and mature conservation significance, giving botanical species lists and a very brief description of most sites. Appendices detail Cissbury Ring and Lancing Ring. (Phase II)  |     |
| Date             | 6.90   |     |
| Site Name        | Cow Bottom, Lancing (pSNCI) TQ1880   | 068 |
| Site Comment     | Potential SNCI. The site consists of two fields which are distinct from; but not physically separated from; the improved pasture around them. The fields occupy steep slopes and have only been partially improved. The western-most of the two is the most diverse; consisting of typical calcareous grassland and scattered scrub. Cow Bottom itself has remnants of unimproved chalk grassland; but these form a mosaic with improved pasture. Here; overall interest is lower than for the rest of the site; although higher than that of the surrounding grassland. |     |
| Copies Available | SxBRC Digital  |     |
| <b>0</b> N       |  |     |
| Survey Name      | A27 Worthing/Lancing Improvement - Environmental Statement - (740)   |     |
| Survey Author    | CHRIS BLANDFORD ASSOC.   |     |
| Survey Comment   | The ecological survey is an appendix to the statement. It identifies areas of semi-natural vegetation and mature conservation significance, giving botanical species lists and a very brief description of most sites. Appendices detail Cissbury Ring and Lancing Ring. (Phase II)  |     |
| Date             | 6.90   |     |
| Site Name        | Cuckoo Corner Fields & Ditches, Lancing (pSNCI) TQ2030   | 065 |
| Site Comment     | Potential SNCI. The site consists of a network of ditches and drains with arable fields. The ditches vary in terms of diversity of species. Several ditches have been filled in and the pond has silted up.  |     |
| Copies Available | SxBRC Digital  |     |

| Survey Name      | A27 Worthing/Lancing Improvement - Environmental Statement - (740)  |       |
|------------------|---|-------|
| Survey Author    | CHRIS BLANDFORD ASSOC.  |       |
| Survey Comment   | The ecological survey is an appendix to the statement. It identifies areas of semi-natural vegetation and mature conservation significance, giving botanical species lists and a very brief description of most sites. Appendices detail Cissbury Ring and Lancing Ring. (Phase II) |       |
| Date             | 6.90  |       |
| Site Name        | Lancing College Pond & Water Meadow (pSNCI) TQ1   | 98063 |
| Site Comment     | Potential SNCI. Consists of the pond, grazed fields and ditch system, south of the farm. The fields are rather poor, the pond is extremely diverse and the ditches are interesting. There is a small plantation.  |       |
| Copies Available | SxBRC Digital   |       |

| Survey Name      | A27 Worthing/Lancing Improvement - Environmental Statement - (740)  |  |
|------------------|---|--|
|                  |   |  |
| Survey Author    | CHRIS BLANDFORD ASSOC.  |  |
| Survey Comment   | The ecological survey is an appendix to the statement. It identifies areas of semi-natural vegetation and mature conservation significance, giving botanical species lists and a very brief description of most sites. Appendices detail Cissbury Ring and Lancing Ring. (Phase II) |  |
| Site Name        | Old Shoreham Bridge (West of) (nSNCI) TO203059  |  |
| Site Comment     | Potential SNCI. The site consists of the northern edge of the airfield from Old Shoreham Bridge in the east to the scrub west of Honeyman's Farm, and two ditches on the track to Monk's Farm.  |  |
| Copies Available | SxBRC Digital   |  |
|                  |   |  |
| Survey Name      | A27 Worthing/Lancing Improvement - Environmental Statement - (740)  |  |
| Survey Name      | Az / Worthing/Lancing improvement - Environmental Statement - (740)   |  |
| Survey Author    | CHRIS BLANDFORD ASSOC.  |  |
| Survey Comment   | The ecological survey is an appendix to the statement. It identifies areas of semi-natural vegetation and mature conservation significance, giving botanical species lists and a very brief description of most sites. Appendices detail Cissbury Ring and Lancing Ring. (Phase II) |  |
| Date             | 6.90  |  |
| Site Name        | Lancing Ring LNR (Part of) TQ180063   |  |
| Site Comment     | A rich mosaic of scrub and grassland with some areas of woodland. Much of site is also within SNCI Ad02.  |  |
| Copies Available | SxBRC Digital   |  |
|                  |   |  |
| Survey Name      | A27 Worthing/Lancing Improvement - Environmental Statement - (740)  |  |
|                  |   |  |
| Survey Author    | CHRIS BLANDFORD ASSOC.  |  |
| Survey Comment   | The ecological survey is an appendix to the statement. It identifies areas of semi-natural vegetation and mature conservation significance, giving botanical species lists and a very brief description of most sites. Appendices detail Cissbury Ring and Lancing Ring. (Phase II) |  |
| Date             | 6.90  |  |
| Site Name        | Cow Bottom (SW) Chalk Grassland TQ185067  |  |
| Site Comment     | An area of rough chalk grassland and scrub.   |  |
| Copies Available | SxBRC Digital   |  |

| Survey Name      | Ecological Survey of New Monks Farm - (745)  |     |
|------------------|--|-----|
| Survey Author    | DOLPHIN ECOLOGICAL SURVEYS   |     |
| Survey Comment   | A survey to assess the current ecological value of the habitats with a view to possible conversion to a golf course. There was detailed botanical recording and casual recording of fauna. (Phase II). See also follow-up survey in June 1999 (ESD survey 1237). |     |
| Date             | 8.93   |     |
| Site Name        | New Monks Farm, Lancing Brooks TQ193   | 052 |
| Site Comment     | A series of arable fields crossed by ditches of variable wetness and bordered by hedges; tree belts and fences. Some scarce species present.   |     |
| Copies Available | WSCC   |     |

| Survey Name      | West Sussex Notable Road Verges - (809)   |
|------------------|---|
| Survey Author    | Various   |
| Survey Comment   | These roadside verges are noted as having conservation interest. All the records are collated and the more significant sites will be designated. At most sites the significance is botanical. [spp data extracted]. |
| Date             | 1975-   |
| Site Name        | Road Verges & Roundabouts, A27/A283 Steyning Rd Interchange TQ208066  |
| Site Comment     | The roundabouts are grassy as are the adjacent road verges. They have a good flora.   |
| Copies Available | WSCC  |

| Survey Name      | Sussex Churchyard Survey - (916)  |          |
|------------------|---|----------|
| Survey Author    | DONOVAN, Pat  |          |
| Survey Comment   | Botanical survey of most of the churchyards in Sussex. The majority will have just a species list, but the ones with ecological significance have more detail. (Phase II). NB: Results held at SxBRC for some of sites covered (with details for each site filed according to grid squares), including ESD site nos. 841[TQ33], 1370 [TQ32], 4470 [TQ32], 4341 [SU90]., 4382 [TQ01]. [SxBRC also holds documents in BRC box H2b]. |          |
| Date             | 1980-   |          |
| Site Name        | St M Churchyard, A2025 South Street, South Lancing  | TQ182042 |
| Site Comment     |   |          |
| Copies Available | As contact, SxBRC File Cabs, SxBRC Boxes  |          |

| Survey Name      | Sussex Churchyard Survey - (916)  |  |
|------------------|---|--|
| Survey Author    | DONOVAN, Pat  |  |
| Survey Comment   | Botanical survey of most of the churchyards in Sussex. The majority will have just a s but the ones with ecological significance have more detail. (Phase II). NB: Results he SxBRC for some of sites covered (with details for each site filed according to grid squ including ESD site nos. 841[TQ33], 1370 [TQ32], 4470 [TQ32], 4341 [SU90]., 4382 [T [SxBRC also holds documents in BRC box H2b]. | pecies list,<br>eld at<br>ares),<br>"Q01]. |
| Date             | 1980-   |  |
| Site Name        | St JtL Churchyard, Manor Rd, North Lancing  | TQ182057                                   |
| Site Comment     |   |  |
| Copies Available | As contact, SxBRC File Cabs, SxBRC Boxes  |  |

| Survey Name      | Sussex Churchyard Survey - (916)  |   |
|------------------|---|---|
| Survey Author    | DONOVAN, Pat  |   |
| Survey Comment   | Botanical survey of most of the churchyards in Sussex. The majority will have just a sp<br>but the ones with ecological significance have more detail. (Phase II). NB: Results hel<br>SxBRC for some of sites covered (with details for each site filed according to grid squa<br>including ESD site nos. 841[TQ33], 1370 [TQ32], 4470 [TQ32], 4341 [SU90]., 4382 [To<br>[SxBRC also holds documents in BRC box H2b]. | becies list,<br>d at<br>ares),<br>Q01]. |
| Date             | 1980-   |   |
| Site Name        | St M de H Churchyard, East St, Shoreham   | TQ216052                                |
| Site Comment     |   |   |
| Copies Available | As contact, SxBRC File Cabs, SxBRC Boxes  |   |

| Survey Name      | Herpetological Site Atlas for Sussex - (957)   |  |
|------------------|--|--|
| Survey Author    | DEY, Dennis et al  |  |
| Survey Comment   | An atlas showing distribution, in East and West Sussex, of reptiles and amphibians. In<br>on each species is displayed on 1km square grid maps for each county. Distribution of<br>assemblages of species are also shown in the same format. Specific sites are prioritis<br>significant for amphibians and sites supporting Great Crested Newts are listed for both<br>(Phase II). [SxBRC copy held in box E6]. | nformation<br>of<br>ed as<br>n counties. |
| Date             | 1993   |  |
| Site Name        | The Meads, Victoria Rd, Shoreham   | TQ213055                                 |
| Site Comment     | Great Crested Newt site. Identified as priority site for Amphibians.   |  |
| Copies Available | SxBRC Boxes  |  |

| Survey Name      | SSSI Data Collation - (1000)  |
|------------------|---|
| Survey Author    |   |
| Survey Author    |   |
| Survey Comment   | All information for SSSIs is held with EN. Detailed information on most groups of plants and animals is held for each site. This includes de-notified SSSIs, but not proposed SSSIs. The information is updated fairly often by monitoring or additional surveys. NOTE: Groups covered varies with site. (Phase II/III) 1949- |
| Site Name        | Adur Estuary SSSI TQ208056  |
| Site Comment     | This is one of only four significant areas of salt-marsh in Sussex. It holds unusual plants and is important for wintering wading birds. It is mainly river estuary and some salt-marsh.  |
| Copies Available | EN  |
|                  |   |
| Survey Name      | Survey of Halewick Farm - (1001)  |
| Survey Author    | CLARK Louise FINCH Marion   |
| Survey Aution    | A brief our you of the betony of the site (Dhase II) in response to correspondences between Mrs   |
| Survey Comment   | Shipson & SWT. [SxBRC copy filed under TQ10].   |
| Date             | 5.91  |
| Site Name        | Halewick Farm Fields & Grasslands TQ172057  |
| Site Comment     | The site consists of two large overgrazed pastures and a small scrubby area to the north of Worthing.   |
| Copies Available | SxBRC File Cabs   |
|                  |   |
| Survey Name      | Old Shoreham Roadside Survey - (1064)   |
| Survev Author    | GRIFFITHS, Ann  |
| Survey Comment   | The bedge and adjacent rough grassland were surveyed on a brief visit. Results are on a printed   |
| Survey comment   | map.  |
| Date             | 8.97  |
| Site Name        | Roadside, Old Shoreham Rd W of Bridge, Shoreham TQ202060  |
| Site Comment     |   |
| Copies Available | WSCC  |

| Survey Name      | A River Corridor Survey, River Adur Catchment, Volume 1 - (2101)   |
|------------------|--|
|                  |  |
| Survey Author    | LEE DONALD ASSOCIATES  |
| Survey Comment   | A River Corridor Survey of the River Adur Catchment. The catchment is split into 500m sections, each section is treated as a discrete site. Only macrophyte (large aquatic plants)communities are described in detail. DAFOR scale is used to describe abundance. Detailed OS and handrawn maps. Bank profiles and vegetation structure are visually presented.<br>Aug - Sept 1994 |
| Site Name        | River Adur (Section 1) TQ209053  |
| Site Comment     | 500m stretch of River Adur & Banks. A broad tidal channel with parallel floodbanks upstream. TQ209053 to TQ212050.   |
| Copies Available | EA, SWT, EN/LEWES/LIB  |
|                  |  |
| Survey Name      | A River Corridor Survey, River Adur Catchment, Volume 1 - (2101)   |
| •                |  |
| Survey Author    | LEE DONALD ASSOCIATES  |
| Survey Comment   | A River Corridor Survey of the River Adur Catchment. The catchment is split into 500m sections, each section is treated as a discrete site. Only macrophyte (large aquatic plants)communities are described in detail. DAFOR scale is used to describe abundance. Detailed OS and handrawn maps. Bank profiles and vegetation structure are visually presented.                    |
| Date             | Aug - Sept 1994  |
| Site Name        | River Adur (Section 2) TQ206058  |
| Site Comment     | 500m stretch of River Adur & Banks. A straight, tidal section through urban land and an airfield with parallel floodbanks. Moderate botanical interest. TQ206058 to TQ209054.  |
| Copies Available | EA, SWT, EN/LEWES/LIB  |
|                  |  |
| Survey Name      | A River Corridor Survey, River Adur Catchment, Volume 1 - (2101)   |
| Survey Author    |  |
|                  | A Diver Carridar Survey of the Diver Adur Catalment. The estelment is an lit into 500m continue  |
| Survey Comment   | A River Corridor Survey of the River Adur Catchment. I he catchment is split into 500m sections,   |

each section is treated as a discrete site. Only macrophyte (large aquatic plants)communities are described in detail. DAFOR scale is used to describe abundance. Detailed OS and

500m stretch of River Adur & banks. A wide tidal section with paralell floodbanks. Adjacent

TQ206058

handrawn maps. Bank profiles and vegetation structure are visually presented.

landuse is mainly urban. Moderate botanical interest. TQ206058 to TQ206064.

Aug - Sept 1994

River Adur (Section 3)

EA, SWT, EN/LEWES/LIB

Date

Site Name

Site Comment

**Copies Available** 

| Survey Name      | A River Corridor Survey, River Adur Catchment, Volume 1 - (2101)   |  |
|------------------|--|--|
| Survey Author    |  |  |
| Survey Comment   | A River Corridor Survey of the River Adur Catchment The catchment is split into 500m sections  |  |
| Survey comment   | each section is treated as a discrete site. Only macrophyte (large aquatic plants)communities are described in detail. DAFOR scale is used to describe abundance. Detailed OS and handrawn maps. Bank profiles and vegetation structure are visually presented.  |  |
| Date             | Aug - Sept 1994  |  |
| Site Name        | River Adur (Section 4) TQ203067  |  |
| Site Comment     | 500m stretch of River Adur. Wide tidal section with floodbanks along both sides. Certain parts are of botanical interest. Land use on the floodbanks is recreational, with fenced off arable and grassland on either side. TQ203067 to 206064.   |  |
| Copies Available | EA, SWT, EN/LEWES/LIB  |  |
|                  |  |  |
| Survey Name      | Wetland Bird Survey 1992-1993; Wildfowl and Wader Counts - (1233)  |  |
| Survey Author    |  |  |
| Survey Author    | The survey presents population figures for each species of wildfowl and wader in the LIK during  |  |
| Survey Comment   | the non-breeding season and lists principal waterfowl sites in the UK. The appendices include total waterfowl numbers in England, Scotland, Wales, Isle of Man and the Channel Islands for 1992-1993. WeBS is a joint project administered by the BTO and WWT(Phase III). [SxBRC copy held in G5 box]. |  |
| Date             | 1992-1993  |  |
| Site Name        | Adur Estuary SSSI TQ208056   |  |
| Site Comment     | This is one of only four significant areas of salt-marsh in Sussex. It holds unusual plants and is important for wintering wading birds. It is mainly river estuary and some salt-marsh.   |  |
| Copies Available | SxBRC Boxes  |  |
|                  |  |  |
| Survey Name      | New Monks Farm, Lancing: Botanical Survey & Management Suggestions (1237)  |  |
| Survey Author    |  |  |
| Survey Comment   | A detailed survey of the site with management suggestions, which undates information from the  |  |
| Survey comment   | original survey in 1993 (ESD survey 745). The survey concentrates on the ditches and hedgerows, as those had previously been identified as important for wildlife. The survey considers the implications of a proposed golf course on wildlife. [spp data extracted].                                  |  |
| Date             | 6.99   |  |
| Site Name        | New Monks Farm, Lancing Brooks TQ193052  |  |
| Site Comment     | A series of arable fields crossed by ditches of variable wetness and bordered by hedges; tree belts and fences. Some scarce species present.   |  |
| Copies Available |  |  |

| Survey Name      | Species Recorded at Ropetackle, Shoreham - (1488) |          |
|------------------|---|----------|
|                  |   |          |
| Survey Author    | HALLS, J.   |          |
| Survey Comment   | [SxBRC copy filed under TQ20].                    |          |
| Date             | 21.2.01   |          |
| Site Name        | Land at Ropetackle, Shoreham                      | TQ212052 |
| Site Comment     |   |          |
| Copies Available | As Author, SxBRC File Cabs                        |          |

| Survey Name      | Winter Wader Counts, Shoreham - (2509)   |          |
|------------------|--|----------|
| Survey Author    | Unknown  |          |
| Survey Comment   | Numbers of waders recorded for a period of 8 years. A comparison of Shoreham with Sussex sites, showing that it is the 3rd best site for dunlin.   | other    |
| Date             | 1968-1975  |          |
| Site Name        | Adur Estuary SSSI  | TQ208056 |
| Site Comment     | This is one of only four significant areas of salt-marsh in Sussex. It holds unusual plants and is important for wintering wading birds. It is mainly river estuary and some salt-marsh. |          |
| Copies Available | EN/SSSI/SCI, As contact  |          |

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| <b>•</b> ••      |   |            |
|------------------|---|------------|
| Survey Name      | Wader and Wildfowl Counts, Adur Saltings - (2525)   |            |
|                  |   |            |
| Survey Author    | Various   |            |
| Survey Comment   | September-March counts of wildlfowl and waders, with incidental record of barn owl ar stonechat.  | nd         |
| 2410             |   |            |
| Site Name        | Adur Estuary SSSI   | TQ208056   |
| Site Comment     | This is one of only four significant areas of salt-marsh in Sussex. It holds unusual plan important for wintering wading birds. It is mainly river estuary and some salt-marsh. | its and is |
| Copies Available | EN/SSSI/SCI, As contact   |            |

| Survey Name      | Shoreham Airport - Ecological Survey - (1620)  |          |
|------------------|--|----------|
| Survey Author    | Various  |          |
| Survey Comment   | Surveys undertaken for botany, invertebrates, amphibians, reptiles, birds, bats and badge connection with redevelopment for helicopter landing). 3.4.01, 29.4.01, 9.5.01 | ers. (in |
| Site Name        | Shoreham Airport (NW Corner of) TC   | 2198057  |
| Site Comment     | North-west corner of Shoreham Airport being redeveloped for helicopter landing. Reptiles translocated outside perimeter fence.   | 6        |
| Copies Available | WSCC   |          |

| Survey Name     | Reptile Translocation at Shoreham Airport - (1621)  |
|-----------------|---|
| Survey Author   | COLENUTT, Simon   |
| Survey Comment  | Report of reptile translocation exercise July - November 2001. Previous ecological assessment in May 2001 (ESD Survey -1620). 190 slow worm, 32 viviparous lizard, 2 adder, 1 grass snake. 5.01 |
| Site Name       | Shoreham Airport (NW Corner of) TQ198057  |
| Site Comment    | North-west corner of Shoreham Airport being redeveloped for helicopter landing. Reptiles translocated outside perimeter fence.  |
| oopioo Avanabio |   |

| Survey Name      | Saline Lagoon Baseline & Mapping Survey - (2674)  |              |
|------------------|---|--------------|
| Survey Author    | Various   |              |
| Survey Comment   | Phase III field surveys of saline lagoons in Sussex in order to produce baseline data on specialis floora and invertebrate fauna. Assessment of lagoon habitat resources using GIS; determination of whether flora and invert. Fauna of 'true' lagoons differs from other lagoons. Information gathered on salinity and the status of invasive algae. A report for EN produced by Biogeography and Ecology Research Group. (Related paper "Biotic variation in coastal water bodies in Sussex: implications for saline lagoons" has also been published in Estuarine, Coastal and Shelt Science 2005). [SxBRC copy held in H7a box] [spp data extracted]. | st<br>n<br>/ |
| Date             | 18/06 - 18/09/2001  |              |
| Site Name        | Widewater Lagoon, LancingTQ20004  | 2            |
| Site Comment     | Site relates to the actual water body.  |              |
| Copies Available | EN/LEWES/LIB, SxBRC Boxes   |              |

| Survey Name      | Dave Sadler's Field Records - (2124)   |          |
|------------------|--|----------|
| Survey Author    | SADLER, Dave   |          |
| Survey Comment   | Assorted records of mainly birds & dragonflies from sites or areas that have been regulation visited. Details of records vary from site to site. | ularly   |
| Date             | various  |          |
| Site Name        | Widewater Lagoon & Beach Area, Lancing   | TQ200042 |
| Site Comment     | Site covers lagoon & land to seaward side, including beach above mean high water.  |          |
| Copies Available | As contact   |          |

| Survey Name      | Dave Sadler's Field Records - (2124)  |      |
|------------------|---|------|
| Survey Author    | SADLER, Dave  |      |
| Survey Comment   | Assorted records of mainly birds & dragonflies from sites or areas that have been regularly visited. Details of records vary from site to site. |      |
| Date             | various   |      |
| Site Name        | Adur Saltings/Estuary: A259 Norfolk Bridge to E of Drawbridge TQ214   | 4048 |
| Site Comment     | Mudflats & the River Arun downstream from the A259 road bridge, to approx 200m east of drawbridge.  |      |
| Copies Available | As contact  |      |

| Survey Name      | Dave Sadler's Field Records - (2124)   |  |
|------------------|--|--|
| Survey Author    | SADLER, Dave   |  |
| Survey Comment   | Assorted records of mainly birds & dragonflies from sites or areas that have been regularly visited. Details of records vary from site to site.                |  |
| Date             | various  |  |
| Site Name        | River Adur, Mudflats & Banks: A27 to Rail Bridge, Shoreham TQ207058  |  |
| Site Comment     | The River Adur between the railway bridge at Shoreham and the A27 road bridge. It consists of the river, mudflats, grassy river banks and reed-filled ditches. |  |
| Copies Available | As contact   |  |

| Survey Name      | Peter J Hodge Coleoptera Records - (2143)   |          |
|------------------|---|----------|
| Survey Author    | HODGE, P. J.  |          |
| Survey Comment   | Coleoptera records from a 7 year period. Lower River Valley Survey No 51.         |          |
| Date             | various: 1973-80.   |          |
| Site Name        | Widewater Lagoon & Beach Area, Lancing  | TQ200042 |
| Site Comment     | Site covers lagoon & land to seaward side, including beach above mean high water. |          |
| Copies Available | As contact  |          |

| Survey Name      | Botanical Survey of the Adur Floodbanks - (2772)  |  |  |
|------------------|---|--|--|
|                  |   |  |  |
| Survey Author    | BENATT, Ben., ANTONINI, Bob   |  |  |
| Survey Comment   | Plant survey carried out on the stretches of the River Adur which possess a floodbank. The aim was to obtain information on the flora present along the flood embankments, to allow the Environment Agency to devlelop a future mowing regime. The entire length of both floodbanks was surveyed in order to determine the dominant plants within the plant communities present. Interesting species and botanically rich areas were also identified. These were marked on the maps from a previous River Corridor Survey conducted in 1994 (ESD Surveys 2101 & 2102). A plant card was completed for each section using DAFOR, and a short description written on a separate sheet, detailing the vegetation present and other noteworthy findings. Management suggestions were then made based on these findings. |  |  |
| Date             | 06.99   |  |  |
| Site Name        | River Adur (Section 1) TQ209053   |  |  |
| Site Comment     | 500m stretch of River Adur & Banks. A broad tidal channel with parallel floodbanks upstream. TQ209053 to TQ212050.  |  |  |
| Copies Available | EA  |  |  |

| Survey Name      | Botanical Survey of the Adur Floodbanks - (2772)  |  |  |
|------------------|---|--|--|
| Survey Author    | BENATT, Ben., ANTONINI, Bob   |  |  |
| Survey Comment   | Plant survey carried out on the stretches of the River Adur which possess a floodbank. The aim was to obtain information on the flora present along the flood embankments, to allow the Environment Agency to devlelop a future mowing regime. The entire length of both floodbanks was surveyed in order to determine the dominant plants within the plant communities present. Interesting species and botanically rich areas were also identified. These were marked on the maps from a previous River Corridor Survey conducted in 1994 (ESD Surveys 2101 & 2102). A plant card was completed for each section using DAFOR, and a short description written on a separate sheet, detailing the vegetation present and other noteworthy findings. Management suggestions were then made based on these findings. |  |  |
| Date             | 06.99   |  |  |
| Site Name        | River Adur (Section 2) TQ206058   |  |  |
| Site Comment     | 500m stretch of River Adur & Banks. A straight, tidal section through urban land and an airfield with parallel floodbanks. Moderate botanical interest. TQ206058 to TQ209054.   |  |  |
| Copies Available | EA  |  |  |

| Survey Name      | Botanical Survey of the Adur Floodbanks - (2772)  |  |
|------------------|---|--|
| Survey Author    | BENATT, Ben., ANTONINI, Bob   |  |
| Survey Comment   | Plant survey carried out on the stretches of the River Adur which possess a floodbank. The aim was to obtain information on the flora present along the flood embankments, to allow the Environment Agency to devlelop a future mowing regime. The entire length of both floodbanks was surveyed in order to determine the dominant plants within the plant communities present. Interesting species and botanically rich areas were also identified. These were marked on the maps from a previous River Corridor Survey conducted in 1994 (ESD Surveys 2101 & 2102). A plant card was completed for each section using DAFOR, and a short description written on a separate sheet, detailing the vegetation present and other noteworthy findings. Management suggestions were then made based on these findings. |  |
| Date             | 06.99   |  |
| Site Name        | River Adur (Section 3) TQ206058   |  |
| Site Comment     | 500m stretch of River Adur & banks. A wide tidal section with paralell floodbanks. Adjacent landuse is mainly urban. Moderate botanical interest. TQ206058 to TQ206064.   |  |
| Copies Available | EA  |  |
|                  |   |  |

| Survey Name      | Botanical Survey of the Adul Floodbanks - (2772)  |
|------------------|---|
| Survey Author    | BENATT, Ben., ANTONINI, Bob   |
| Survey Comment   | Plant survey carried out on the stretches of the River Adur which possess a floodbank. The aim was to obtain information on the flora present along the flood embankments, to allow the Environment Agency to devlelop a future mowing regime. The entire length of both floodbanks was surveyed in order to determine the dominant plants within the plant communities present. Interesting species and botanically rich areas were also identified. These were marked on the maps from a previous River Corridor Survey conducted in 1994 (ESD Surveys 2101 & 2102). A plant card was completed for each section using DAFOR, and a short description written on a separate sheet, detailing the vegetation present and other noteworthy findings. Management suggestions were then made based on these findings. 06.99 |
| Olfa Nama        | Diver Advar (Operation 4)   |
| Site Name        | River Adur (Section 4) I Q203067  |
| Site Comment     | 500m stretch of River Adur. Wide tidal section with floodbanks along both sides. Certain parts are of botanical interest. Land use on the floodbanks is recreational, with fenced off arable and grassland on either side. TQ203067 to 206064.  |
| Copies Available | EA  |
|                  |   |

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| Survey Name      | Ecology Proof of Evidence - Land off Manor Close - (3064)   |            |  |
|------------------|---|------------|--|
| Survey Author    | ECOSA   |            |  |
| Survey Comment   | A report of two ecological walkover surveys. The report also includes existing data from MAGI and the NBN Gateway.  | С          |  |
| Site Name        | Land off Manor Close, Lancing TQ191   | 055        |  |
| Site Comment     | An area of horse-grazed pasture, with hedgerow and scrub with ditches. New Monks Farm is the south of the site, there are residential properties and the A27 to the west and north, floodp and marshes to the east. | to<br>Iain |  |
| Copies Available | SxBRC Digital   |            |  |

# **Glossary of Abbreviations**

## Organisations:

| BBCS     | British Butterfly Conservation Society    | www.sussex-butterflies.org.uk                |
|----------|---|--|
|          | (now Butterfly Conservation)              |  |
| BMONH    | Booth Museum of Natural History           | Tel: 03000 290900                            |
| BSBI     | Botanical Society of the British Isles    | www.bsbi.org.uk                              |
| BTO      | British Trust for Ornithology             | Tel: 01842 750050                            |
| EA       | Environment Agency                        | Tel: 08708 506506 (Southern Regional Office) |
| EN       | English Nature (now Natural England)      | Tel: 03000 600 300 (Sussex Team)             |
| ESCC     | East Sussex County Council                | Tel: 01273 481621 (County Ecologist)         |
| FC       | Forestry Commission                       | Tel: 01420 23337 (SE England)                |
| FWAG     | Farming and Wildlife Advisory Group       | Tel: 01273 891190 (Sussex Area)              |
| NCC      | Nature Conservancy Council (now NE)       | Contact NE                                   |
| NE       | Natural England                           | Tel: 03000 600 300 (Sussex Team)             |
| NRA      | National Rivers Authority (now EA)        | Contact EA                                   |
| NT       | National Trust                            | Tel: 01372 453401 (South East Office)        |
| RSPB     | Royal Society for the Protection of Birds | Tel: 01273 775333 (SE Regional Office)       |
| SBRS     | Sussex Botanical Recording Society        | www.sussexflora.org.uk                       |
| SOS      | Sussex Ornithological Society             | www.sos.org.uk                               |
| SxBRC    | Sussex Biodiversity Record Centre         | Tel: 01273 497521                            |
| SxWT/SWT | Sussex Wildlife Trust                     | Tel: 01273 492630                            |
| WSCC     | West Sussex County Council                | Tel: 01243 756691 (County Ecologist)         |
|          |   |  |

## Designations

| AONB   | Area of Outstanding Natural Beauty                    |
|--------|---|
| COGS   | County Geological/Geomorphological Site               |
| LNR    | Local Nature Reserve                                  |
| NNR    | National Nature Reserve                               |
| NP     | National Park   |
| RAMSAR | RAMSAR (internationally important wetlands)           |
| RIGS   | Regionally Important Geological/Geomorphological Site |
| SAC    | Special Area of Conservation                          |
| SNCI   | Site of Nature Conservation Importance                |
| SPA    | Special Protection Area                               |
| SSSI   | Site of Special Scientific Interest                   |

## Surveys:

| Phase I   | A broad habitat survey with a dominant species list and land use information.          |
|-----------|--|
| Phase II  | Mapping of vegetation communities with species lists and abundance/distribution.       |
| Phase III | A detailed survey including ecological processes and long term monitoring information. |
| NVC       | National Vegetation Classification.  |

**MAP CITATION SHEETS** 

Sites of Nature Conservation Importance (SNCIs) are non-statutory designations which are identified at a county level. They typically form a network of sites that are recognised to be of local conservation importance and are often included in Local Authority development plans. In other areas of the country they are sometimes called SINCs (Sites of Importance for Nature Conservation) or County Wildlife sites.

There are many sites within East and West Sussex and Brighton and Hove that are not recognised under the national designation of SSSI (Site of Special Scientific Interest) but are of considerable wildlife value due to the special interest of their flora or fauna. In May 1990 a Sussex-wide project was instigated to identify which non-designated sites were important for wildlife. The selected sites are now known as SNCIs. The aim of this identification was to protect such sites from land management changes, which may lessen their nature conservation interest, and to encourage sensitive management to maintain and enhance their importance.

Sites within both rural and urban areas were considered but the evaluation process considers two types of site under slightly different criteria:

- **Rural sites**, that may contain habitats such as heathland or ancient woodland, must be of county-wide importance.
- **Urban sites** must recognise the importance to safeguard important urban wildlife sites, to link all significant greenspaces and to ensure that people in towns have easy access to wildlife areas.

The selection of SNCIs was made, after extensive survey work, by a panel of expert ecologists. This panel included representatives from the relevant County Council, English Nature (now Natural England) and the Sussex Wildlife Trust. A range of specialists with either specific species knowledge or a sound knowledge of the county's ecology were also involved with the selection process. Assessment and identification of SNCIs is a continuing process with new sites being identified and others deleted as ecological knowledge of the total resource and specific sites increase.

In West Sussex SNCI selection is steered by the County Council, whereas in East Sussex it is steered by the District Councils. Currently there are over 600 SNCIs in Sussex.

Although SNCIs have no statutory protection they need to be considered in the planning process through Planning Policy Guidance such as PPG9 which refers to the Town & Country Planning Act 1990 Section 30. This states that nature conservation issues should be included in the surveys of local authority areas to ensure that the plans are based on fully adequate information about local species, habitats, geology and landform. Plans should be concerned not only with designated areas but also with other land of conservation value and the possible provision of new habitats.

SNCI site accounts outline the characteristics of the area based on its semi-natural vegetation and the underlying geology and are in three main sections :-

- Summary which highlights the nature conservation importance of the site
- Site description or site notes which gives further descriptive details about the site and its associated species
- **Management recommendations** which give a brief indication of the type of management that would best maintain the nature conservation interest of the site.

It is important to realise that classification as an SNCI in no way reduces the value of other wildlife sites. Sites of SNCI quality may not have been surveyed for various reasons. All areas of semi-natural vegetation are important to wildlife. Many rare plants and animals occur in seemingly otherwise uninteresting sites and may be overlooked by the survey.

### West Sussex

| Site Name:         | Mill Hill                 |            |                       |
|--------------------|---------------------------|------------|-----------------------|
| Site Ref:          | Ad01                      | Owner:     | Adur District Council |
| District:          | Adur                      | Size (ha): | 35.0                  |
| Parish:            | Shoreham                  | Date:      | Identified May 1992   |
| National Grid Ref: | TQ211074                  | Author:    | Graham Roberts        |
| Habitat:           | Chalk grassland and scrub |            |                       |

### Summary

Mill Hill is a fine example of unimproved herb-rich downland on a steep west-facing slope. The site consists of a mosaic of open grassland, grassland with scattered scrub and patches of dense scrub. In addition to an interesting herb and moss flora, the site is of tremendous butterfly importance. Following extensive scrub removal and fencing, sheep-grazing was re-introduced to part of the hill in 1991.

### Site description

Much of the grassland is herb-rich with typical downland species such as Wild Thyme *Thymus praecox*, Dropwort *Filipendula vulgaris*, Round-headed Rampion *Phyteuma tenerum*, Autumn Gentian *Gentianella amarella*, Pyramidal Orchid *Anacamptis pyramidalis*, Yellow Rattle *Rhinanthus minor*, Burnet-saxifrage *Pimpinella saxifraga* and Horseshoe Vetch *Hippocrepis comosa*. A small area of grassland is noted for its rich moss flora. Fine grasses such as Sheep's-fescue *Festuca ovina* are present, although coarse species, particularly Upright Brome *Bromus erectus* and False Oat-grass *Arrhenatherum elatius* are locally dominant.

The whole site is certainly of county-wide significance on account of its butterfly fauna. Twenty-five species are known to have bred including a number of particular note such as Adonis Blue, Chalkhill Blue, Brown Argus and Marbled White. The uncommon Dark Green Fritillary has re-colonised the site in recent years.

A number of species of grasshopper have been recorded including two of note, the Stripe-winged Grasshopper and Great Green Bush-cricket.

Parts of the hill now support dense scrub. It provides nesting sites for Linnet, Yellowhammer, Whitethroat and Lesser Whitethroat. The berries of Elder and Bramble attract many warblers in late summer.

#### Management recommendations

It is extremely pleasing to see that sheep-grazing has been re-instated on this site. This is the best method of maintaining the varied interest of Mill Hill. Grazing levels will need careful monitoring in order to maintain a balance between the extent of scrub, rank grassland and short, herb-rich sward.

### West Sussex

| Site Name:         | Lancing Ring                                     |            |                       |
|--------------------|--|------------|-----------------------|
| Site Ref:          | Ad02   | Owner:     | Adur District Council |
| District:          | Adur   | Size (ha): | 24.3                  |
| Parish:            | Lancing & Sompting                               | Date:      | Identified May 1992   |
| National Grid Ref: | TQ180065   | Author:    | Graham Roberts        |
| Habitat:           | Chalk grassland, scrub and semi-natural woodland |            |                       |

### Summary

This site encompasses a range of habitats including unmanaged rank grassland, horse-grazed pasture, disused chalk pit, scrub and developing Ash woodland. Although most of the grassland has become heavily scrub invaded it supports an interesting herbaceous flora. Lancing Ring is also important for insects, notably butterflies.

### Site description

Much of the site consists of unmanaged grassland with scattered scrub of Hawthorn, Blackthorn, Gorse, Wild Privet, Dogwood and Bramble. Many of these shrubs are large and shading of the grassland is becoming severe. Coarse grasses, particularly False Oat-grass *Arrhenatherum elatius* and Upright Brome *Bromus erectus* dominate the sward. Characteristic downland herbs such as Squinancywort *Asperula cynanchica*, Round-headed Rampion *Phyteuma tenerum*, Horseshoe Vetch *Hippocrepis comosa* and Kidney Vetch *Anthyllis vulneraria* are present, although few are abundant. There are localised patches of herb-rich sward, for example on the shallow soils of the chalk pits.

The horse-grazed pasture has an interesting chalk grassland flora with Dwarf Thistle *Cirsium acaule*, Common Restharrow *Ononis repens*, Yellow Rattle *Rhinanthus minor*, Pyramidal Orchid *Anacamptis pyramidalis*, Harebell *Campanula rotundifolia* and Cowslip *Primula veris*.

The rich butterfly fauna includes breeding colonies of Chalkhill Blue, Holly Blue, Small Copper, Small Heath and Wall Brown. The rank grassland favours certain species such as the localised Marbled White. The flowers of the Greater Knapweed *Centaurea scabiosa* and Field Scabious *Knautia arvensis* are a great attraction to many butterflies.

Lancing Ring supports a good range of breeding warblers, including Chiffchaff, Willow Warbler, Whitethroat and Lesser Whitethroat. Yellowhammer, Linnet and Cuckoo also breed.

Adder, Slow-worm and Common Lizard are reported to occur.

#### Management recommendations

The site should be managed as a complex of open downland with some scrub and woodland. Removal of much of the invading scrub is required urgently. Further areas should be managed by either grazing or mowing.

### West Sussex

| Site Name:         | Shoreham Beach     |            |                     |
|--------------------|--------------------|------------|---------------------|
| Site Ref:          | Ad03               | Owner:     | Private             |
| District:          | Adur               | Size (ha): | 11.2                |
| Parish:            | Shoreham & Lancing | Date:      | Identified May 1992 |
| National Grid Ref: | TQ217044           | Author:    | Marion Finch        |
| Habitat:           | Shingle beach      |            |                     |

#### Summary

The site includes all of the landward side of Shoreham Beach, from Widewater Lagoon in the west to the old fort by the entrance to Shoreham Harbour. Its main interest is its highly specialised shingle flora, adapted to withstand harsh and extreme conditions. Largely due to habitat destruction, this community is very rare in West Sussex.

### Site description

The plant communities vary with the amount of disturbance. On stable shingle between houses and along garden boundaries, grasses, such as Soft Brome *Bromus mollis*, Red Fescue *Festuca rubra*, Cock's-foot *Dactylis glomerata* and Barren Brome *Bromus sterilis* have established, together with tolerant 'land' herbs, such as Ribwort Plantain *Plantago lanceolata*, or those adapted to dry, bare places, such as Ivy-leaved Toadflax *Cymbalaria muralis*, Red Valerian *Centranthus ruber* and Common Mallow *Malva sylvestris*. However, most species are 'maritime', including Sea-kale *Crambe maritima*, Yellow Horned-poppy Glaucium flavum, Sea-beet *Beta vulgaris*, Sea Campion *Silene maritima*, Danish Scurvy-grass *Cochlearia danica*, Buck's-horn Plantain *Plantago coronopus* and English Stonecrop *Sedum anglicum*.

On less stable areas, the vegetation is scattered with Yellow-horned Poppy, Sea-beet, Kale and Mallow must abundant. Bittersweet *Solanum dulcamara* and exotics, such as Tamarisk, are occasional.

Short grassland occurs within the old fort, but the surrounding shingle supports grasses and herbs similar to those listed for stable shingle, with Wall Barley *Hordeum murinum*, Lady's Bedstraw *Galium verum* and Viper's Bugloss *Echium vulgare*.

Of particular interest is the presence of Starry Clover *Trifolium stellatum*.

#### **Management recommendations**

Some tipping of rubbish and garden waste occurs. This should be stopped and the material removed, as nutrientenrichment from soil or cuttings will encourage growth of more vigorous species at the expense of the highlyadaptable shingle flora. The site should be left undisturbed as much as possible.

### West Sussex

| Site Name:         | River Adur Meadows            |            |                     |
|--------------------|-------------------------------|------------|---------------------|
| Site Ref:          | Ad06                          | Owner:     | Private             |
| District:          | Adur                          | Size (ha): | 13.9                |
| Parish:            | Shoreham                      | Date:      | Identified May 1992 |
| National Grid Ref: | TQ197083 & TQ205068           | Author:    | Marion Finch        |
| Habitat:           | Neutral grassland and ditches |            |                     |

### Summary

The site consists of two relatively herb-rich meadows, located on the eastern bank of the River Adur. The meadows are crossed by ditches, which contain an interesting variety of species.

#### Site description

The two meadows support rough, uncut grassland, with Yorkshire Fog *Holcus lanatus*, Tufted Hair-grass *Deschampsia caespitosa*, Cock's-foot *Dactylis glomerata*, Red Fescue *Festuca rubra*, Yellow Oat-grass *Trisetum flavescens* and Creeping Bent *Agrostis stolonifera* all frequent. Bulbous Foxtail *Alopecurus bulbosus* occurs in damp hollows. This grass is rare in West Sussex.

The herbs are typical of neutral grassland, including Meadow Vetchling *Lathyrus pratensis*, Goat's Beard *Tragopogon pratensis*, Hogweed *Heracleum sphondylium*, Meadow Buttercup *Ranunculus acris*, Bristly Oxtongue *Picris echioides* and Wild Carrot *Daucus carota*. Red Clover *Trifolium pratense* and White Clover *Trifolium repens* are common in the northern field, and Oxeye Daisy *Leucanthemum vulgare* and Ribwort Plantain *Plantago lanceolata* are frequent.

The fields are crossed by ditches which contain a diversity of species including Common Reed *Phragmites australis*, Spike-rush *Eleocharis* sp., Common Fleabane *Pulicaria dysenterica*, False Fox-sedge *Carex obtrubae* and Bulrush *Scirpus lacustris*. The presence of Sea Clubrush *Scirpus maritimus* indicates that the ditches are brackish.

#### **Management recommendations**

The meadows are becoming rank and need to be grazed, or cut in late summer and the cuttings removed. Thistles should be topped. The fields should not be fertilised. Ideally, the ditches should be cleared of rubbish and the banks graded to a shallower profile.

## SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)

Sites of Special Scientific Interest (SSSIs) are areas notified under the Wildlife and Countryside Act 1981, as being of special interest for nature conservation. They represent the finest sites for wildlife and natural features supporting many characteristic, rare and endangered species, habitats and natural features. Notification as a SSSI is primarily a legal mechanism organised by Natural England and selected according to specific scientific criteria. *The Guidelines for the Selection of Biological SSSIs*, published in 1989 by the Joint Nature Conservation Council, set down the selection criteria for both biological and geological SSSIs.

**Biological SSSIs** form a national network of wildlife sites. Sites are selected in such a way that the protection of each site, and hence the network, aims to conserve the minimum area of wildlife habitat necessary to maintain the natural diversity and distribution of Britain's native flora and fauna and the communities they comprise. Each site, therefore, is of national significance for its nature conservation value.

**Geological SSSIs** are sites chosen for their research value, the criterion being that they are of national or international importance. Geological conservation is concerned with the maintenance of our geological and geomorphological heritage.

There are over 4,000 SSSIs in England of which just under 150 are in Sussex. Natural England is responsible for identifying and protecting these sites. This is achieved, primarily, in partnership with SSSI owners and managers, and as a result the majority are in good condition and well managed.

Ever growing pressures on our landscape and countryside mean that SSSIs are an increasingly precious part of our natural heritage. Damaging SSSIs is unacceptable, either in the short or long term, and must be avoided if they are to remain the finest wildlife and natural heritage sites in England. Once lost, the special interest of a site may be difficult or impossible to restore or recreate. Owners and occupiers (i.e. landowners, tenants and commoners) of SSSIs must give Natural England written notice before initiating any operations likely to damage the site, or allowing someone else to carry out these activities. None of the operations listed in the notification documents may proceed without Natural England's consent.

Under the Countryside and Rights of Way Act 2000 (CROW) anyone who intentionally or recklessly destroys or damages any of the flora, fauna or geological or physiological features of an SSSI is guilty of an offence. They are liable, on summary conviction, of a fine of up to £20,000.

For more information on SSSIs visit the Natural England website.

## SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)

| Site Name:                      | Adur Estuary                |                        |   |
|---------------------------------|-----------------------------|------------------------|---|
| County:                         | West Sussex                 |                        |   |
| District:                       | Adur                        |                        |   |
| Local Planning Authority:       | Adur District Council       |                        |   |
| Size:                           | 62.2 hectares (153.6 acres) |                        |   |
| National Grid Ref:              | TQ208056                    |                        |   |
| Date Notified (Under 1949 Act): | -                           | Date of last revision: | - |
| Date Notified (Under 1981 Act): | 1987                        | Date of last revision: | - |

**Other Information:** This is a new site. Part of the site is an RSPB reserve.

### **Reason for Notification**

The Adur Estuary, together with Rye Harbour further to the east, represent the only significant areas of saltmarsh between Chichester and Pagham Harbours in West Sussex, and Sandwich Bay in Kent, The estuarine plant communities are unusual due to the relative scarcity of cord-grass, *Spartina* spp. The large area of intertidal mudflats within the estuary are important for a variety of wading birds.

Saltmarsh plants fringe most of the estuary and in places have colonised large areas of mudflats. Sea purslane *Halimione portaculoides* dominates most of the areas above mean high water mark, and annual seablite *Suaeda maritima* is also extremely frequent in these areas. Towards the mean low water mark, glasswort *Salicornia* sp. is dominant and sea aster *Aster tripolium* becomes more abundant. Other species are scattered throughout the saltmarsh community, including common sea lavender *Limonium vulgare*, thrift *Armeria maritima*, sea plantain *Plantago maritima* and sea poa grass, *Puccinella maritima*. Cord grass *Spartina* spp. is noticeably absent from most of the estuary, but a small stand does grow southeast of the Old Shoreham Bridge.

At the landward margin of the saltmarsh a variety of herbs and shrubs are frequent, including mugwort *Artemisia vulgaris*, orache *Atriplex* spp., teasel *Dipsacus fullonum*, yarrow *Achillea millefolium* and elm *Ulmus procera*.

The intertidal mudflats of the Adur Estuary support a number of wading birds, particularly redshank, dunlin and ringed plover. The number of ringed plover regularly exceed 1% of the total British population, making the estuary of national importance for this species. A variety of species breed within the reedbed adjacent to the estuary north of the A27, including moorhen, reed warbler and sedge warbler.

The estuary embankment near the car park supports a large colony of viviparous lizards, Lacerta vivipara.

## SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)

## Operations likely to damage the special interest

## Site name: Adur Estuary (OLD1003359)

### Ref. No. Type of operation

- 1. Cultivation, including ploughing, rotovating, harrowing, and re-seeding.
- **2.** Grazing and changes in the grazing regime (including type of stock or intensity or seasonal pattern of grazing and cessation of grazing).
- **3.** Stock feeding and changes in stock feeding practice.
- **4.** Mowing or other methods of cutting vegetation and changes in the mowing or cutting regime (including hay making to silage and cessation).
- **5.** Application of manure, fertilisers and lime.
- **6.** Application of pesticides, including herbicides (weedkillers).
- 7. Dumping, spreading or discharge of any materials.
- 8. Burning.
- **9.** The release into the site of any wild, feral or domestic animal\*, plant or seed.
- **10.** The killing or removal of any wild animal\*, including pest control.
- **11.** The destruction, displacement, removal or cutting of any plant or plant remains, including tree, shrub, herb, hedge, dead or decaying wood, moss, lichen, fungus, leaf-mould, turf.
- 12. Tree and/or woodland management+ and changes in tree and/or woodland management+.
- **13a.** Drainage (including the use of mole, tile, tunnel or other artificial drains).
- **13b.** Modification of the structure of watercourses (eg rivers, streams, springs, ditches, dykes, drains), including their banks and beds, as by re-alignment, re-grading and dredging.
- **13c.** Management of aquatic and bank vegetation for drainage purposes.
- **14.** The changing of water levels and tables and water utilisation (including irrigation, storage and abstraction from existing water bodies and through boreholes).
- **15.** Infilling of ditches, dykes, drains, ponds, pools, marshes or pits.
- **16b.** Coastal fishing or fisheries management and seafood or marine life collection, including the use of traps or fish cages.
- **17.** Reclamation of land from sea, estuary or marsh.
- **18.** Bait digging in intertidal areas.
- **19.** Erection of sea defences or coast protection works, including cliff or landslip drainage or stabilisation measures.
- **20.** Extraction of minerals, including shingle, sand and gravel, topsoil, subsoil, shells and spoil.
- **21.** Construction, removal or destruction of roads, tracks, walls, fences, hardstands, banks, ditches or other earthworks, or the laying, maintenance or removal of pipelines and cables, above or below ground.
- 22. Storage of materials.
- 23. Erection of permanent or temporary structures, or the undertaking of engineering works, including drilling.
- 26. Use of vehicles or craft likely to damage or disturb features of interest.
- 27. Recreational or other activities likely to damage or disturb features of interest.
- **28.** Game and waterfowl management and hunting practice.
- \* 'Animal' includes any mammal, reptile, amphibian, bird, fish or invertebrate.
- + Including afforestation, planting, clear and selective felling, thinning, coppicing, modification of the stand or underwood, changes in species composition, cessation of management.

## **KEY NATIONAL AND INTERNATIONAL SITE DESIGNATIONS**

### National Nature Reserve (NNR)

National Nature Reserves are statutory reserves established under the Wildlife and Countryside Act 1981. NNRs may be owned by the relevant national body (e.g. Natural England in England) or established by agreement. A few are owned and managed by non-statutory bodies, for example the Sussex Wildlife Trust. NNRs cover a selection of the most important sites for nature conservation in the UK. There are six NNRs in Sussex.

### **Special Area of Conservation (SAC)**

Special Areas of Conservation are sites designated by Member States under the EC Habitats Directive. The aim is to establish a European network of important high quality conservation sites that will make a significant contribution to conserving habitats and species considered to be most in need of conservation at a European level. There are 12 SAC sites in Sussex.

### **Special Protection Area (SPA)**

Special Protection Areas are designated under the EC Birds Directive, to conserve the habitat of certain rare or vulnerable birds and regularly occurring migratory birds. Any significant pollution or disturbance to or deterioration of these sites has to be avoided. All SPAs are also designated as SSSIs. There are six SPA sites in Sussex.

### Ramsar

Ramsar sites are designated under the Convention on Wetlands of International Importance. Under the Convention, each government must select its best wetlands according to very clear criteria, which include: a wetland that regularly supports 20,000 or more waterbirds; a wetland that regularly supports 1% of the individuals in a population of one species or subspecies of waterbird. Wetlands are broadly defined to include marsh, fen, peatland and water. All designated Ramsar sites are also designated as SSSIs. There are four Ramsar sites in Sussex.

### **National Park**

National Parks are beautiful, spectacular and often dramatic expanses of countryside. In the UK people live and work in the National Parks and the farms, villages and towns are protected along with the landscape and wildlife. They differ from Areas of Outstanding Natural Beauty (AONBs) in that each National Park has its own authority for planning control and other services.

The creation of the South Downs National Park (SDNP) was confirmed on 12th November 2009 and came into being on 1st April 2010.

Further information can be found on the SDNP Authority website.

### Area of Outstanding Natural Beauty (AONB)

Areas of Outstanding Natural Beauty are areas of high scenic quality that have statutory protection in order to conserve and enhance the natural beauty of their landscapes. They differ from National Parks in their more limited opportunities for extensive outdoor recreation and by the way they are managed. AONBs are designated by Natural England under the Countryside and Rights of Way Act 2000.

There are two AONBs in Sussex covering approx. 114,000 hectares; Chichester Harbour and High Weald. Each has an associated body concerned with the area's conservation:

Chichester Harbour Conservancy www.conservancy.co.uk

High Weald AONB Unit www.highweald.org

### Local Nature Reserve (LNR)

Local Nature Reserves are for both people and wildlife. All district and county councils have powers to acquire, declare and manage LNRs. To qualify for LNR status, a site must be of importance for wildlife, geology, education or public enjoyment. Some are also SSSIs. There are 36 LNRs in Sussex.

## **Country Park**

Country Parks were established as a result of the 1968 Countryside Act to provide a wide range of opportunities for recreation, health, education and improve the quality of life for local communities. Natural England recognises Country Parks as significant places that contribute to England's accessible natural green space. There are 11 Country Parks in Sussex, the details of which can be obtained from the local authorities.

## Local Geological Site (LGS)

Previously known as Regionally Important Geological/Geomorphological Sites (RIGGS), LGS are non-statutory designations that have been identified by local geodiversity groups as being of importance. There are over 120 LGS in Sussex which have been assessed by the Sussex Geodiversity Partnership. The features identified as being important become a material consideration in any future development, and should be taken into account by the relevant local authority.

A selection of LGS with public access in Sussex can be viewed on the Sussex Geodiversity Partnership's website.

## Marine Site of Nature Conservation Importance (MSNCI)

Marine Sites of Nature Conservation Importance are non-statutory sites identified on account of the special interest of their marine habitats, the fauna and flora, or for unusual geological and geomorphological features. They are an extension of the series of terrestrial SNCIs. The identification of these sites is to highlight their importance for marine wildlife and to emphasise the risks of certain operations damaging their interest. There are 23 MSNCIs off the Sussex coast.

## **Environmental Stewardship**

Environmental Stewardship is an agri-environment scheme managed by Natural England that provides funding to farmers and other land managers to deliver effective environmental management.

There are four elements to Environmental Stewardship, three of which are relevant in Sussex:

**Entry Level Stewardship (ELS)** goes beyond the Single Payment Scheme requirement to maintain land in good agricultural and environmental condition.

**Organic Entry Level Stewardship (OELS)** is the organic strand of ELS. It is geared to organic and organic/conventional mixed farming systems and is open to all farmers not receiving Organic Farming Scheme aid.

**Higher Level Stewardship (HLS)** involves more complex types of management where agreements are tailored to local circumstances.

Further information can be found on the Natural England website.

Further information on many of the designations listed above can be found on the Natural England website.

# West Sussex Local Geological Site (LGS) Survey 2010



Condition Monitoring Form for NI 197 Reporting

Woods Mill, Henfield, West Sussex BN5 9SD. Tel: 01273 497521 Email: sxbrc@sussexwt.org.uk Website: www.sxbrc.org.uk

| 1. Site Information    |                                      |                       |               |  |
|------------------------|--------------------------------------|-----------------------|---------------|--|
| Site Name & LGS ID     | Hill Barn Pit, North Lancing TQ10/89 |                       |               |  |
| Site Type              | ED Grid Reference TQ184062           |                       | TQ184062      |  |
| Date of Visit          | 16/07/2010                           | Local Authority       |               |  |
| Surveyor               | Peter Anderton                       | Landowner             |               |  |
| 1:50,000 BGS Sheet no. | 318/333                              | 1:25,000 OS Sheet no. | 122           |  |
| LGS designation        | Scientific X Education               | al X Aesthet          | ic Historical |  |

### Interest Feature(s):

Disused chalk quarry exposing a section of the basal Tarrant Chalk which is exposed nowhere else and provides a vital link with the chalk exposed in cliffs between Newhaven and Brighton. The exposure is at the western end of the quarry and is about 60m long and up to 3m high.

**Stratigraphy:** Tarrant Chalk member, Culver Chalk Formation, White Chalk Subgroup, late Cretaceous in age. **Sedimentology:** soft white chalk limestone with seams of large nodular and tabular flints, including the Lancing Flint Band. Deposited in relatively deep (->100m) open marine environment.

Previous management and dates (if any)

| 2. Prima    | 2. Primary Factors   |     |   |  |  |  |
|-------------|--|-----|---|--|--|--|
|             | Is (are) the feature(s) exposed?                                 |     | If No, can it (they) practically be re-exposed?   |  |  |  |
| ck feature  | Is (are) the feature(s) being affected by the following factors? |     |   |  |  |  |
|             | Factor   | Y/N | Comments  |  |  |  |
|             | Vegetation   | Y   | The quarry is heavily overgrown with shrubs and trees and the chalk is only visible close to the exposure.  |  |  |  |
|             | Scree/Mass Movement  | Y   | There is a steep slippery debris slope beneath the exposure<br>which masks any deeper beds. Only the upper 3m of a former 10<br>m face are now visible. |  |  |  |
| dro         | Flooding   |     |   |  |  |  |
| Be          | Dumping/Landfill   |     |   |  |  |  |
|             | Quarrying/Engineering Works                                      |     |   |  |  |  |
|             | Development (housing/industrial)                                 | Ν   |   |  |  |  |
|             | Others (please define) –   | N   |   |  |  |  |
|             | Is (are) the feature(s) exposed?                                 | N/A | If No, can it (they) practically be re-exposed?   |  |  |  |
| sit         | Is (are) the feature(s) being affected by the following factors? |     |   |  |  |  |
| epo         | Vegetation (Trees or crop planting)                              |     |   |  |  |  |
| al d<br>ure | Agricultural practices (deep ploughing)                          |     |   |  |  |  |
| ficia       | Quarrying/Engineering Works                                      |     |   |  |  |  |
| per         | Development (housing/industrial)                                 |     |   |  |  |  |
| Su          | Others (please define) -   |     |   |  |  |  |

|                      | Is (are) the geomorphological feature(s) be                      | ing allo | wed to evolve naturally? | N/A |  |
|----------------------|--|----------|--------------------------|-----|--|
| somorphology feature | Is (are) the feature(s) being affected by the following factors? |          |                          |     |  |
|                      | Vegetation   | Ν        |                          |     |  |
|                      | Sea Defences   | Ν        |                          |     |  |
|                      | River Management   | Ν        |                          |     |  |
|                      | Ground Stabilisation (slopes/sand dunes)                         | Ν        |                          |     |  |
|                      | Water level change   | Ν        |                          |     |  |
|                      | Development (housing/industrial)                                 | Ν        |                          |     |  |
| Ğ                    | Others (please define) –   | N        |                          |     |  |

| 3. Secondary Factors  |  |     |  |  |  |
|---|--|-----|--|--|--|
| Factors that do not directly affect the feature(s) but may need to be managed in order for feature(s) to maintain a desirable condition |  |     |  |  |  |
|   | Factor   | Y/N | Comments   |  |  |
|   | Are any of the following causing difficulties in accessing the site? |     |  |  |  |
| Iccess  | Physical obstacles   | Y   | The tree and shrub cover hinder access to the exposure and the debris slope below<br>the exposure is very steep and difficult to climb even in dry conditions. The easiest<br>access is from the path by the western end of the protective fence where it is possible<br>to lower oneself down a 1 m high bank to the top of the debris slope. Traversing along<br>the base of the exposure is also difficult due to dense vegetation and slippery debris. |  |  |
| ite   | Landowner permissions  | Ν   |  |  |  |
| S   | Protected species/habitats   | N   |  |  |  |
|   | Other (please define)  |     |  |  |  |
|   | Are any of the following in an undesirable condition?                |     |  |  |  |
| o   | Interpretation Boards  | N   |  |  |  |
| iitur   | Benches/Fences/Gates   | N   |  |  |  |
| Furn  | Earthworks   | N/A |  |  |  |
|   | Other (please define)  |     |  |  |  |
| S   | Are there any other features of interest that should be considered?  |     |  |  |  |
| Other features  | Biodiversity   | N   |  |  |  |
|   | Historic Environment   | Ν   |  |  |  |
|   | Other (please define)  |     |  |  |  |

| 4. Site Status  |   |  |  |  |
|---|---|--|--|--|
| Overall, is the site in a desirable condition for use(s) of the feature(s) identified?  | Yes / <u>No</u> / Uncertain               |  |  |  |
| If Yes - what management is required (if any) for the feature(s) to maintain a desi   | rable condition:                          |  |  |  |
|   |   |  |  |  |
|   |   |  |  |  |
|   |   |  |  |  |
| For the above, is the management <i>: <u>Being undertaken</u> / Going to be undertaken /</i> N  | lot going to be undertaken / Not possible |  |  |  |
| If Uncertain or No - what management is required for the feature(s) to reach and maintain a desirable condition:  |   |  |  |  |
| Vegetation clearance would be needed initially to allow better access and scree excavation would be needed either to make access to the existing exposure safer or to access deeper layers. |   |  |  |  |
| For the above, is the management : Being undertaken / Going to be undertaken / Not going to be undertaken / Not possible  |   |  |  |  |
| Are there any secondary factors that need further management? Yes / <u>No</u> / Not applicable  |   |  |  |  |
| Suggested management in order for the feature(s) to reach/maintain a desirable condition:   |   |  |  |  |
|   |   |  |  |  |
|   |   |  |  |  |

## Site map based on aerial photo and OS Mastermap



RGB Aerial Photography – ©GeoPerspectives, 2007. (WSCC).

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Key to Map:

| Photos  |  |
|---|--|
| 1. Fence along top of quarry face. Grid ref. TQ18340624. Direction ENE.   | 2. Eastern end of upper quarry face about 1.5m high showing a direct access option from the path above. Grid ref. TQ18380625. Direction NE.  |
|   | nom the path above. On the relief to 10000025. Direction NE.   |
|   |  |
| <ol> <li>Steep path up slippery debris slope to upper quarry face. Grid ref. TQ18390623.<br/>Direction NW.</li> </ol> | <ol> <li>Central part of upper quarry face showing 3m high exposure of chalk with<br/>prominent layer of irregular flints half way up the face. Grid ref. TQ18370623.<br/>Direction NW.</li> </ol> |
| 5. | View along upper quarry face from centre showing difficulty of access due to dense vegetation and the steep debris slope. Grid ref. TQ18370624. Direction SW. | <ol> <li>Western part of upper quarry face showing clean white chalk with layer of<br/>irregular flints half way up the face. Grid ref. TQ18360622. Direction NE.</li> </ol> |
|----|---|--|

# ANCIENT & VETERAN TREES

Ancient trees form a vital part of our landscape, heritage and biodiversity. They are scattered through most parts of the UK landscape where they are found in exceptionally large numbers compared with north east Europe. Ancient trees can be most easily found in the vestiges of the once extensive Royal Hunting Forests, such as Ashdown Forest, and medieval parks. Others occur in historic parkland, landscaped gardens, woodland, wood pasture and ancient wooded commons. There are also small groups and individual trees scattered around housing estates, urban parks, village greens and churchyards. Some ancient trees are found on farmland, usually in hedgerows or old boundary features.

In Sussex, some of the largest recorded girths belong to: the Queen Elizabeth oak of 12.67m at Cowdray Park, a yew of 8.5m in Wilmington churchyard; a beech of 8.4m on Ashdown Forest; and a sweet chestnut of 7.2m at Herstmonceux Castle.

There are different definitions for mature trees, depending mainly on their stage of life:

**Ancient trees**. Biologically, aesthetically or culturally interesting because of their great age; In ancient or post-mature stage of life; Have a large girth relative to others of the same species.

**Veteran trees**. Usually in the second or mature stage of life; Have important wildlife and habitat features including hollowing or associated decay fungi, holes, wounds and large dead branches.

**Notable trees**. Locally important or of significance to the community; Specimen trees or considered to be the potential next generation of veteran trees.

### Ancient tree ecology

Ancient trees are unique as a wildlife habitat because of the exceptionally species-rich communities associated with wood decay and the bare surfaces of trunks, bough and roots. Clusters of ancient trees are even more important because together they offer a wide range of niche homes for many specialist species in one small area.

Approximately 1,700 (6%) invertebrate species in the British Isles are dependent on decaying wood to complete their life cycles. Species associated with decaying wood include: rare click beetles such as the violet click beetle *Limoniscus violaceus*, the wasp mimic cranefly *Ctenophora flaveolata* and the oak longhorn beetle *Rhagium mordax*. The black-headed cardinal beetle *Pyrochroa coccinea* is an insect associated with veteran trees and old growth woodland.

Old trees with splits, cracks, loose bark, holes and crevices are especially attractive to bats and in particular to woodland specialists such as the rare Barbastelle and Bechstein's bat.



The Ancient Tree Hunt

The Ancient Tree Hunt is a nationwide search to map all of the old trees in the UK in order to plan for their active conservation. This project, led by the Woodland Trust in partnership with the Ancient Tree Forum and Tree Register of the British Isles, was launched in 2007.

Most of the trees recorded can be viewed on their website: www.ancient-tree-hunt.org.uk

Characteristic features of a veteran tree

Source: Veteren Trees: A guide to good management. Natural England, 2000.

# CHALK STREAM

A chalk river or stream is a watercourse which flows across chalk bedrock, and/or is influenced by local chalk geology. Chalk rivers are usually fed by underground or seasonal springs and often have 'winterbourne' stretches in their headwaters which run dry, or partially dry in late summer because of lack of rainfall recharging the spring. Sites are generally considered to be streams rather than rivers if they are no further than 5km from their source, nor greater than 5m wide (unless they have been artificially widened.)

# Why are they important?

All chalk rivers are fed from groundwater aquifers which means they have clean, clear water and relatively stable water temperatures. These unique conditions along with their chalk geology, support a rich diversity of wildlife including important fish populations such as brown trout, native crayfish and many other specialist species. Their rarity means that chalk rivers are recognised as a priority habitat under the UK BAP and many have been designated as SSSI's.

# Chalk streams in Sussex

Sussex chalk streams often occur in small gulleys which are much more wooded than most other headwater chalk streams. This results in unusual features including:

- Mini chalk waterfalls which form when chalk water upwellings 'calcify' in the air;
- Dense shade which means that there is naturally less vegetation cover;
- Typical chalk river plants like water crowfoot are often absent which is more natural;
- Stream channels are diverse because of natural flow restrictions such as tree roots;
- Woody debris is common in the channel and it influences the stream flow;
- The substrate (stream bed) is less frequently made up of flints and mobile gravels.

# What are the threats?

- Ditching and removal of natural features
- Weirs and man-made obstructions to flow
- Urbanisation of streams
- Non-native invasive species
- Abstraction of water from groundwater aquifers and streams
- Pollution
- Lack of recognition

### Some associated species

- Fool's water-cress Apium nodiflorum
- Blunt-fruited water-starwort Callitriche obtusangula
- Brook water crowfoot Ranunculus peltatus
- Lesser water-parsnip Berula erecta
- Brown trout *Salmo trutta*
- White-clawed crayfish Austropotamobius pallipes
- Southern damselfly Coenagrion mercuriale

Further information can be found on the <u>Sussex Wildlife Trust website</u>.

# COASTAL & FLOODPLAIN GRAZING MARSH

Grazing marsh is periodically inundated pasture, or meadow with ditches that maintain the water levels, containing standing brackish or fresh water. Sites may contain seasonal water-filled hollows and permanent ponds with emergent swamp communities.

# Why is it important?

- Wading birds such as redshank feed on invertebrates forced close to the surface by the high water table and shallow surface floods.
- Around 500 species of vascular plant have been recorded from grazing marsh including rare species such as narrow-leaved water-dropwort.
- It supports large numbers of invertebrates including over a thousand nationally notable species.
- Drainage channels and open water associated with grazing marsh support a number of fish species and can provide important spawning areas.
- Water filled ditches are often used by otter, water vole, and various dragonflies.

# Coastal and floodplain grazing marsh in Sussex

Sussex has around 14,000 hectares of grazing marsh, with the rivers Arun, Adur, Ouse and Cuckmere all having important areas. Just under half of Sussex's floodplains consist of wet grassland, however much of this has been agriculturally improved decreasing its value for wildlife. Pevensey Levels is one of only three sites in Britain where the large fen raft spider is found, and two rare species of ramshorn snail can also be found in Sussex.

### What are the threats?

- Conversion to agriculture through drainage and fertilizer application.
- Drainage and flood defences can disrupt the hydrology of sites.
- Overgrazing, neglect or early grazing, can affect breeding birds.
- Water pollution, which can be exacerbated if concentrated by over-abstraction.
- Floodplain development, aggregate extraction and recreational pressure.
- Isolation and fragmentation of sites reduces dispersal opportunities making species more susceptible to extinction.

### Some associated species

- Lapwing Vanellus vanellus
- Merlin Falco columbarius
- Marsh mallow moth *Hydraecia osseola*
- Desmoulin's whorl snail Vertigo moulinsiana
- Greater water parsnip Sium latifolium
- Star sedge Carex echinata

### Further information

- Floodplain Meadows Partnership: <u>www.floodplainmeadows.org.uk</u>
- Sussex Wetland Landscapes Project: <u>www.sussexotters.org</u>



# **COASTAL SALTMARSH**

Coastal saltmarshes lie at the top of the intertidal zone on fine sediments. The vegetation here is adapted to regular immersion by the tide.

## Why is it important?

- Saltmarshes are an important resource for breeding and wintering wading birds and wildfowl.
- They provide sheltered nursery sites for several species of fish.
- Areas with high structural and plant diversity are particularly important for invertebrates.

# Coastal saltmarsh in Sussex

The majority of saltmarsh in Sussex is found in Chichester Harbour, and smaller amounts in Pagham and Rye Harbours. Sussex's saltmarshes support a number of nationally scarce plants including sea barley and golden samphire.

# What are the threats?

- "Coastal squeeze" resulting from coastal development, erosion and coastal defences, restricts the ability of saltmarsh habitat to move.
- Disruption of natural coastal processes as a result of coastal protection work, dredging or coastal defences can affect natural sediment systems.
- Non-native species such as cord grass.

### Some associated species

- Twite Carduelis flavirostris
- Bass Dicentrarchus labrax
- Starwort moth Cucullia asteris
- Shore crab *Carcinus maenas*
- Common saltmarsh grass Pucinella maritima
- Sea aster Aster tripolium



Sea aster

# **COASTAL VEGETATED SHINGLE**

Shingle is an accumulation of pebbles with a diameter between 2-200mm. In Sussex the shingle is composed mainly of flint pebbles derived by marine or glacial erosion of Cretaceous chalk and Tertiary deposits.

### Why is it important?

- Vegetated shingle is a rare habitat and some of the plants and animals found here are very restricted in their distribution.
- Shingle is important for breeding birds, in particular gulls and terns.
- Many rare species are found including species of moth and spider.

### Coastal vegetated shingle in Sussex

A significant area of vegetated shingle exists in Sussex, accounting for almost a fifth of the total resource in England. Areas of vegetated shingle can be found in both East and West Sussex, with the most extensive area being in the Rye and Dungeness area.

#### What are the threats?

- Coastal defence work can interrupt natural sediment movement which affects coastal habitats including vegetated • shingle.
- Sea level rise and increased storms could destroy vegetated shingle areas.
- Recreation impacts including trampling, disturbance of animals and introduction of non-native plant species.

#### Some associated species

- Lesser black-backed gull *Larus fuscus*
- Little tern Sternula albifrons
- Toadflax brocade Calophasia lunula
- Brown-banded carder bee *Bombus humilis*
- Yellow horned poppy *Glaucium flavum*
- Sea holly Eryngium maritimum

(Illustration courtesy of Natural England.)



Sea Holly

# INTERTIDAL MUDFLAT

Mudflats are sedimentary intertidal habitats created by deposition in low energy coastal environments particularly estuaries and other sheltered areas.

## Why are they important?

- Mudflats are part of a habitat sequence between open water and saltmarsh, and have an important role in reducing the impact of waves upon saltmarshes, damage to coastal defences and flooding of low-lying land.
- A wide range of invertebrates is supported including molluscs, annelids and lugworms.
- Mudflats are highly productive, making them important feeding areas for birds. They support internationally important populations of migrant and wintering waders.
- Due to their sheltered nature mudflats are important areas for fish, in particular flatfish, which use them as nursery areas.

### Intertidal mudflats in Sussex

Sussex has just over 1,100 hectares of intertidal mudflats. Much of this occurs in a mosaic with saltmarsh and seagrass beds.

### What are the threats?

- Sea level rise is expected to result in the loss of up to 10,000 hectares of intertidal mudflat by 2013, with much of this in southern England.
- Land claim for development, and industry including hard flood defences.
- Pollution from agricultural, industrial and urban sources.
- Human disturbance from fishing and bait digging can have adverse impacts.
- Introduction of invasive species such as cord grass.

### Some associated species

- Golden plover Pluvialis apricaria
- Atlantic salmon Salmo salar
- Lugworm Arenicola marina
- Mud shrimp Corophium volutator
- Glasswort Salicornia europaea
- Spiral wrack Fucus spiralis

(Illustrations courtesy of Natural England.)



Golden plover

# LOWLAND CALCAREOUS GRASSLAND

Lowland calcareous grasslands develop on shallow lime-rich soils generally overlying limestone rocks - in Sussex it occurs exclusively on chalk.

# Why is it important?

- Chalk grassland can support over 50 species of flowering plant per square metre, including a number of nationally scarce species.
- Many species of rare invertebrates are found including hoverflies, molluscs and moths.
- Rare assemblages of mosses and lichens can be found on some chalk grasslands.
- The grasslands and associated patches of scrub provide breeding and feeding habitat for many birds including scarce species such as stone curlew.

### Lowland calcareous grassland in Sussex

The South Downs represents one of the major areas of chalk grassland in the UK. It is estimated that the habitat now covers only around 3% of the South Downs, where it is predominantly confined to steeper slopes. It continues to support a rich diversity of animals and plants including many rare species.

### What are the threats?

- Agricultural intensification by use of fertilisers, liming, reseeding and ploughing.
- Lack of grazing stock results in dominance of coarse grasses and scrub, and a decline in overall botanical diversity.
- Recreation effects including disturbance of wildlife, compaction of soil, trampling and increased nutrients in soil. High public access can also cause conflicts where grazing animals are present.
- Isolation and fragmentation of sites reduces dispersal opportunities making species more susceptible to extinction.
- Losses can result from development including redevelopment of abandoned chalk quarries which can develop good quality grassland.

### Some associated species

- Linnet Carduelis cannabina
- Whitethroat Sylvia communis
- Adonis blue Polyommatus bellargus
- Glow-worm Lampyris noctiluca
- Round-headed rampion *Phyteuma orbiculare*
- Yellow-wort *Blackstonia perfoliata*



Round-headed rampion

# NOTABLE ROAD VERGE

Notable Road Verges (NRVs) are areas of roadside verge that have been designated for their special wildlife interest. They can hold spectacular displays of wild flowers, including rare orchids and other plant species indicative of old meadows, and can be of great importance to invertebrates and fungi. There is no statutory protection for road verges, but they can be found within both non-statutory and statutory designations.

As linear features, road verges naturally traverse a wide range of habitat types, soils and geology. The species composition of NRVs can therefore be varied. Swathes of cow parsley, cuckoo flower, primroses and orchids can be found. Downland herbs, meadow flowers and heathers support a range of insects, as do the areas of bare ground which are used by nesting bees and wasps. Reptiles, amphibians and mammals can find shelter along these verges and use them as valuable green corridors.

As the Highway Authorities, the County Councils are responsible for the cutting and management of roadside verges, and they also have a responsibility to conserve



Common spotted orchid

biodiversity. Where health and safety measures allow, this is achieved by restricting cutting to certain times of the year (usually when wild flowers have set seed in late summer) and using different techniques to standard verge cutting. For example, in September 2008 West Sussex County Council undertook a hay cut on 19 NRVs across the county. Mimicking traditional grassland management techniques, grass was collected manually and removed, preventing the build up of excess nutrients and competitive plants.

The initiatives for designating and managing NRVs differ between East and West Sussex. NRVs in West Sussex are identified by short oak posts with red discs. In East Sussex they are marked by posts with yellow metal flowers.

In West Sussex, the following guidelines are used to help identify NRVs:

### 1. Site supports locally rare, notable or protected species of flora or fauna.

E.g. the plant coralroot. This type of bittercress is only found in two localised areas of the UK; the Sussex Weald and the Chilterns.

### 2. Site is a good example of an uncommon, remnant or declining habitat.

E.g. species of sandy grassland along Rock Road in the Parish of Washington.

### 3. Site has good overall species diversity.

E.g. Mallions Lane near Cuckfield.

### 4. The assemblage of wild flowers has high aesthetic value.

E.g. Franklyn Road outside Haywards Heath hospital with a wonderful display of common spotted orchids in early summer.

### 5. Site has wildlife value that is regarded as important by the local community.

E.g. Barnham Road at Eastergate.

# SALINE LAGOON

Lagoons are natural or artificial bodies of saline water partially separated from the sea by shingle, sand, a rocky shore or sea wall. Seawater input can be through percolation, via a channel or by overtopping.

## Why are they important?

- The salinity of lagoons can vary considerably, and they support specialised species of plants and animals, which reflect the degree of salinity.
- Lagoons often have soft sediments (mud or sand) making them important for burrowing invertebrates, and stoneworts some of which are extremely rare.
- Lagoons provide important habitat for birds.

### Saline lagoons in Sussex

In Sussex saline lagoons occur at over 30 sites, which is around 3% of the total UK resource.

# What are the threats?

- Saline lagoons will often naturally fill-in through vegetation succession. This would naturally be offset by lagoon creation; however this may be limited by human activity.
- Pollution, particularly through nutrient enrichment, affects the vegetation community.
- Artificial control of water input to lagoons will affect salinity.
- Coastal defence work can interrupt natural sediment movement which affects coastal habitats and structures including lagoons.
- Sea level rise will lead to the loss of some lagoons; however it may also result in the creation of new ones.

## Some associated species

- 3-spined stickleback Gasterosteus aculeatus
- Knot Calidris canutus
- Sea slater Ligia oceanica
- Lagoon cockle Cerastoderma glaucum
- Tasselweed *Ruppia* spp.
- Foxtail stonewort Lamprothamnium papulosum



# **TRADITIONAL ORCHARDS**

Traditional orchards are areas of land on which a range of fruit and nut trees are cultivated that are managed in a low intensity way. Permanent grassland beneath the trees was traditionally grazed by livestock.

# Why are they important?

- The mosaic of habitats such as hedgerows, dead wood and fruit trees make traditional orchards important for a wide range of species.
- Traditional orchards provide a the conditions needed for many bryophytes and lichens.
- Holes and crevices in old trees provide habitat for bats and nest sites for birds such as redstart and bullfinch.
- Dead and decaying wood makes traditional orchards hugely important for invertebrates, lichens and fungi.

# Traditional orchards in Sussex

The traditional orchards inventory<sup>\*</sup> lists over 900 sites in Sussex covering an area of approximately 300 hectares. It is estimated that around half of these orchards are currently in a poor condition.

# What are the threats?

- Changes in farming policy and markets has led to a decline in income from traditional orchard produce.
- A decline in the skills and knowledge to manage traditional orchards can lead to neglect.
- Loss of orchards can occur as fruit trees dying of old age are not replaced.
- Lack of protection under the current planning system.

## Some associated species

- Lesser spotted woodpecker Picoides minor
- Noctule Nyctalus noctula
- Lichen running-spider Philodromus margaritatus
- Noble chafer Gnorimus nobilis
- Mistletoe Viscum album
- A lichen Ramonia chrysophaea

### \* The Traditional Orchard Inventory for England

The traditional orchard data used in Sussex Biodiversity Record Centre reports are the result of a project run by the People's Trust for Endangered Species (PTES) on behalf of Natural England. The resulting inventory is based on combining exisiting survey data with aerial photograph interpretation, together with ground-truthing survey work by local volunteers. The inventory is provisional, and is still being refined and updated as new data becomes available. The project was completed in March 2011.

For the purpose of the inventory, traditional orchards are defined as sites where at least five fruit trees must be present with no more than 20m between their crown edges.

### Further information

Orchard Network: www.orchardnetwork.org.uk



# WOOD-PASTURE & PARKLAND

Many parks were established in medieval times for aesthetic reasons, to provide grazing for farm animals or deer and to provide wood from pollarded trees. In later centuries, new landscaped parks were created from these medieval parks or by enclosing ordinary farmland. Wood-pasture and parkland is therefore the result of a distinctive, historic land-use system, and represents a vegetation structure rather than being a particular plant community.

Typically this structure consists of veteran trees with wide, spreading crowns growing in a matrix of grazed grassland or heathland. It is a habitat of cultural and historical significance and can also be of great ecological importance due to the wide range of species it supports. For these reasons, and due the threats facing the habitat, it is a UK Biodiversity Action Plan (BAP) habitat.



Pedunculate Oak

# **Current status and distribution**

There are no reliable statistics on the extent of this habitat in the UK, but it is most common in southern Britain. Sussex is particularly rich in wood-pasture and parkland with several large old deer parks, such as Petworth Park and Parham Park.

# **Ecological significance**

Wood-pasture and parkland is important for wildlife for a number of reasons:

- The mosaic of habitats together with the presence of veteran trees provides the conditions needed by certain species for every stage of their life cycle.
- There is often a continuity of old trees over hundreds of years, or even in some cases back to the post ice-age 'wildwood'. The trees have often been pollarded; this management technique extends their life and creates rot holes and crevices which are used by bats, hole-nesting birds and invertebrates.
- Sussex has the majority of the UK's mature English Elms following the loss of millions to Dutch Elm Disease.
- Rotten wood within ancient tree trunks supports saproxylic invertebrates (those that rely on dead wood for all or part of their life cycle) and are amongst the most threatened group of species in Europe. One such species is the click beetle *Lacon querceus*, which develops in dry red-rotten oak wood in veteran trunks and fallen boughs. The Stag Beetle is another saproxylic beetle often associated with pasture parkland.
- The old tree trunks also support unique communities of lichens, mosses and liverworts which depend on the stability of the surface provided by veteran trees. Two BAP Priority Species of lichen found on old trees include *Bacidia incompata* and *Enterographa sorediata*.

### Threats facing the habitat include:

- Isolation and fragmentation of the remaining parklands.
- Inappropriate grazing resulting in the loss of plant diversity and habitat structure.
- Agricultural intensification including reseeding, ploughing and use of fertilisers.
- Neglect and loss of veteran trees, and over-tidying of deadwood.



Stag Beetle

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The Sussex Biodiversity Record Centre is managed by the Sussex Wildlife Trust as a partnership project. A list of our current funding partners can be found on our website: www.sxbrc.org.uk/about/partners



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**Reptile Surveys** 

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### LIABILITIES:

Whilst every effort has been made to guarantee the accuracy of this report, it should be noted that living creatures are capable of migration and whilst protected species may not have been located during the survey duration, their presence may be found on a site at a later date.

The views and opinions contained within this document are based on a reasonable timeframe between the completion of the survey and the commencement of any works. If there is any delay between the commencement of works that may conflict with timeframes laid out within this document, or have the potential to allow the ingress of protected species, a suitably qualified ecologist should be consulted.

It is the duty of care of the landowner/developer to act responsibly and comply with current environmental legislation if protected species are suspected or found prior to or during works.

- 1.1 The Ecology Partnership, previously PJC Ltd (PJC), was commissioned by The Hyde Group to undertake a reptile survey on land on Salts Farm Road, Shoreham by Sea. The location of the site and its indicative boundary are shown in Figures 1 below.
- 1.2 A previous Phase 1 ecological survey undertaken in April 2015 highlighted the potential for the site to support reptile species. It was considered that suitable reptile habitat covered almost the entire site.
- 1.3 The site is situated to the west of Shoreham-by-Sea, between Shoreham and Lancing in West Sussex. The immediate surrounding landscape comprises predominantly residential properties and gardens, grazing marsh, tree-lines and drains. The River Adur extends 0.7km to the east of the site and the coast is lies approximately 0.2km south. Shoreham airport is located immediately to the north of the site. The aerial photograph (Figure 1) below shows the site and its immediate surrounds.



Figure 1: Approximate red line boundary of the site and survey area

1.4 This report presents the results of The Ecology Partnership's survey in and around the site, which aimed specifically to determine the presence or likely absence of reptiles on the site. A suitable mitigation strategy has also been recommended.

### **Relevant Legislation**

- 1.5 All species of reptile are protected through Sections 9(1) and 9(5) of the Wildlife and Countryside Act 1981 as amended by the Countryside and Rights of Way Act 2000. It is an offence to
  - Intentionally or recklessly kill of injure any reptile
- 1.6 The UK Government's National Planning Policy Framework (NPPF) states that those species as being identified of principle importance (including all native species of reptile) should be protected from the adverse effects of development through the planning system. Reptiles are therefore deemed a material consideration within the planning process, and their conservation requirements should be promoted through the incorporation of beneficial biodiversity designs within development proposals.

# 2.0 Reptile Survey Methodology

- 2.1 A terrestrial survey of the site for reptiles (presence or likely absence) was carried out at the site between the dates of 14<sup>th</sup> and 30<sup>th</sup> September 2015 inclusive. Prior to the commencement of the survey, the site was set up with artificial refugia (roofing-felt mats) for reptiles on 1<sup>st</sup> September 2015.
- 2.2 Refugia were placed around the site (in rough grassland or at the edges of scrub patches) and across the centre of the site and were left undisturbed for a 14-day period of beddingin prior to the reptile survey (as recommended in the guidance from Natural England).
- 2.3 The timing and number of survey visits completed were based on guidelines produced by Froglife (1999) and Gent and Gibson (1998). A total of seven survey visits were made to the site to check the refugia for the presence of reptiles and to carry out a visual transect. Visits

were only carried out if the weather conditions were suitable for locating reptiles and took place at a variety of times of day (some in the morning and some in the afternoon/evening so that different mats would be exposed to the sun), in order to maximise the probability of finding reptiles if they were present. On each visit to the site, a minimum of one circuit to check all refugia was carried out.

2.4 Note that whilst checking the artificial refugia a visual check was also carried out of natural basking sites and refugia on the site. Other pre-existing refugia were also searched for evidence of reptiles, whilst the route chosen in moving between the artificial refugia allowed a thorough visual transect of the whole site to be carried out, again in accordance with Natural England guidelines.

### 3.0 Results

3.1 The table below documents the timing and weather conditions of the reptile survey visits.

| Date       | Night | Max  | Cloud | Rain | Wind  | Slow  | Common | Grass |
|------------|-------|------|-------|------|-------|-------|--------|-------|
|            | temp  | temp | cover |      |       | Worm  | Lizard | Snake |
|            |       |      | (5)   |      |       |       |        |       |
| 14/09/2015 | 8     | 17   | 75    | None | SW    | 1 AF  | 3 AM   | 0     |
|            |       |      |       |      | light | 2 Juv | 2 AF   |       |
| 15/09/2015 | 9     | 22   | 0     | None | SW    | 3 SWM | 6 AM   | 0     |
|            |       |      |       |      | light | 1 SWF | 7 AF   |       |
|            |       |      |       |      |       |       | 2 Juv  |       |
| 17/09/2015 | 11    | 23   | 0     | None | SW    | 1 Juv | 3 AF   | 0     |
|            |       |      |       |      | light |       |        |       |
| 19/09/2015 | 11    | 19   | 50    | None | SW    | 0     | 2 AF   | 0     |
|            |       |      |       |      | light |       |        |       |
| 21/09/2015 | 10    | 19   | 50    | None | SW    | 0     | 3 AF   | 0     |
|            |       |      |       |      | light |       |        |       |
| 28/09/2015 | 6     | 19   | 50    | None | SW    | 2 SWM | 11 AM  | 1     |

# Table 1: Results from the 2015 reptile survey

|            |   |    |    |      | light | 2 SWF | 7 AF  |   |
|------------|---|----|----|------|-------|-------|-------|---|
|            |   |    |    |      |       | 2 juv | 3 Juv |   |
| 30/09/2015 | 8 | 21 | 50 | None | SW    | 1 SWM | 6 AM  | 0 |
|            |   |    |    |      | light | 4 SWF | 5 AF  |   |
|            |   |    |    |      |       | 1 Juv | 2 Juv |   |

AF: Adult female AM: Adult male Juv: Juvenile

3.2 Slow worms, common lizards and grass snake were all located within the red line boundary. It should be noted however that the actual population size on the site are likely to be higher than the number actually detected. The approximate location of the areas which supported reptiles is shown in figure 2 below.



Reptile concentrations

Figure 2: Areas where reptiles were located during the survey period

- 4.1 The size of the populations can be estimated using the Froglife (1999) scoring system. This system assumes a density of 10 refugia per hectare of suitable habitat, a number exceeded in our survey. A population size class assessment, which is based on the number of adults recorded in one survey visit can be made using Table 2.
- 4.2 According to the Froglife criteria, and given the numbers found, the site supports a 'good' population of slow worms, a 'good' population of common lizards and a 'low' population of grass snake.

|               | Low population | Good population | Exceptional |
|---------------|----------------|-----------------|-------------|
|               | (Score 1)      | (Score 2)       | population  |
| Adder         | <5             | 5 - 10          | >10         |
| Common lizard | <5             | 5 - 20          | >20         |
| Grass snake   | <5             | 5 -10           | >10         |
| Slow-worm     | <5             | 5 - 20          | >20         |

Table 2: Population class assessment categories (Froglife, 1999)

4.3 As the site supports slow worms, common reptiles and grass snake a mitigation strategy must be developed to ensure that reptiles are not harmed by the development.

# Mitigation Strategy

- 4.5 As terrestrial habitat is due to be lost to the development, reptiles must be moved outside the development zone to ensure that individuals are not harmed by the proposals.
- 4.6 Mitigation will involve the construction of a reptile fence around the development footprint in the vegetated area. The habitats outside the reptile fence are to be maintained and enhanced. The habitats within the reptile fence are to be cleared of reptiles. The reptile fence will be constructed following the standard below.



Figure 2: Fence line standards

- 4.7 With the exclusion fencing set-up, the area inside can be trapped intensively for reptiles. Artificial refugia for the reptiles would be set out in a density of at least 50 refugia per hectare of suitable habitat (HGBI guidelines, 1998) and allowed to bed in. Trapping will take place in optimal weather conditions, between the March and October inclusive and for a period of at least 70 days or until there are 5 consecutive no-reptile catch days.
- 4.8 The grassland will then be strimmed to 150mm, checked, and then finally strimmed down to ground level. This will be undertaken under ecological supervision. The arisings can be taken off site, or placed in several compost heaps within the retained habitat, providing good habitat for breeding slow worms and grass snakes.

- 4.9 As the final stage of the translocation process, any natural reptile refugia will need to be dismantled by hand or using sensitive machine work under close supervision of an ecologist.
- 4.10 The mitigation strategy will therefore follow:
  - Reptile fencing being placed around the edges of the site, ensuring that the area outside the development footprint is fenced off, therefore fencing off any potential movement of reptiles on to the site. This physical barrier will protect any species using the edges of the site.
  - The site will be trapped until there are 5 clear days. The slow worms, common lizards and grass snakes will be removed from the site. The fence line will prevent them moving back on to the central area of site and the construction zone.
  - This area will be monitored during site works by an ecologist to ensure the fence line is fit for purpose and that the area is respected as a 'wildlife exclusion area'.
  - Once 5 clear trapping days has been gained the grass within the development zone will strimmed.
  - Any areas which support vegetation should be removed sensitively under ecological supervision. The process would entail: visual inspected and finger tip search by an ecologist for the presence of reptiles. This is followed by a cut of the vegetation to 150mm above ground. This cut is inspected once more for the presence of reptiles. Finally vegetation is cut to ground level.
  - Final clearance works and sensitive soil removal will also be carried out under the supervision of an ecologist.
  - Once this is complete, development works can start.
- 4.11 The extent of the trapping is currently unknown as the area which is subject to development has not been identified. However, it is recommended that all of the ditch networks within the site are maintained and support ecological buffers which would provide suitable habitat for common reptile species to be translocated into. Further habitat, most notably on the edges of the site should be retained as ecological buffer zones for a range of species, including reptiles.

### 5.0 Conclusions

- 5.1 An 'good' population of slow worms and common lizards were found to be present on the site within the redline boundary and a 'low' population of grass snakes. The reptiles were located across the site, but only found in areas highlighted in figure 2 of this report.
- 5.2 The development will involve the loss of some optimal terrestrial habitat for reptiles. As such reptiles are required to be translocated from the red line boundary. The development plans, including the extent of the development boundary is as yet unknown, as as such, translocation and mitigation plans will be formalised when the master plan is being developed. It is recommended that ecological buffer areas located around the ditch networks through the site and along the edges of the site are maintained and enhanced to provide some opportunities for reptiles as well as other common species.
- 5.3 It is considered that the translocation of slow worms, common lizards and grass snakes would ensure that none are harmed by the development and the mitigation strategy which will be developed will ensure that the favourable conservation status of these species will not be affected by the development.

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Invertebrates, water voles and GCN assessment

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# 1.0 Introduction

## Background

- 1.1 The Ecology Partnership (formerly PJC Ecology Ltd (PJC)) was commissioned by The Hyde Group to undertake a preliminary ecological appraisal on a site adjacent to New Salts Farm Road in Shoreham-by-Sea, West Sussex.
- 1.2 As a result of the initial surveys it was recommended that further surveys be undertaken to ascertain the use of the site by protected species including water voles, GCNs and invertebrates.

# Site Context and Status

1.3 The site is situated to the west of Shoreham-by-Sea, between Shoreham and Lancing in West Sussex. The immediate surrounding landscape comprises predominantly residential properties and gardens, grazing marsh, tree-lines and drains. The River Adur extends 0.7km to the east of the site and the coast is lies approximately 0.2km south. Shoreham airport is located immediately to the north of the site. The aerial photograph (Figure 1) below shows the site and its immediate surrounds. The red line boundary depicts the approximate site boundary.



Figure 1: Approximate red line boundary of the site

- 1.4 The surveys were undertaken in September 2015, with several visits undertaken for invertebrate surveys with the ditches checked twice in September for invertebrates and water voles.
- 1.5 This report details the methodologies used and the results of the species specific surveys. Further surveys maybe recommended on the site as a result of these initial investigations.

# 2.0 Water Vole Presence/Likely Absence Survey

2.1 Water-filled ditches towards the western part of the site and to a lesser degree ditches to the east are considered to have potential to support water voles both is terms of suitable bank profiles, adequate vegetation cover and potential food resources. These ditches are also connected to ditches located outside of the site, enabling movement of water voles across the ditch network.

# Methodology

2.2 All of the drainage ditches were surveyed for the presence / likely absence of water voles. The locations of the ditches surveyed are shown in figure 2 below.



Figure 2: Above showing the ditch network which was surveyed for evidence of water voles

- 2.3 The water vole survey in the drainage ditches was undertaken in September 2015 by Alexia Tamblyn MA (Oxon) MSc CEnv MCIEEM FRGS and Dr Jonty Denton FRES FLS CEcol MCIEEM within the optimal season for water vole activity (April October); when water voles establish breeding territories, marked with latrines (discrete piles of droppings).
- 2.4 The presence / likely absence of water voles are largely determined by field signs, including:
  - latrines;
  - feeding stations of neatly piled food cuttings;
  - burrows;
  - short grazed 'lawns' close to burrows;

- runways in vegetation;
- footprints;
- sightings or sounds of water voles entering the water; and
- nests consisting of finely shredded grasses or reeds.
- 2.5 Both sides of the ditches were searched for signs of water vole. All signs in each ditch were counted and recorded on a standard survey form. The habitat within and surrounding the ditches were also recorded on the forms.

## Results

- 2.6 Water-filled drainage ditches, particularly were considered to provide suitable habitat for water voles. The ditches which were present within the red line boundary were surveyed for evidence of water voles.
- 2.7 Ditches immediately adjacent to the site boundaries along the northern edge, could not however, be accessed, as this appears to be on railway land, and a large fence was present along this northern edge.
- 2.8 All ditches were walked through and all of the banks were surveyed for evidence of water vole use. No burrows were recorded within the on site ditches and no evidence of grazing, droppings or eaten reeds were recorded during the survey. As such it is considered that the ditches which are present within the red line boundary do not currently support water voles.
- 2.9 However, it is noted that water voles maybe present in the wider landscape and as such it is recommended that if works to any ditches are proposed then an update survey would be recommended.

## Discussion and Recommendations

2.10 No evidence of water voles was identified in any of the ditches within the red line boundary during the surveys undertaken in September. However, drainage ditches which lie adjacent to the railway

line could not be accessed. These have not been surveyed and therefore the presence/likely absence of water voles in these ditches could not be ascertained.

- 2.11 No evidence of water voles have been identified using the ditch network. However, as not all the ditches could be investigated adjacent to the site, there is a possibility that water voles could be present in the off site ditch network. As such a precautionary approach to works in the ditches or associated with the ditches edges is recommended.
- 2.12 The ditch network is however, recommended to be retained. The ditch network provides some landscape connectivity through the site to other off site habitats and provides green infrastructure linkages which are considered to be important in terms of local wildlife. Kingfisher and Cetti's warbler were recorded using this ditch network.
- 2.13 It is therefore recommended that all ditches within the site should be retained and enhanced as part of the proposals for the site. Furthermore, in order to safeguard ditches during construction activities on site, it is recommended that an appropriate fenced buffer be maintained between the ditches and proposed construction activities.
- 2.14 Enhancement of the drainage ditches may include rotational clearance of in-channel vegetation, such as common reed and supplementing existing vegetation with native marginal and emergent species, such as soft rush (*Juncus effuses*), water plantain (*Alisma plantago-aquatica*), meadowsweet (*Filipendula ulmaria*), yellow flag iris (*Iris pseudacorus*) and water mint (*Mentha aquatica*). It is recommended that other enhancements are associated with the edges of the ditch network including creating wildflower edges and enhancing linkages through the site.

### 3.0 Great Crested Newts

- 3.1 No ponds were identified on site during the survey and no ponds were identified within 500m of the site using online maps and through aerial photograph interpretation.
- 3.2 Notwithstanding this, several wet ditches are present within this site, which form a network linking ditches on site with those outside of the site boundary. Ditches within the site were generally still or with a slow current and possessed submerged, emergent and marginal aquatic vegetation suitable for egg laying. Furthermore, fringe habitats such as tall ruderal vegetation and rank semi-improved grassland, as well as tree-lines, scrub and dry ditches are not only considered to provide suitable habitat for newts in their terrestrial phase, but also provide habitat corridors enabling movement of newts throughout the site and across the wider landscape.
- 3.3 It was therefore recommended that presence/likely absence surveys for great crested newts should be carried out at all suitable ditches within the site, either using traditional methods of bottle trapping or using eDNA surveys. However, during the invertebrate assessment of the ditch network stickleback were recorded in all of the ditches within the red line boundary.
- 3.4 Stickleback are known to predate on GCN eggs and as such it is considered highly unlikely that the ditch networks, which support stickleback (being sufficient in population to support kingfishers) that GCNs would be able to support a population. As such it is considered that no further survey work is recommended and that the ditch networks are not considered suitable for GCNs.
- 3.5 No mitigation for GCNs is recommended, however, it is recommended that where possible enhancements around the ditch networks are undertaken to provide suitable habitat for a range of common amphibians which may be present in the local area.

## 4.0 Invertebrate Survey

4.1 The initial phase 1 survey identified the potential for the site to support a range of invertebrate species, including invertebrates which would be associated with the ditch networks. The invertebrate survey undertaken was to carry out a baseline invertebrate survey of the site and to identify areas which would be considered to be more valuable in terms of invertebrate biodiversity.

### Methodology

- 4.2 All surveys were undertaken by Dr. Jonty Denton FRES FLS CEcol MCIEEM
- 4.3 Specific groups of species of invertebrates, which are sufficiently well known as to provide meaningful comparisons to be made with other sites both locally and nationally, are chosen to be the focus of providing an appropriate base line assessment. These species are also important as indicators of the quality of the site and the habitats present were targeted (see Brooks, 1993). This survey focused on the Nationally reviewed invertebrate groups, which have had status classifications assigned to each species based on the current and historic distributions (Ball, 1994). These include;- Mollusca (Slugs and snails), Arachnida (Spiders, Harvestmen & Pseudoscorpions), Isopoda (Woodlice), Thysanura (Bristletails), Ephemeroptera (Mayflies), Odonata (Dragon & Damselflies). Plecoptera (Stoneflies), Orthoptera (Grasshoppers & Crickets), Dictyoptera (Cockroaches) Dermaptera (Earwigs), Hemiptera- Heteroptera (True-bugs), Hemiptera -Homoptera (Hoppers), Psocoptera (Psocids), Neuroptera (Lace-wings), Mecoptera (Scorpion-flies), Lepidoptera (Butterflies & Moths), Trichoptera (Caddis flies), Diptera (True flies), Aculeate Hymenoptera (Ants, Bees & Wasps), Hymenoptera Symphyta (Sawflies), Coleoptera (Beetles). In addition some species from other less well known groups which have yet to have official statuses assigned to them were identified. These included, Parasitic Hymenoptera,
- 4.4 The main emphasis of the survey was to find as many rare and notable species as possible, within the reviewed groups. The site was visited on the following dates 2nd & 25<sup>th</sup> September 2015

### Terrestrial/ Arboreal Survey

4.5 All the terrestrial and arboreal habitat types present across the survey areas were sampled, using a variety of sampling methods. This covered the main activity period for all the invertebrate groups

studied. The methods employed included standard techniques of sweeping grasses, rushes, sedges, herbs and foliage (Kirby, 1992). A petrol powered suction sampler was employed to collect terrestrial invertebrates. Surface vegetation, tussocks, and ground litter were sampled and each collection emptied onto a large beating tray, where specimens of interest could be collected. The remainder could then be released unharmed.

### Wetland sampling

4.7 A 0.5mm GB nets pond net was employed to sample the ditches for invertebrates. Bank-splashing was employed on the muddy /mossy areas around the various water bodies and seepages. This simply involved throwing handfuls of water over the surfaces forcing burrowing beetles to the surface, where they were collected in a pooter. Moss and leaf litter was pushed under the water surface to force out the invertebrates within.

#### Results

- 4.8 The invertebrate species recorded are listed in Appendix 1, the subsets correspond to different habitat types along the road route template. The distribution of local, rare and notable taxa is shown on figure 3 below
- 4.9 In all this survey found 196 taxa, the Rare and Nationally Notable species are listed below.

#### **RARE AND NOTABLE SPECIES**

### **ARACHNIDA (SPIDERS)**

### Argiope bruennichi - Wasp Spider (Nationally Scarce B)

This unmistakable spider was once restricted to the south coast, but in past 20 years or so it as spread northwards and inland, as is now locally frequent in rough grassy sites (Harvey, *et al* 2002).

#### DERMAPTERA

#### Forficula lesnei – Lesnei's Earwig. (Nationally Scarce B)

Smaller and more reddish than the ubiquitous common earwig, and with no wings. This species is associated with open warm sunny hedgerows and bramble patches, where it is usually found off the ground. Found widely on the hedgerows across the whole site.

### ORTHOPTERA

### Conocephalus dorsalis - Short-winged Conehead (Nationally Scarce B)

A local cricket which is often found in wetlands, it as undergone a rapid expansion across southern Britain and is no longer deserving of Notable status.

### HEMIPTERA

#### Rhopalidae

### Stictopleuron abutilon (RDBK)

Once a great rarity this bug has increased and is now found widely in rough grass places in southern Britain.

# Delphacidae

#### Calligypona reyi (RDBK)

A hopper associated with *Juncus* in rough grassland. Given RDBK status in Kirby (1992) and then only known from 4 sites in the UK, all coastal. It has since been found more widely and as spread considerably and should be reassigned Nationally Scarce B status.

### **COLEOPTERA**

#### Curculionidae

#### Isochnus sequesni (RDBK)

A jumping weevil found on crack willow. Local but much increased since its original discovery in the South-east and should be reassigned Nationally Scarce B status. Found on willows near the railway.


Figure 3: Highlighting the areas where the notable invertebrates were located within the red line boundary

# Conclusions

**4.10** The ditch in the south east corner of the site shows saline influence and grades from S4 Phragmites dominated to areas of S21 Sea Clubrush Swamp to S20 *Schoenoplectus tabernamontanae* swamp. The later supported the RDBK delphacid hopper *Calligypona reyi* and local taxa including *Teratocoris antennatus*. This ditch was considered to be of local importance in terms of the diversity of species and in terms of invertebrates, as well as the swamp habitat, present.

- 4.11 The survey was undertaken late in the season in terms of invertebrate surveying but for the aquatic surveys this is not likely to have a significant effect on the fauna present. The ditches within the remaining site (NS and SW ditch) were considered to have relatively low species diversity especially for mollusca and aquatic beetles.
- 4.12 The terrestrial habitats are likely to produce more species of interest especially in the SE ditch, but much of the grassland is of low value to invertebrates. The exception being the rough ruderal community in the west field, which has numerous nectar sources, which will attract flying insects.

### 5.0 Conclusion

- 5.1 As part of the initial phase 1 survey undertaken by The Ecology Partnership further surveys were commissioned and included water vole surveys and invertebrate surveys. GCN surveys were also recommended as part of the initial assessment.
- 5.2 The water vole survey did not identify any of the ditches supporting signs of water voles. No burrows, runs or feeding remains were recorded within the ditch network within the red line boundary. Ditches present off site were not surveyed as access to the ditch adjacent to the railway line was not possible. It is considered that whilst no evidence of water voles is present on site, a precautionary approach to works within or near the ditch networks is undertaken. It is further recommended that update surveys are undertaken prior to any development on site to ensure that there has been no changes in the status of the ditch networks.
- 5.3 The ditch networks were found to support species such as kingfisher and Cetti's warbler. The kingfisher is 'amber' status and is listed as a Schedule 1 bird on the WCA 1981 as amended and Cetti's warbler is also Schedule 1 listed. As such it is an offence to take, injure or kill a kingfisher or to take, damage or destroy its nest, eggs or young. It is also an offence to intentionally or recklessly disturb the birds close to their nest during the breeding season. It is recommended that any works to the ditch networks are undertaken outside bird nesting season. It is also recommended that ditch networks are maintained and enhanced as part of the scheme.

- 5.4 The surveys along the ditch network identified stickleback using all of the ditch networks. As such it is considered that GCNs would not be present within the ditch network and no further surveys are required. It is considered that the site is not constrained by the presence of GCNs.
- 5.5 Invertebrate surveys were undertaken across the site. Although late in the season for invertebrates, it was considered that the surveys provide a good baseline for the site. The majority of the grassland is considered to be of limited interest to terrestrial invertebrates, whilst the area to the south west is considered likely to provide more interest. Generally the ditch networks were considered to be limited in species diversity. However, several national notable species as well as species which are considered to be local, were identified on site. The ditch in the south east of the site was considered to support a more interesting invertebrate fauna.
- 5.6 It is considered that the site is currently not constrained by the presence of water voles or GCNs. However, the ditch network does support habitat which provides important opportunities for Schedule 1 listed bird species most notably the kingfisher and Cettis warbler, which were both seen on several occasions during the survey period.
- 5.7 The site is classified as lowland grazing marsh and the ditch networks within the site form an important feature of this habitat. The ditches provide habitat for a range of species, including Schedule 1 listed bird species, and as such should be maintained within the scheme.
- 5.8 It is recommended that the ditches are maintained and enhanced within the proposals, providing and maintaining green corridors through the site and across the site, allowing species to persist and move through the site. Ecological buffers should also be maintained on either side of the network ensuring that an ecotone between development and ditches, and as such provision of varying habitats, is maintained within the scheme.

# 6.0 **REFERENCES**

Ball, S.G. (1994) RECORDER 3.2. Peterborough. JNCC.

Brooks, S.J. 1993. Joint Committee for the Conservation of British Invertebrates: Guidelines for Invertebrate Surveys. *British Wildlife*, 4(5) 283-287

English Nature (2001). Great Crested Newt Mitigation Guidelines. http://www.naturalengland.org.uk

Harvey, P.R., Nellist, D.R. & Telfer, M.G. (eds) 2002. *Provisional Atlas of British Spiders* (Arachnida, Araneae) Volumes 1 & 2. Huntingdon: BRC.

Hyman, P.S & Parsons, M.S. 1992. *A review of the scarce and threatened Coleoptera of Great Britain*. Part 1. JNCC, Peterborough.

Kirby, P. 1992a. A review of the scarce and threatened Hemiptera of Great Britain. Peterborough, JNCC.

Kirby, P. 1992b. Habitat Management for invertebrates. RSPB

Merrit, P. 1990. A review of the Nationally Notable Spiders of Great Britain. Peterborough, NCC.

Natural England (2008) *Water Voles – The Law in Practice: Guidance for Planners and Developers.* http://www.naturalengland.org.uk

### APPENDIX 1. STATUS CATEGORIES FOR RARE AND UNCOMMON TAXA

#### Red Data Book Category 3 (RDB 3) - Rare

# Definition.

Taxa with small populations *in Great Britain* that are not at present endangered or vulnerable, but are at risk.

These taxa are usually localised within restricted geographical areas or habitats or are thinly scattered over a more extensive range.

### Criterion.

Species which are estimated to exist in only fifteen or fewer 10 km squares. *This criterion may be relaxed where populations are likely to exist in over fifteen 10 km squares but occupy small areas of especially vulnerable habitat* 

### Red Data Book Category K (RDB K) - Insufficiently Known

### Definition.

Taxa in Great Britain that are suspected, but not definitely known, to belong to any of the above categories, because of lack of information.

### Criteria.

Taxa recently discovered or recognised in Great Britain which may prove to be more widespread in the future.

Taxa with very few or perhaps only a single known locality but which belong to poorly recorded or taxonomically difficult groups.

Species known from very few localities but which occur in inaccessible habitats or habitats which are seldom sampled.

Species with very few or perhaps only a single known locality and of questionable native status, but not clearly falling into the category of recent colonist, vagrant or introduction.

#### Nationally Scarce Category A - Notable A (Na)

### Definition.

Taxa which do not fall within **RDB** categories but which are none-the-less uncommon in Great Britain and are thought to occur in 30 or fewer 10 km squares of the National Grid or, for less well recorded groups, within seven or fewer vice-counties.

#### Nationally Scarce Category B - Notable B (Nb)

### Definition.

Taxa which do not fall within **RDB** categories but which are none-the-less uncommon in Great Britain and are thought to occur in between 31 and 100 10 km squares of the National Grid or, for less well recorded groups, within eight and twenty vice-counties.

### Nationally Scarce - Notable (N)

# Definition.

Taxa which do not fall within **RDB** categories but which are none-the-less uncommon in Great Britain and are thought to occur in between 16 to 100 10 km squares of the National Grid. Species within this category are often too poorly known for their status to be more precisely estimated.

#### Local

# Definition

Species which are not Nationally Notable or rare but which are restricted in distribution. e.g. Species widespread in Southern England but absent from Northern England and Scotland

The species list uses the statuses from the most recent version of Recorder.

|           |                   |                        |                      |           | W-E ditch | N-S Ditch | S20/21 ditch | grassland | hedgerows |
|-----------|-------------------|------------------------|----------------------|-----------|-----------|-----------|--------------|-----------|-----------|
| Mollusca  | Physidae          | Physa fontinalis       | common bladder snail | common    | 1         | 1         |              |           |           |
| Mollusca  | Planorbidae       | Lymnaea peregra        | wandering snail      | common    | 1         | 1         |              |           |           |
| Mollusca  | Discidae          | Discus rotundatus      | Rounded snail        | common    |           |           |              | 1         |           |
| Mollusca  | Agriolimacidae    | Deroceras reticulatum  | Field slug           | common    |           |           |              | 1         |           |
| Mollusca  | Cochlicellidae    | Cochlicella acuta      | Point Snail          | local     |           |           |              | 1         |           |
| Mollusca  | Helicidae         | Monacha cantiana       | Kentish snail        | common    |           |           |              | 1         |           |
| Mollusca  | Helicidae         | Cepaea hortensis       | Whie-lipped snail    | common    |           |           |              | 1         |           |
| Mollusca  | Helicidae         | Cepaea nemoralis       | Black-lipped snail   | common    |           |           |              | 1         |           |
| Mollusca  | Helicidae         | Cernuella virgata      | Striped Snail        | common    |           |           |              | 1         |           |
| Chilopoda | Lithobiidae       | Lithobius forficatus   | a centipede          | common    |           |           |              | 1         |           |
| Isopoda   | Philosciidae      | Philoscia muscorum     | a woodlouse          | common    |           |           |              | 1         |           |
| Isopoda   | Armadilliidae     | Armadillium vulgare    | a pill woodlouse     | common    |           |           |              | 1         |           |
| Isopoda   | Porcellionidae    | Porcellio scaber       | a woodlouse          | common    |           |           |              | 1         |           |
| Araneae   | Dysderidae        | Harpactea hombergi     | a spider             | common    |           |           |              |           | 1         |
| Araneae   | Theridiidae       | Paidiscura pallens     | a comb-footed spider | common    |           |           |              |           | 1         |
| Araneae   | Theridiidae       | Enoplognatha ovata     | a comb-footed spider | common    |           |           |              | 1         | 1         |
| Araneae   | Theridiosomatidae | Therdiosoam gemmosum   | Ray Spider           | Notable B |           |           | 1            |           |           |
| Araneae   | Linyphyiidae      | Hypomma bituberculatum | a money spider       | common    | 1         | 1         |              |           |           |
| Araneae   | Linyphyiidae      | Erigone dentipalpis    | a money spider       | common    |           |           |              | 1         |           |
| Araneae   | Linyphyiidae      | Linyphia triangularis  | a money spider       | common    | 1         | 1         | 1            | 1         | 1         |
| Araneae   | Tetragnathidae    | Tetragnatha extensa    | a spider             | common    | 1         | 1         | 1            | 1         | 1         |
| Araneae   | Tetragnathidae    | Tetragnatha montana    | a spider             | common    |           |           |              |           | 1         |
| Araneae   | Tetragnathidae    | Pachygnatha clercki    | a spider             | common    |           |           |              | 1         | 1         |
| Araneae   | Tetragnathidae    | Metellina segmentata   | a spider             | common    |           |           |              | 1         | 1         |
| Araneae   | Araneidae         | Argiope bruennichi     | Wasp Spider          | Notable   |           |           |              | 1         |           |
| Araneae   | Araneidae         | Araneus diadematus     | garden spider        | common    |           |           | 1            | 1         | 1         |
| Araneae   | Araneidae         | Larinioides cornutus   | an orb weaver        | common    | 1         | 1         | 1            |           |           |

|             |               |                           |                       |           | 1 |   |   |   |   |
|-------------|---------------|---------------------------|-----------------------|-----------|---|---|---|---|---|
| Araneae     | Araneidae     | Nuctenea umbratica        | an orb weaver         | common    |   |   |   |   | 1 |
| Araneae     | Araneidae     | Steatoda bipunctata       | an orb weaver         | common    |   |   |   |   | 1 |
| Araneae     | Lycosidae     | Pardosa prativaga         | a wolf spider         | common    |   |   |   | 1 |   |
| Araneae     | Lycosidae     | Pirata piraticus          | a wolf spider         | common    | 1 | 1 | 1 |   |   |
| Araneae     | Pisauridae    | Pisaura mirabilis         | Nursery tent spider   | common    |   |   |   | 1 | 1 |
| Araneae     | Amaurobiidae  | Amaurobius fenestralis    | a spider              | common    |   |   |   |   | 1 |
| Araneae     | Clubionidae   | Clubiona phragmitis       | a foliage spider      | common    | 1 | 1 | 1 |   |   |
| Araneae     | Clubionidae   | Clubiona lutescens        | a foliage spider      | common    |   |   |   |   | 1 |
| Araneae     | Philodromidae | Philodromus dispar        | a running crab spider | common    |   |   |   |   | 1 |
| Araneae     | Philodromidae | Tibellus oblongus         | a running crab spider | local     |   |   |   | 1 |   |
| Araneae     | Thomisidae    | Xysticus cristatus        | a crab spider         | common    |   |   |   | 1 |   |
| Araneae     | Thomisidae    | Xysticus lanio            | a crab spider         | common    |   |   |   |   | 1 |
| Opiliones   | Phalangiidae  | Dicranopalpus ramosus     | a harvestman          | common    |   |   |   |   | 1 |
| Opiliones   | Phalangiidae  | Leiobunum rotundum        | a harvestman          | common    |   |   |   |   |   |
| Odonata     | Coenagriidae  | Pyrrhosoma nymphula       | Large red damsel      | common    | 1 |   |   |   |   |
| Odonata     | Coenagriidae  | Enallagma cyathigerum     | Common-blue damsel    | common    | 1 |   |   |   |   |
| Odonata     | Aeshnidae     | Aeshna mixta              | Migrant Hawker        | common    | 1 |   |   |   | 1 |
| Odonata     | Libellulidae  | Sympetrum striolatum      | common darter         | common    |   |   |   |   |   |
| Orthoptera  | Tettigoniidae | Metrioptera roeselii      | Roesel's Bush-cricket | common    |   |   |   | 1 |   |
| Orthoptera  | Tettigoniidae | Pholidoptera griseoaptera | Dark Bush-cricket     | common    |   |   |   |   | 1 |
| Orthoptera  | Tettigoniidae | Conocephalus discolor     | Long-winged Conehead  | common    |   |   |   | 1 |   |
| Orthoptera  | Tettigoniidae | Conocephalus dorsalis     | Short-winged Conehead | Notable B |   |   | 1 |   |   |
| Orthoptera  | Acridiidae    | Chorthippus brunneus      | Field Grasshopper     | common    |   |   |   | 1 |   |
| Orthoptera  | Acridiidae    | Chorthippus parallelus    | Meadow Grasshopper    | common    |   |   |   | 1 |   |
| Dermaptera  | Forficulidae  | Forficula auricularia     | common earwig         | common    |   |   |   | 1 |   |
| Dermaptera  | Forficulidae  | Forficula lesnei          | Lesnei's earwig       | Notable B |   |   |   |   | 1 |
| Heteroptera | Gerridae      | Gerris lacustris          | Common pond skater    | common    | 1 | 1 |   |   |   |
| Heteroptera | Notonectidae  | Notonecta glauca          | a water boatman       | common    | 1 | 1 |   |   |   |
| Heteroptera | Notonectidae  | Notonecta viridis         | a water boatman       | common    | 1 | 1 |   |   |   |
| Heteroptera | Corixidae     | Corixa panzeri            | a corixid bug         | local     | 1 | 1 |   |   |   |
| Heteroptera | Corixidae     | Corixa punctata           | a corixid bug         | common    | 1 | 1 |   |   |   |
| Heteroptera | Corixidae     | Sigara dorsalis           | a corixid bug         | common    | 1 | 1 |   |   |   |

| Heteroptera | Corixidae        | Sigara fossarum           | a corixid bug           | common | 1 | 1 |   |   |   |
|-------------|------------------|---------------------------|-------------------------|--------|---|---|---|---|---|
| Heteroptera | Saldududae       | Saldula saltatoria        | common shore bug        | common |   |   | 1 |   |   |
| Heteroptera | Acanthosomatidae | Acanthosoma haemorhoidale | hawthorn shield bug     | common |   |   |   |   | 1 |
| Heteroptera | Pentatomidae     | Palomena prasina          | common green shield bug | common |   |   |   |   | 1 |
| Heteroptera | Pentatomidae     | Dolycoris baccarum        | Sloe bug                | common |   |   |   |   | 1 |
| Heteroptera | Pentatomidae     | Eurydema oleracea         | Brassica Bug            | common |   |   |   | 1 |   |
| Heteroptera | Pentatomidae     | Podops inuncta            | Turtle Bug              | common |   |   |   | 1 |   |
| Heteroptera | Lygaeidae        | Ischnodemus sabuleti      | chinch bug              | common |   | 1 | 1 | 1 |   |
| Heteroptera | Miridae          | Megalocoleus tanaceti     | Tansy Plantbug          | common |   |   |   | 1 |   |
| Heteroptera | Miridae          | Megalocoleus molliculus   | Yarrow Plantbug         | common |   |   |   | 1 |   |
| Heteroptera | Miridae          | Orthotylus flavosparsus   | a plantbug              | common |   |   |   | 1 |   |
| Heteroptera | Miridae          | Orthotylus marginalis     | a plantbug              | common |   |   |   |   | 1 |
| Heteroptera | Miridae          | Phytocoris varipes        | a plantbug              | common |   |   |   | 1 |   |
| Heteroptera | Miridae          | Teratocoris antennatus    | a plantbug              | local  |   |   | 1 |   |   |
| Heteroptera | Miridae          | Lygus rugilipennis        | Tarnished plant bug     | common |   |   |   | 1 |   |
| Heteroptera | Miridae          | Notostira elongata        | a grassbug              | common |   |   |   | 1 |   |
| Heteroptera | Miridae          | Leptoterna dolobrata      | Meadow plantbug         | common |   |   |   | 1 |   |
| Heteroptera | Nabidae          | Nabis rugosus             | common damselbug        | common |   |   |   | 1 |   |
| Heteroptera | Anthocoridae     | Anthocoris confusus       | an anthocorid bug       | common |   |   |   | 1 |   |
| Heteroptera | Anthocoridae     | Anthocoris nemoralis      | an anthocorid bug       | common |   |   |   | 1 | 1 |
| Heteroptera | Anthocoridae     | Orius majusculus          | an anthocorid bug       | common |   |   |   |   |   |
| Homoptera   | Cercopidae       | Aphrophora alni           | a froghopper            | common |   |   |   |   | 1 |
| Homoptera   | Cercopidae       | Philaenus spumarius       | Common Froghopper       | common |   |   |   | 1 |   |
| Homoptera   | Cicadellidae     | Aphrodes makorovi         | a leafhopper            | common |   |   |   | 1 |   |
| Homoptera   | Cicadellidae     | Macustus grisescens       | a leafhopper            | common |   |   | 1 |   |   |
| Homoptera   | Cicadellidae     | Opsius stactogalus        | Tamarisk Hopper         | local  |   |   |   |   | 1 |
| Homoptera   | Cicadellidae     | Arhaldeus pascuellus      | a leafhopper            | common |   |   |   | 1 |   |
| Homoptera   | Cicadellidae     | Euptyeryx                 | a leafhopper            | common |   |   |   | 1 |   |
| Homoptera   | Cicadellidae     | Empoasca vitis            | a leafhopper            | common |   |   |   | 1 |   |
| Homoptera   | Delphacidae      | Delphax pulchellus        | reed hopper             | local  |   |   | 1 |   |   |
| Homoptera   | Delphacidae      | Calligypona reyi          | a delphacid hopper      | RDBK   |   |   | 1 |   |   |
| Psocoptera  | Caeciliusidae    | Valenzuela atricornis     | a bark louse            | local  |   |   | 1 |   |   |

| Lonidentera | Nontigulidas  | Stigmalla aurolla      | a micro moth         | 00000000 |   |   |   |   | 1 |
|-------------|---------------|------------------------|----------------------|----------|---|---|---|---|---|
| Lepidoptera | Nepticulidae  | Sugmella aurella       | a micro-moth         | common   |   |   |   |   | 1 |
| Lepidoptera | Nepticulidae  | Stigmella crataegella  | a micro-moth         | common   |   |   |   |   | 1 |
| Lepidoptera | Choreutidae   | Anthophila fabriciana  | a micro-moth         | common   |   |   |   | 1 |   |
| Lepidoptera | Pterophoridae | Emmeti mondactyla      | common plume moth    | c        |   |   |   | 1 |   |
| Lepidoptera | Nymphalidae   | Inachis io             | Peacock              | common   |   |   |   | 1 | 1 |
| Lepidoptera | Nymphalidae   | Vanessa atalanta       | Red Admiral          | common   |   |   |   | 1 | 1 |
| Lepidoptera | Nymphalidae   | Polygonia c-album      | Comma                | common   |   |   |   | 1 |   |
| Lepidoptera | Pieridae      | Pieris brassicae       | Large White          | common   |   |   |   | 1 |   |
| Lepidoptera | Pieridae      | Pieris rapae           | Small white          | common   |   |   |   | 1 |   |
| Lepidoptera | Satyridae     | Pararge aegeria        | Speckled Wood        | common   |   |   |   |   | 1 |
| Lepidoptera | Satyridae     | Maniola jurtina        | Meadow Brown         | common   |   |   |   | 1 |   |
| Lepidoptera | Geometridae   | Camptogramma bilineata | Yellow Shell         | common   |   |   |   | 1 |   |
| Lepidoptera | Noctuidae     | Autographa gamma       | Silver Y             | Migrant  |   |   |   | 1 |   |
| Diptera     | Tipulidae     | Tipula paludosa        | a cranefly           | common   |   |   |   | 1 |   |
| Diptera     | Stratiomyidae | Chorisops tibialis     | a soldier fly        | common   |   |   |   |   | 1 |
| Diptera     | Stratiomyidae | Pachygaster atra       | a soldier fly        | common   |   |   |   |   |   |
| Diptera     | Asilidae      | Machimus atricapillus  | a robber fly         | common   |   |   |   | 1 |   |
| Diptera     | Syrphidae     | Episyrphus balteatus   | marmalade hoverfly   | common   |   |   |   | 1 |   |
| Diptera     | Syrphidae     | Eristalis pertinax     | a hoverfly           | common   |   |   |   | 1 |   |
| Diptera     | Syrphidae     | Eupeodes corollae      | a hoverfly           | common   |   |   |   | 1 | 1 |
| Diptera     | Syrphidae     | Helophilus pendulus    | a hoverfly           | common   | 1 | 1 | 1 | 1 |   |
| Diptera     | Syrphidae     | Melanostoma scalare    | a hoverfly           | common   |   |   |   | 1 |   |
| Diptera     | Syrphidae     | Platycheirus albimanus | a hoverfly           | common   |   |   |   | 1 |   |
| Diptera     | Syrphidae     | Sphaerophoria scripta  | a hoverfly           | common   |   |   |   | 1 |   |
| Diptera     | Syrphidae     | Syritta pipiens        | a hoverfly           | common   |   |   |   | 1 |   |
| Diptera     | Syrphidae     | Syrphus ribesii        | a hoverfly           | common   |   |   |   | 1 |   |
| Diptera     | Syrphidae     | Syrphus vitripennis    | a hoverfly           | common   |   |   |   | 1 |   |
| Diptera     | Tephritidae   | Anomoia permunda       | a picture winged fly | common   |   |   |   | 1 | 1 |
| Diptera     | Tephritidae   | Terrellia serratulae   | a picture winged fly | common   |   |   |   | 1 |   |
| Diptera     | Tephritidae   | Tephritis neesii       | a picture winged fly | common   |   |   |   | 1 |   |
| Diptera     | Tephritidae   | Urophora cardui        | a picture winged fly | common   |   |   |   | 1 |   |
| Diptera     | Sciomyzidae   | Pherbellia schoenherri | A snail killing fly  | common   |   |   | 1 | 1 |   |

| Diptera     | Sciomyzidae    | Tetanocera arrogans        | A snail killing fly | local  |   |   | 1 |   |   |
|-------------|----------------|----------------------------|---------------------|--------|---|---|---|---|---|
| Diptera     | Opomyzidae     | Geomyza tripunctata        | a fly               |        | 1 | 1 |   | 1 |   |
| Diptera     | Opomyzidae     | Opomyza germinationis      | a fly               | common |   |   |   | 1 |   |
| Diptera     | Sarcophagidae  | Sarcophaga carnaria        | flesh fly           | common |   |   |   | 1 |   |
| Diptera     | Muscidae       | Mesembrina meridiana       | a fly               | common |   |   |   | 1 |   |
| Diptera     | Tachinidae     | Gymnochaeta viridis        | a tachinid fly      | common |   |   |   |   | 1 |
| Diptera     | Tachinidae     | Eriothrix rufomaculatus    | a tachinid fly      | common |   |   |   | 1 |   |
| Diptera     | Tachinidae     | Siphona geniculata         | a tachinid fly      | common |   |   |   | 1 |   |
| Hymenoptera | Formicidae     | Lasius niger               | an ant              | common |   |   |   | 1 |   |
| Hymenoptera | Formicidae     | Lasius platythorax         | an ant              | common |   |   |   |   |   |
| Hymenoptera | Formicidae     | Myrmica ruginodis          | an ant              | common |   |   |   |   | 1 |
| Hymenoptera | Vespidae       | Vespula vulgaris           | common wasp         | common |   |   |   | 1 | 1 |
| Hymenoptera | Apidae         | Lasioglossum leucozonium   | a solitary bee      | common |   |   |   | 1 |   |
| Hymenoptera | Apidae         | Bombus lapidarius          | a bumblebee         | common |   |   |   |   |   |
| Hymenoptera | Apidae         | Bombus pascuorum           | a bumblebee         | common |   |   |   | 1 |   |
| Hymenoptera | Apidae         | Bombus pratorum sens. Lato | a bumblebee         | common |   |   |   | 1 |   |
| Hymenoptera | Apidae         | Bombus terrestris          | a bumblebee         | common |   |   |   |   |   |
| Hymenoptera | Apidae         | Apis mellifera             | hive bee            | common |   |   |   |   |   |
| Hymenoptera | tenthridinidae | Athalia rosae              | a sawfly            | common |   |   |   | 1 |   |
| Coleoptera  | Gyrinidae      | Gyrinus caspius            | a whirlygig         | local  | 1 | 1 |   |   |   |
| Coleoptera  | Carabidae      | Nebria brevicollis         | a ground beetle     | common |   |   |   | 1 |   |
| Coleoptera  | Carabidae      | Harpalus affinis           | a ground beetle     | common |   |   |   | 1 |   |
| Coleoptera  | Carabidae      | Pterostichus madidus       | Black-clock         | common |   |   |   | 1 |   |
| Coleoptera  | Carabidae      | Demetrius atricapillus     | a ground beetle     | common |   |   |   | 1 |   |
| Coleoptera  | Carabidae      | Paradromius linearis       | a ground beetle     | common | 1 |   |   |   |   |
| Coleoptera  | Haliplidae     | Haliplus immaculatus       | a haliplid beetle   | common | 1 | 1 |   |   |   |
| Coleoptera  | Haliplidae     | Haliplus lineatocollis     | a haliplid beetle   | common | 1 | 1 |   |   |   |
| Coleoptera  | Noteridae      | Noterus clavicornis        | the larger Noterus  | common | 1 | 1 |   |   |   |
| Coleoptera  | Hydrophilidae  | Anacaena bipustulata       | a water beetle      | local  | 1 | 1 |   |   |   |
| Coleoptera  | Hydraenidae    | Ochthebius minimus         | a water beetle      | common | 1 |   |   |   |   |
| Coleoptera  | Histeridae     | Kissister minima           | a hister beetle     | common |   |   |   | 1 |   |
| Coleoptera  | Staphylinidae  | Cypha longicornis          | a rove beetle       | common |   |   |   | 1 |   |

| Coleoptera | Staphylinidae | Tachinus signatus         | a rove beetle       | common      |  |   | 1 |   |
|------------|---------------|---------------------------|---------------------|-------------|--|---|---|---|
| Coleoptera | Staphylinidae | Drusilla canaliculata     | a rove beetle       | common      |  |   | 1 |   |
| Coleoptera | Staphylinidae | Stenus brunnipes          | a camphor beetle    | common      |  |   | 1 |   |
| Coleoptera | Staphylinidae | Stenus clavicornis        | a camphor beetle    | common      |  |   | 1 |   |
| Coleoptera | Staphylinidae | Paederus littoralis       | a rove beetle       | common      |  |   | 1 |   |
| Coleoptera | Staphylinidae | Paederus riparius         | a rove beetle       | common      |  | 1 |   |   |
| Coleoptera | Staphylinidae | Ocypus olens              | Devil's Coach horse | common      |  |   |   |   |
| Coleoptera | Staphylinidae | Xantholinus linearus      | a rove beetle       | common      |  |   | 1 |   |
| Coleoptera | Cantharidae   | Cantharis cryptica        | a soldier beetle    | common      |  |   |   | 1 |
| Coleoptera | Cantharidae   | Rhagonycha fulva          | a soldier beetle    | common      |  |   | 1 |   |
| Coleoptera | Nitidulidae   | Bracypterus urticae       | a pollen beetle     | common      |  |   | 1 |   |
| Coleoptera | Nitidulidae   | Meligethes aeneus         | a nitidulid beetle  | common      |  |   | 1 |   |
| Coleoptera | Coccinellidae | Hippodamia variegata      | Adonis ladybird     | local       |  |   | 1 |   |
| Coleoptera | Coccinellidae | Subcoccinella 24-punctata | a ladybird          | common      |  |   | 1 |   |
| Coleoptera | Coccinellidae | Rhizobius litura          | a ladybird          | common      |  |   | 1 |   |
| Coleoptera | Coccinellidae | Tytthaspis 16-punctata    | 16-spot ladybird    | common      |  |   | 1 | 1 |
| Coleoptera | Coccinellidae | Coccinella 7-punctata     | 7 spot ladybird     | common      |  |   | 1 | 1 |
| Coleoptera | Coccinellidae | Harmonia axydris          | Harlequin Ladybird  | naturalized |  |   | 1 | 1 |
| Coleoptera | Coccinellidae | Propylea 14-punctata      | 14-spot ladybird    | common      |  |   | 1 | 1 |
| Coleoptera | Scraptidae    | Anaspis maculata          | a scraptid beetle   | common      |  |   | 1 | 1 |
| Coleoptera | Oedemeridae   | Oedemera lurida           | an oedemrid beetle  | common      |  |   | 1 |   |
| Coleoptera | Chrysomelidae | Phratora laticollis       | a leaf beetle       | common      |  |   |   | 1 |
| Coleoptera | Chrysomelidae | Aphthona euphorbiae       | a leaf beetle       | common      |  |   |   | 1 |
| Coleoptera | Chrysomelidae | Longitarsus pellucidus    | a leaf beetle       | common      |  |   | 1 |   |
| Coleoptera | Chrysomelidae | Longitarsus suturellus    | a leaf beetle       | common      |  |   | 1 |   |
| Coleoptera | Chrysomelidae | Psylloides affinis        | a flea beetle       | common      |  |   | 1 |   |
| Coleoptera | Apionidae     | Oxystoma pomonae          | an apionid weevil   | common      |  |   | 1 |   |
| Coleoptera | Apionidae     | Ischnopterapion virens    | an apionid weevil   | common      |  |   | 1 |   |
| Coleoptera | Apionidae     | Protapion fulvipes        | an apionid weevil   | common      |  |   | 1 |   |
| Coleoptera | Apionidae     | Malvapion malvae          | an apionid weevil   | common      |  |   | 1 |   |
| Coleoptera | Apionidae     | Aspidapion aeneum         | an apionid weevil   | common      |  |   | 1 |   |
| Coleoptera | Apionidae     | Aspidapion radiolus       | an apionid weevil   | common      |  |   | 1 |   |

| Coleoptera | Curculionidae | Isochnus sequesni       | a jumping weevil | Notable |  |   | 1 |
|------------|---------------|-------------------------|------------------|---------|--|---|---|
| Coleoptera | Curculionidae | Archarius salicivorus   | a weevil         | common  |  |   | 1 |
| Coleoptera | Curculionidae | Nedyus quadrimaculatus  | a weevil         | common  |  | 1 |   |
| Coleoptera | Curculionidae | Rhinoncus inconspectus  | a weevil         | local   |  | 1 |   |
| Coleoptera | Curculionidae | Rhinoncus pericarpius   | a weevil         | common  |  | 1 |   |
| Coleoptera | Curculionidae | Anthonomus pedicularius | a weevil         | common  |  |   | 1 |
| Coleoptera | Curculionidae | Gymnetron pascuorum     | a weevil         | common  |  | 1 |   |
| Coleoptera | Curculionidae | Sitona lineatus         | a weevil         | common  |  | 1 |   |
| Coleoptera | Curculionidae | Sitona hispidulus       | a weevil         | common  |  | 1 |   |

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