

The



Ecology Consultancy

NE Hasler / Preliminary Ecological Appraisal / **Report for Sheelis Flynn** on behalf of **Adur DC**



**Land North-East of the Hasler Estate,
 Lancing, West Sussex**
 Preliminary Ecological Appraisal
Report for Sheils Flynn
 on behalf of Adur District Council

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Executive Summary

The Ecology Consultancy was commissioned by Sheils Flynn on behalf of Adur District Council to carry out a Preliminary Ecological Appraisal (PEA) of land north-west of the Hasler Estate on the edge of Lancing in West Sussex. This assessment is part of the landscape and ecological survey of potential strategic allocations within Adur District being carried out by Sheils Flynn for the Council's emerging Local Plan.

A PEA, including protected species risk assessment, was carried out on the 07th August 2012 and the main findings are as follows:

- The site supports 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 is not subject to any statutory or non-statutory nature conservation designations. The nearest statutory (and non-statutory) designated nature conservation site is Widewater Lagoon Local Nature Reserve and Site of Nature Conservation Importance, located 0.05km to the south of the site.
- The nearest statutory designated site for nature conservation is Adur Estuary Site of Special Scientific interest (SSSI), which is contiguous with on-site water bodies via EA flood control gates adjacent to the south-east boundary of the site.
- Adur Estuary SSSI is designated for its estuarine plant communities and intertidal mudflats that support nationally significant populations of wading birds. It receives legal protection under the Wildlife and Countryside Act 1981 as updated by the CROW Act 2000 and NERC Act 2006 and any direct or indirect impact on this SSSI, or the species for which it is designated, as a result of development should therefore be avoided. The most likely constraints are disturbance to wading birds during construction and operational phases, and contamination of the river.
- The proximity of the development to the SSSI is likely to trigger the requirement for an Environmental Impact Assessment and a screening opinion should be sought from the Local Planning Authority.
- Overall, and on the basis of the PEA site is considered to be of ecological value of at least a district level. Features of highest ecological value 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.
- It is strongly recommended that, where possible, construction works that may result in the loss of, or other impacts on, the grazing marsh and network of ditches/streams (and their associated riparian habitat) is avoided. These habitats should be retained and protected, except where loss is unavoidable, and only after an appropriate programme of mitigation, compensation and enhancement has been put in place. It is highly likely that any development of floodplain grazing marsh would require further studies to determine its hydrological value in terms of flood storage.
 - Reed bed is the only other UK BAP priority habitats present on-site. Due to its limited extent it is not considered to be an outstanding example of its type and is of local importance only.
 - All other remaining habitats comprised buildings, bare ground, ephemeral short/perennial vegetation, amenity grassland, tall ruderal vegetation, introduced shrub, non-native and mixed hedgerows, scattered trees and scrub are common and widespread habitats within the locality. They are considered to be of ecological value within the immediate vicinity of the site.
 - A range of UK BAP habitats/species are present or have potential to be present within the site. BAP habitats/species are not necessarily rare but under NPPF (2012) and the Natural Environment and Rural Communities (NERC) Act 2006 are all of principal importance for the conservation of biodiversity and are of material consideration in the planning process. None of the BAP habitats or populations of BAP species currently known to be present on-site are considered as notable or exceptional examples of their type.
 - The site may also provide an important secondary and supporting role to the network of ecological receptors surrounding it, primarily by providing wildlife corridors for a range of mobile species such as bats, birds, invertebrates, badgers, grass snake and small mammals. These species may commute both within the site and across the urban-rural

fringe into Lancing Strategic Gap, north towards the South Downs National Park and east towards the River Adur.

- On-site habitats have potential to support a range of protected, rare/notable and BAP species. Further surveys are 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. Details on further surveys, along with mitigation measures to minimise any adverse impacts on retained woodland/tree habitat, breeding birds, the network of ditches/streams and through the use of artificial lighting and accidental spreading of invasive plant species are presented in Section 5 of this report.
- The potential development of the site presents opportunities to improve it for wildlife; ecological considerations should be an integral part of masterplanning. Proposals for compensation and enhancement measures are provided in Section 5 of this report. These include, amongst other things, the use of Sustainable Drainage Systems including ponds and biodiverse green roofs, tree/scrub/hedgerow planting, landscape planting of recognised wildlife value, and artificial nesting/roosting opportunities for birds and bats.

1 Introduction

BACKGROUND

- 1.1 The Ecology Consultancy was commissioned by Sheils Flynn on behalf of Adur District Council (ADC) to prepare a Preliminary Ecological Appraisal (PEA) of land north-east of the Hasler Estate on the edge of Lancing in West Sussex. This report forms part of the landscape and ecological survey of potential strategic allocations within Adur District being carried out by Sheils Flynn for the Council's emerging Local Plan.
- 1.2 The draft version of the Local Plan proposes two alternative housing targets, a number of different spatial options for new greenfield housing, identifies key employment sites, and a 'broad location' for mixed use development at Shoreham Harbour. There are a number of place based policies and development management policies. Consultation on the Local Plan will be undertaken 2012-2013 with adoption in 2014.
- 1.3 The six sites being considered for potential strategic allocations are as follows:
- Shoreham Airport
 - Sompting North
 - Sompting Fringe
 - New Monk's Farm
 - Land North-west of Hasler Estate
 - Land North-east of Hasler Estate
- 1.4 All six sites are located within 'Strategic Gaps'¹ and have been assessed in regards to potential development impacts on landscape features, landscape character and ecological value. A stand-alone PEA for each of these sites has been produced by The

¹ Strategic Gaps are identified by Local Planning Authorities (LPAs) in their development documents as strategic areas of green field land which define and maintain the separate identity of a Borough/District's settlements. Both Sompting and Lancing Strategic Gaps are protected under the Strategic Gap policy (AC4) of Adur's adopted Local Plan (2006). They are referred to as Local Green Gaps in the emerging Local Plan. Due to the scale of government development targets it is highly likely that these areas will need to be redefined. This presents an opportunity to create new urban edges where masterplanning encourages a well designed built form and the provision of green infrastructure such as wildlife habitats, buffer zones and improved access to natural green space. They are referred to as Local Green Gaps in the emerging Local Plan.

Ecology Consultancy, with Landscape Assessments for each site produced by Sheils Flynn.

- 1.5 The ecology and landscape assessments have been combined to produce the *Landscape and Ecological Surveys of Key Sites within the Adur District Report* (Sheils Flynn, 2012), which should be read in conjunction with this PEA. This combined report uses the findings of both assessments to put forward indicative development principles for each of the potential allocations sites, including ecological opportunity and constraints mapping.

SCOPE OF REPORT

- 1.6 This report is based on a desk-top study and field survey using standard Phase 1 survey methodology (JNCC, 2010). This approach is designed to identify the broad habitat types present, to assess the potential of habitats to support protected species and to assist in providing an overview of the ecological interest at a site. It is generally the most widely used and professionally recognised method for initial ecological site appraisal.

SITE CONTEXT AND STATUS

- 1.7 This potential strategic allocation site is situated in Lancing Strategic Gap, south-east of Lancing and north of the Shoreham Beach area. The National Grid Reference for the centre of the site is TQ 203 047 and it includes an area of 38.39 hectares (ha).
- 1.8 The west boundary is broadly delimited by Broadway Park, allotments, and East Lancing Recreation Ground accessed off Orient Road. The north-west corner of the site is continuous with farmland; the embankment of the Main South Coast Railway Land forms the northern boundary. Adur Recreation Ground and Adur Estuary Site of Scientific Special Interest (SSSI) form the east boundary. The southern boundary is delimited by Brighton Road (A259), Saltings Roundabout and housing off Swallow Close, Wenceling Cottages and Adur Close.
- 1.9 New Salt's Farm Road and connected properties/businesses such as Blandford Cottage, New Salts Farm and Old Farm Court run through the centre of the site from the A259 (Saltings Roundabout), northwards under the Main South Coast Railway Line, to join with Cecil Pashley Way at Shoreham Airport. A complex of buildings at The Dog's Trust is situated midway along the east boundary, accessible via a road joining the A259.

- 1.10 South-east of the Dog's Trust is an Environment Agency (EA) flood control gate, receiving water from the site and the tidal pool section of Adur Estuary SSSI to the east. Adur Estuary SSSI is a statutorily designated nature conservation site including a Royal Society for the Protection of Birds (RSPB) reserve.

Table 1: Adur Estuary SSSI

Citation Summary
<p>The Adur Estuary, together with Rye Harbour further to the east, represent the only significant areas of salt marsh between Chichester and Pagham Harbours (West Sussex) and Sandwich Bay (Kent). The estuarine plant communities are unusual due to the relative scarcity of cord-grass <i>Spartina</i> spp. The large area of intertidal mudflats are important for a variety of wading birds.</p> <p>Salt marsh plants fringe most of the estuary and in places have colonised large areas of mudflats. Sea purslane <i>Halimione portaculoides</i> dominates most of the areas above mean high water mark and annual seablight <i>Suaeda maritima</i> is also frequent in these areas. Towards the mean low water mark, glasswort <i>Salicornia</i> sp. is dominant and sea aster <i>Aster tripolium</i> abundant. Other species are scattered throughout the salt marsh community, including common sea lavender <i>Limonium vulgare</i>, thrift <i>Armeria maritima</i>, sea plantain <i>Plantago maritima</i> and sea poa grass <i>Puccinellia maritima</i>. Cord grass <i>Spartina</i> spp. is noticeably absent from most of the estuary, but a small stand is present south-east of Old Shoreham Bridge. At the landward margin of the salt marsh a variety of herbs and shrubs are frequent, including mugwort <i>Artemisia vulgaris</i>, orache <i>Atriplex</i> spp., teasel <i>Dipsacus fullonum</i>, yarrow <i>Achillea millefolium</i> and elm <i>Ulmus procera</i>.</p> <p>The intertidal mudflats support a number of wading birds, particularly redshank <i>Tringa tetanus</i>, dunlin <i>Calidris alpina</i> and ringed plover <i>Charadrius hiaticula</i>. 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 reed bed adjacent to the estuary north of the A27, including moorhen <i>Gallinula chloropus</i>, reed warbler <i>Acrocephalus scirpaceus</i> and sedge warbler <i>Acrocephalus schoenobaenus</i>. The estuary embankment near the car park supports a large colony of common lizard <i>Zootoca vivipara</i>.</p>

DESCRIPTION OF THE PROPOSALS

- 1.11 Significant further work is required to assess the acceptability of this site. This site is not included as a potential housing allocation identified in the Adur Draft Local Plan, but has been assessed as part of a sites appraisal which forms an appendix to the Sustainability Appraisal of the Draft Adur Local Plan 2012.

2 Methodology

DESK TOP STUDY

- 2.1 Information regarding protected and notable species, habitat and areas within a 2km radius of the site was supplied by the Sussex Biodiversity Record Centre (SxBRC). In addition, a search was completed using an on-line mapping service for statutory designated sites and landscape features (MAGIC, 2012).

HABITAT SURVEY

- 2.2 The habitat survey following standard Phase 1 survey methodology (JNCC, 2010) was carried out on 7th August 2012 and covered all accessible parts of the site, including boundary features. Habitats were described and mapped. A list of plant species was compiled (Appendix 3), together with an estimate of abundance made according to the DAFOR² scale. A Habitat Plan of the site is included in Appendix 1 together with photographs in Appendix 2. Incidental records of birds and other fauna noted during the course of the habitat survey were also compiled.
- 2.3 In this report of these surveys, scientific names are given after the first mention of a species, thereafter, common names only are used. Nomenclature follows Stace (2010) for vascular plant species.

PROTECTED SPECIES ASSESSMENT

- 2.4 The potential of the site to provide habitat for protected species was assessed from field observations carried out at the same time as the habitat survey and the results of the desk top study. The site was inspected for evidence of the presence of protected species as follows:
- The presence of nesting habitat for breeding birds, such as mature trees, dense scrub, hedgerows and buildings and/or field margins suitable for ground nesting

² The DAFOR scale has been used to measure the frequency and cover of the different plant species as follows: Dominant (D) - >75% cover Abundant (A) – 51-75% cover Frequent (F) – 26-50% cover Occasional (O) – 11-25% cover Rare (R) – 1-10% cover. Locally Frequent (LF) is used where the frequency and distribution is irregular.

birds; and evidence of bird nesting including bird song, old nests, faecal marks etc;

- Scrub/grassland mosaic and potential hibernation sites for widespread species of reptile;
- Cover and topography suitable for badger *Meles meles* sett construction, as well as evidence of badger including runs, push-throughs, setts, hair and latrines;
- Assessment of water bodies, such as ditches/streams as to their potential to support water vole *Arvicola amphibius*;
- Diversity/heterogeneity of habitat types with varied structure and mixture of foraging plant resources suitable for invertebrates;
- Assessment of any on-site water bodies as to their potential to support breeding amphibians specifically great crested newts *Triturus cristatus*, and suitable terrestrial habitats including rough grassland, scrub, hedgerows, woodland and refuges (logs and rubble piles); and,
- The presence of features in, and on trees, indicating potential for roosting bats such as fissures, holes, loose bark and ivy and those associated with buildings such as cavities, roof voids, hanging tiles, unenclosed soffits etc. Direct evidence such as the presence of bats, staining, droppings and feeding remains was also looked for.

2.5 The likelihood of occurrence is ranked as follows and relies on the findings of the current survey and an evaluation of existing data.

- **Negligible** – while presence cannot be absolutely discounted, the site includes very limited or poor quality habitat for a particular species or species group. No local records from a data search, surrounding habitat considered unlikely to support wider populations of a species/species group. The site may also be outside or peripheral to known national range for a species.
- **Low** – on-site habitat of poor to moderate quality for a given species/species group. Few or no records from data search, but presence cannot be discounted on the basis of national distribution, nature of surrounding habitats, habitat fragmentation, recent on-site disturbance etc.
- **Medium** – on-site habitat of moderate quality, providing all of the known key requirements of given species/species group. Local records from the data search, within national distribution, suitable surrounding habitat. Factors limiting the likelihood of occurrence may include small habitat area, habitat severance, and disturbance.

- **High** – on-site habitat of high quality for given a species/species group. Local records provided by desk-top study. The site is within/peripheral to a national or regional stronghold. Good quality surrounding habitat and good connectivity.
- **Present** – presence confirmed from the current survey or by recent, confirmed records.

2.6 The purpose of this assessment is to identify whether more comprehensive Phase 2 surveys for protected species or mitigation should be recommended (see Section 5).

2.7 The potential presence of invasive species including those listed in Section 14 and Part 2 of Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) has also been considered.

SITE EVALUATION

2.8 The site has also been evaluated following guidance issued by the Institute of Ecology and Environmental Management (2006) which evaluates sites according to geographic scale (significance at the international level down to the local level) and uses a range of criteria for assigning ecological value, as follows:

- Presence of sites or features designated for their nature conservation interest. Examples include internationally or nationally designated sites such as Special Areas of Conservation (SACs), SSSIs and Local Nature Reserves (LNRs) and locally designated sites such as Sites of Nature Conservation Importance (SNCIs);
- Biodiversity value, for example, habitats or species which are rare or uncommon, species rich assemblages, species which are endemic or on the edge of their range, large populations or concentrations of uncommon or threatened species, and/or plant communities that are typical of valued natural/semi-natural vegetation types;
- Secondary and supporting value, for example, habitats or features which provide a green infrastructure role such as buffering to valued features or links between otherwise isolated features;
- Social value in regard to the extent to which a site and its wildlife provide a resource that people use or enjoy;
- Economic value for example those relating to impacts on ecological features and resources that are financially viable such as paying for visits to bird hides or a shell fishery in an estuary;
- Presence of legally protected sites or species; and,

- Presence of UKBAP and/or Sussex BAP habitats and species.

GREEN INFRASTRUCTURE APPRAISAL

2.9 A Green Infrastructure (GI) appraisal was carried out, by reviewing the following features, present either on-site or in the adjacent landscape:

- Core Areas that are defined as zones within the site with either high quality habitat, a diversity of habitats, potential to support a diversity of species groups and/or protected species;
- Water bodies and the local hydrological catchment;
- Existing green and blue corridors including hedgerows, lines of scattered trees/scrub, woodland belts, road verges, running water and associated riparian habitat etc.; and,
- Public Rights of Way (PROW) including footpaths, cycle routes and bridleways.

2.10 This information has been used to produce Opportunities and Constraints Maps in the *Landscape and Ecological Surveys of Key Sites within the Adur District* report (see Section 5). These maps show priorities for the conservation and enhancement of on-site ecological features and wider ecological networks and assist in forming indicative GI and development principles for the site.

LIMITATIONS

2.11 It should be noted that whilst every effort has been made to provide a comprehensive description of the site, no investigation can ensure the complete characterisation and prediction of the natural environment.

Data Search

2.12 It is important to note that, even where data is held, a lack of records for a defined geographical area does not necessarily mean that there is a lack of ecological interest the area may simply be under-recorded.

2.13 Where only six figure grid references are provided for protected species by recorders submitting data to SxBRC, their precise location can be difficult to determine and they could potentially be present anywhere within the given 1km x 1km square.

2.14 Locations for badger, otter and breeding Schedule 1 bird species were not provided by SxBRC due to the sensitivity of these records.

Habitat Survey

- 2.15 The Phase 1 habitat survey does not constitute a full botanical survey, or a Phase 2 pre-construction survey that would include accurate GIS mapping for invasive or protected plant species.
- 2.16 Due to dense vegetation growth and health and safety risks it was not possible to fully assess the value of the ditch/stream network in terms of its aquatic flora. A series of sample points were used to survey the ditches/streams, at safe access points and, therefore, the results may not be a true representation of the diversity and distribution of vegetation, including that of invasive plant species listed under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

Protected Species Assessment

- 2.17 The protected species assessment provides a preliminary view of the likelihood of protected species occurring on the site. This is based on the suitability of the habitat, known distribution of the species in the local area provided in response to our enquiries and any direct evidence on the site. It should not be taken as providing a full and definitive survey of any protected species group. It is only valid at the time the survey was carried out. Additional surveys may be recommended if on the basis of the preliminary assessment or during subsequent surveys it is considered reasonably likely that protected species may be present.

3 Results

DESK STUDY

3.1 The following information regarding the present and historical ecological interest of the site, covering a 2km radius search area, was supplied by Sussex Biodiversity Records Centre (SxBRC) and on-line mapping services.

Designated Nature Conservation Sites

3.2 The site does not receive any statutory³ or non-statutory⁴ nature conservation designations. The nearest statutory designated site is Adur Estuary SSSI which is contiguous with the south-east boundary of the site (via EA flood control gates) and also located 0.04km east of the north-east corner of the site (see Section 1.10).

3.3 In total there are five non-statutory designated sites within a 2km radius of the site, the closest being Lancing Ring SNCI and LNR (see Table 2 below). The nearest non-statutory designated site is Widewater Lagoon LNR and SNCI, located 0.05km to the south of the site (see Table 2).

Table 2: SNCIs within a 2km radius of the site

Site Name	Reason for designation	Area (ha)	Distance from Site (km)
Widewater Lagoon (also LNR)	A classic example of an isolated spit lagoon, lying between South Lancing and the well vegetated, broad shingle bank of Lancing Beach. It has no direct connection with the sea, but is apparently tidal. Areas of salt marsh and vegetated shingle (which are rare habitats in West Sussex) occur along its southern edge with species such as glasswort <i>Salicornia sp.</i> , rock samphire <i>Crithmum maritimum</i> and sea couch <i>Elytrigia atherica</i> . 16th Century maps depict the area as salt marsh.	8.2	0.05

³ Principally sites receiving protection under the Wildlife and Countryside Act, 1981 (as amended) and including Local Nature Reserves (LNR), Sites of Special Scientific Interest (SSSI), Special Areas of Conservation (SAC), Special Protected Areas (SPA), amongst others.

⁴ They typically comprise a series of sites designated a county level that are recognised to be of local conservation importance and are often included in Local Planning Authority (LPA) development plans. In other areas of the country they are sometimes called SINC (Sites of Importance for Nature Conservation), CWSs (County Wildlife Sites) or SBIs (Sites of Biological Importance). All are described generally as Local Wildlife sites by the UK Government.

Table 2: SNCIs within a 2km radius of the site

Site Name	Reason for designation	Area (ha)	Distance from Site (km)
Shoreham Beach	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. Largely due to habitat destruction, this community is very rare in West Sussex. Starry clover <i>Trifolium stellatum</i> is of particular note.	11.2	0.17
Lancing Ring (also LNR)	Scattered scrub with unmanaged grassland dominated by coarse grasses with characteristic downland herbs such as squinancywort <i>Asperula cynanchica</i> and round-headed rampion <i>Phyteuma tenerum</i> . There are localised patches of herb-rich sward on the shallow soils of the chalk pits. The horse-grazed pasture has an interesting chalk grassland flora with common restharrow <i>Ononis repens</i> , yellow rattle <i>Rhinanthus minor</i> and pyramidal orchid <i>Anacamptis pyramidalis</i> . The rich butterfly fauna includes breeding colonies of chalkhill blue <i>Lysandra coridon</i> , holly blue <i>Celastrina argiolus</i> , small copper <i>Lycaena phlaeas</i> , small heath <i>Coenonympha pamphilus</i> and wall <i>Lasiommata megera</i> . Supports a good range of breeding warblers, including chiffchaff <i>Phylloscopus collybita</i> , willow warbler <i>Phylloscopus trochilus</i> , whitethroat <i>Sylvia communis</i> and lesser whitethroat <i>Sylvia curruca</i> . Yellowhammer <i>Emberiza citrinella</i> , linnet <i>Carduelis cannabina</i> and cuckoo <i>Cuculus canorus</i> also breed. Adder <i>Vipera berus</i> , slow-worm <i>Anguis fragilis</i> and common lizard <i>Zootoca vivipara</i> are reported to occur.	24.3	1.7
River Adur Meadows	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 including common reed <i>Phragmites australis</i> and spike-rush <i>Eleocharis</i> sp.	13.9	1.5
Mill Hill	A fine example of unimproved herb-rich downland on a steep west-facing slope. The site consists of a mosaic of open grassland, scattered scrub and dense scrub. In addition to an interesting herb and moss flora, the site is of high butterfly importance. Following extensive scrub removal and fencing, sheep-grazing was re-introduced to part of the hill in 1991.	35	1.1

Landscape and Habitat Designations/Classifications

National Parks

- 3.4 The South Downs National Park is located 1.05km north of the site.

Coastal and floodplain grazing marsh

- 3.5 With exception to domestic and business properties, the whole site is designated as coastal and floodplain grazing marsh. This is a spatial dataset that describes the geographic extent and location of this UK Biodiversity Action Plan (BAP) priority habitat in England (MAGIC, 2012).

Ancient Woodland

- 3.6 The nearest Ancient Semi-Natural Woodland (ASNW) within a 2km radius is Clapham Wood ASNW located approximately 8.85km to the north-west of the site.

Biodiversity Opportunity Areas

- 3.7 The distribution of BAP habitats present across the South-East has been used to identify Biodiversity Opportunity Areas (BOAs) (The South East Biodiversity Forum, 2009). BOAs represent a targeted landscape-scale approach to biodiversity conservation in the county, form the basis for an ecological network and opportunity for restoration and creation of BAP habitats⁵. There are 75 BOAs across Sussex and 6 within Adur District.
- 3.8 The site does not fall within a BOA. The nearest BOA is Shoreham Estuary and Beach BOA approximately 70m north-west of the site. This BOA covers approximately 136ha and is dominated by salt marsh, grazing marsh and mudflats and their associated brackish communities. Included within the BOA are Shoreham Beach SNCI and LNR that has some of the best vegetated shingle in the county despite high visitor pressure, and a saline lagoon and estuary (SSSI and RSPB Reserve) important for wading birds.

⁵ BOAs do not include opportunities for all BAP habitats present in the region or identify all areas where these could be applied. Work is still needed to develop opportunity areas in urban and marine environments in particular.

- 3.9 Opportunities identified for the BOA that are potentially relevant to the site include access improvements, wetland management, restoration and creation of grazing marsh and reed bed are potentially applicable to the site.

Water bodies

- 3.10 The site forms part of the lower catchment for a wider network of off-site ditches located in the northern section of Lancing Strategic Gap and therefore forms an important part of the local hydrological system. Four main streams/ditches cross the site from the north boundary, flowing south and south-east to converge at the EA flood control gate. Two ditches are also present in the south-west corner of the site. The nearest standing water marked on a 1:50,000 OS map is a pond located 0.61km north-east of the site, adjacent to Mash Barn Lane.

Records of Protected and BAP Species

SxBRC have supplied records from within a 2km radius for protected and rare species; those covered by the UK BAP (that are also Species of Principal Importance for Biodiversity under the NERC⁶ Act (2006)); invasive species; and, otherwise notable species such as Birds of Conservation Concern⁷ (BoCC).

Plants

- 3.11 The data search returned records of 38 plant species, the majority being either associated with habitats not present at the site, such as chalk grassland, coastal and saltmarsh habitats and/or are not nationally rare or scarce plants. Instead they are uncommon/rare in the county and included on the Sussex Rare Species Inventory Species.

⁶ Section 41 (S41) of the NERC Act (2006) includes a published list of habitats and species which are of principal importance for the conservation of biodiversity in England. It is used to guide decision-makers such as LPAs in implementing their duty under section 40 of the NERC Act (2006), to have regard to the conservation of biodiversity in England, when carrying out their normal functions. Further details of the NERC Act can be found at: www.opsi.gov.uk/acts/acts2006/ukpga_20060016_en_1 (see Chapters 16 and 17).

⁷ Birds of Conservation Concern status is prioritised into high concern (Red), medium concern (Amber) and low concern (Green) (Eaton *et al*, 2009). Red-list species are those that are globally threatened according to the IUCN criteria; those whose population or range has declined rapidly in recent years; and those that have declined historically and have not shown a substantial recent recovery. Amber-list species are those with an 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 fulfil none of the criteria.

3.12 A number of aquatic plants associated with standing and running water habitats are included in this list. This includes records for true fox-sedge *Carex vulpina* to the north of the site at New Monk's Farm. This nationally rare⁸ and UK BAP species is restricted to southern lowland England and grows in Sussex on river banks, ditch sides and damp meadows on heavy clay soils which are sometimes flooded in winter. It is currently confined to West Sussex with its classic site at Amberley Wild Brooks.

Invertebrates

3.13 More than 400 invertebrate species records were returned, most being species of butterfly and moth. A large percentage of these are species associated with habitats not present within the site and/or are not nationally rare or scarce. Instead they are uncommon/rare at a county level and included on the Sussex Rare Species Inventory.

3.14 The following UK BAP butterfly and moth species are Species of Principal Importance for Biodiversity recorded within a 2km radius and for which suitable habitat is present on-site:

- Small heath
- Wall
- White Admiral *Limenitis camilla*
- Dingy Skipper *Erynnis tages*
- Garden tiger moth *Arctia caja*
- Cinnabar moth *Tyria jacobaea*

3.15 There were 32 records for stag beetle *Lucanus cervus* between 2000 and 2011, the closest being a 2001 record 0.64km west of the site.

Birds

3.16 There was a large number of bird records (15,000+) returned for the search area. From these records 64 species have been recorded within the site as follows; sedge warbler, reed warbler, common sandpiper *Actitis hypoleucos*, skylark *Alauda arvensis*, common kingfisher *Alcedo atthis*, teal *Anas crecca*, wigeon *Anas penelope*, gadwall

⁸ Nationally rare plants occur in less than 15 hectads (10x10km grid squares) throughout Britain (Stewart *et al*, 1994) and appear in the Red Data Book of Vascular Plants (Cheffings & Farrell (Eds), 2005). This category includes some species which occur in more than four sites in either vice county.

Anas strepera, grey heron *Ardea cinerea*, short-eared owl *Asio flammeus*, purple sandpiper *Calidris maritime*, siskin *Carduelis spinus*, Cetti's warbler *Cettia cetti*, stock dove *Columba oenas*, mute swan *Cygnus olor*, little egret *Egretta garzetta*, corn bunting *Emberiza calandra*, reed bunting *Emberiza schoeniclus*, hobby *Falco subbuteo*, kestrel *Falco tinnunculus*, coot *Fulica atra*, snipe *Gallinago gallinago*, little gull *Larus minutus*, black-headed gull *Larus ridibundus*, pied wagtail *Motacilla alba*, grey wagtail *Motacilla cinerea*, yellow wagtail *Motacilla flava*, house sparrow *Passer domesticus*, grey partridge *Perdix perdix*, redstart *Phoenicurus phoenicurus*, chiffchaff, willow warbler, water rail *Rallus aquaticus*, whinchat *Saxicola rubetra*, stonechat *Saxicola torquata*, starling *Sturnus vulgaris*, garden warbler *Sylvia borin*, little grebe *Tachybaptus ruficollis*, shelduck *Tadorna tadorna*, greenshank *Tringa nebularia*, redshank and lapwing *Vanellus vanellus*, barn owl *Tyto alba*, bittern *Botaurus stellaris*, black-tailed godwit *Limosa limosa*, crossbill *Loxia curvirostra*, curlew *Numenius arquata*, Dartford warbler *Sylvia undata*, firecrest *Regulus ignicapilla*, house martin *Delichon urbicum*, lesser spotted woodpecker *Dendrocopos minor*, little ringed plover *Charadrius dubius*, long-eared owl *Asio otus*, Mediterranean gull *Larus elanocephalus*, osprey *Pandion haliaetus*, peregrine falcon *Falco peregrinus*, quail *Coturnix coturnix*, raven *Corvus corax*, red kite *Milvus milvus*, swallow *Hirundo rustica*, swift *Apus apus*, tree sparrow *Passer montanus*, turtle dove *Streptopelia turtur*.

- 3.17 BoCC Red-list species include; corn bunting, grey partridge, house sparrow, lapwing, skylark, starling, yellow wagtail, bittern, black-tailed godwit, lesser spotted woodpecker, tree sparrow and turtle dove. All Red-list species are also UK BAP species (JNCC, 2010) and are listed in the NERC Act (2006) as species of principal importance for the conservation of biodiversity. In addition, 32 of the birds recorded on-site are BoCC Amber-list species. A number of these notable bird species are either passage migrants, winter birds or utilise the site as foraging habitat. Not all the species will be dependent on the site as breeding habitat.

Bats

- 3.18 There are records of four different bat species within the search area including; serotine *Eptesicus serotinus*, common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus* and grey long-eared bat *Plecotus austriacus*. The record closest to the site is from 2010 for common pipistrelle, 0.21km south-west of the site.

Reptiles

3.19 No records of reptiles were returned from the site. The following reptile species were recorded within the 2km search area:

- Fifty-two slow-worm records, the closest being a 1993 record 0.1km to the north of the site;
- Twenty-three common lizard records, the closest being a 1990 record 0.1km to the north of the site;
- Sixteen records of grass snake, the closest being a 2001 record 0.84km to the north of the site; and
- Five adder records, the closest being a 2001 record 0.84km north of the site.

Amphibians

3.20 No records of amphibians were returned from the site. Six records of great crested newt were returned from The Meads, Victoria Road in Shoreham, approximately 0.63km north of the site.

3.21 There were seventeen records of common toad *Bufo bufo* returned from within the search area, the closest being a 1993 record at Church Street, Shoreham 0.25km to the east of the site.

Water vole

3.22 There are two on-site records of water vole (recorded as Shoreham Backwater) between 1988 and 1990.

3.23 A water vole survey of a ditch located 0.04km north of the site, at Shoreham Airport, was carried out in 2011 (The Ecology Consultancy, 2011). The survey identified past use of the ditch by water vole with a total of three old burrows located within the western bank of the ditch. No evidence of current water vole activity in the form of latrines, footprints, pathways in the vegetation or feeding remains was found.

Invasive species

3.24 The data search returned a number of records for invasive plant species that may potentially be present within the site. Invasive plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) that are most likely to be present are Japanese knotweed *Fallopia japonica* and montbretia *Crocsmia x crocosmiiflora*.

HABITAT SURVEY

Overview

3.25 Habitats on-site included; 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, mixed and non-native hedgerows, continuous and scattered scrub and scattered trees.

Buildings/structures

3.26 Thirty-eight buildings/structures were present. These were clustered into five groups associated with housing along New Salt's Farm Road, Blandford Cottage, New Salts Farm, Old Farm Court and the Dogs Trust. They comprised a diverse range of building types including residential, commercial, agricultural and lightweight/temporary structures such as sheds, kennels, stables, garages and workshops.

Hardstanding and bare ground

3.27 Hardstanding was present along New Salt's Farm Road, the entrance road to the Dog's Trust and associated entrance tracks. Bare ground was common in heavily grazed and disturbed fields, often sparsely vegetated with ephemeral/short perennials (see description below).

Ephemeral/short perennial vegetation

3.28 Ephemeral/short perennial species had become self-established in disturbed, open ground in fields. Knotgrass *Polygonum aviculare*, annual meadow grass *Poa annua*, greater plantain *Plantago major*, chickweed *Stellaria media*, swine cress *Coronopus squamatus*, fat-hen *Chenopodium album* and pineappleweed *Matricaria discoidea* were abundant to locally frequent.

Amenity grassland

3.29 Small areas of amenity grassland were present around properties along New Salts Farm Road. Hard wearing grass species such as perennial ryegrass *Lolium perenne* and red fescue *Festuca rubra* dominated the swards. Wildflowers included abundant to frequent yarrow *Achillea millefolium*, daisy *Bellis perennis*, white clover *Trifolium repens* and ribwort plantain *Plantago lanceolata*.

Improved grassland

- 3.30 Five fields of improved grassland were present on-site. All are designated as floodplain grazing marsh (UK BAP priority habitat).
- 3.31 The field to the west of New Salts Farm was dominated by perennial ryegrass with frequent false oat-grass *Arrhenatherum elatius*, creeping bent *Agrostis stolonifera* and cock's-foot *Dactylis glomerata*. Wildflowers included abundant white clover and red clover *Trifolium pratense*, and frequent ribwort plantain and creeping thistle *Cirsium arvense*.
- 3.32 An irregular shaped field was present between New Salts Farm and the larger, meandering on-site stream. False oat-grass and tall fescue *Festuca arundinacea* were abundant with frequent cock's-foot and Yorkshire fog *Holcus lanatus*. Wildflowers included frequent field bindweed *Convolvulus arvensis*, common nettle *Urtica dioica* and cow parsley *Anthriscus sylvestris*.
- 3.33 Two fields of improved grassland were present to the west of the Dogs Trust. Perennial ryegrass was dominant, red cover abundant and black medick *Medicago lupulina* and bristly ox-tongue *Helminthotheca echioides* occasional. The field in the south-east corner of the site, south of the Dogs Trust, was dominated by perennial ryegrass with frequent creeping bent, black medick and white clover.
- 3.34 The field to the east of the main streams comprised the following grasses; abundant perennial ryegrass, frequent creeping bent and locally frequent false oat-grass and Yorkshire fog. Wildflowers included frequent ox-tongue species, field bindweed, white clover and spear thistle *Cirsium vulgare*. Ox-tongue species, spear thistle and field horsetail *Equisetum arvense* were locally abundant in the north.

Poor semi-improved grassland

- 3.35 Ten fields of poor semi-improved grassland were present. Their composition varied according to the degree and type of grazing/management and ground water levels, but all were dominated by coarse species. All are classified as floodplain grazing marsh (UK BAP priority habitat).
- 3.36 The field north of the Dogs Trust had a high cover of tall ruderal vegetation. Grasses included abundant creeping bent, frequent false oat-grass and occasional Yorkshire fog. Wildflowers included locally abundant to frequent white clover, field bindweed,

black medick, winter heliotrope *Petasites fragrans*, fleabane *Pulicaria dysenterica* and common vetch *Vicia sativa*. Tall ruderal vegetation included locally frequent creeping thistle, rosebay willowherb *Chamerion angustifolium*, teasel *Dipsacus fullonum* and ragwort *Senecio jacobaea*. Bramble *Rubus fruticosus* agg. was locally frequent.

- 3.37 Two fields to the north of Saltings Roundabout comprised dominant false oat-grass, locally abundant tall fescue and common nettle, and frequent cock's-foot and field bindweed.
- 3.38 The small field to the east of New Salts Farm comprised abundant cock's-foot and false oat-grass and frequent tall fescue and creeping bent. Wildflowers included frequent field bindweed, white clover and ribwort plantain. The larger field to the south of New Salts Farm had a similar composition, but with less wildflower and a greater diversity of grass species including perennial ryegrass, Timothy *Phleum pratense* and common couch *Elytrigia repens*. Species typical of disturbed ground were locally frequent (see ephemeral/short perennial description).
- 3.39 The two fields in the north-west corner of the site had been recently cut and had a limited number of wildflowers. Grasses comprised abundant false oat-grass, tall fescue and cock's-foot and frequent Timothy and creeping bent. Wildflowers included locally abundant field horsetail and frequent creeping thistle. The larger field to the south had a similar composition. Additional species included common couch and red clover with higher amounts of perennial ryegrass.

Tall ruderal vegetation

- 3.40 This habitat type was located around field margins, on disturbed and enriched ground and alongside ditches and streams where bands of dense tall ruderal vegetation lined the upper bank.
- 3.41 Dense bands of tall ruderal vegetation, present alongside ditches/streams, included abundant to locally frequent common nettle, creeping thistle, hogweed *Heracleum sphondylium*, great willowherb *Epilobium hirsutum*, hemp agrimony *Eupatorium cannabinum*, perennial sow-thistle *Sonchus arvensis*, hedge bindweed *Calystegia sepium*, fleabane and field horsetail. The grasses tall fescue, false oat-grass and common couch were locally frequent along with common reed and bramble.

- 3.42 The railway embankment to the west of New Salts Farm Road comprised many of the species described above, along with ragwort and ox-tongue species.
- 3.43 Tall ruderal vegetation in fields and along field boundaries comprised locally abundant common nettle, creeping thistle, hogweed and hedge bindweed. The field in the south-east corner of the site had margins dominated by creeping thistle and ox-tongue species with abundant to frequent spear thistle, common nettle, hedge bindweed, fennel *Foeniculum vulgare*, mugwort *Artemisia vulgaris* and common mallow *Malva sylvestris*.
- 3.44 Disturbed ground in the field west of the Dogs Trust comprised dominant common nettle, locally frequent hoary mustard and Canadian fleabane *Conyza canadensis* and frequent large bindweed *Calystegia silvatica*.
- 3.45 Disturbed ground in the field west of Saltings Roundabout comprised abundant to locally frequent hogweed, ragwort, common mallow and field bindweed.
- 3.46 Disturbed ground around New Salts Farm comprised a mix of poor-semi-improved grassland and tall ruderal vegetation. Grasses included locally abundant perennial ryegrass, cock's-foot and wall barley *Hordeum murinum*. Wildflowers included locally abundant red-star thistle *Centaurea calcitrapa* (see Target Note 5), chickweed and common nettle and frequent to occasional fat-hen, common mallow, hedge mustard *Sisymbrium officinale*, hoary mustard *Hirschfeldia incana* and lesser burdock *Arctium minus*.

Running water, standing water, marginal vegetation and swamp

- 3.47 A key characteristic of the site was its water bodies and associated wetland habitats. The main streams and ditches running south and south-east across the site had developed continuous sections of reed swamp, dominated by common reed. More open sections of water had common reed fringing the banks, with floating aquatic and emergent vegetation present in open water and along the margins (see Target Notes 3, 4, 8, 10 and 11). Dense bands of tall ruderal vegetation were present along the upper banks of most water bodies.
- 3.48 The ditch south-west of New Salts Farm had also developed reed swamp. This comprised abundant sea club-rush *Bolboscheonus maritimus* and common club-rush *Schoenoplectus lacustris*, frequent yellow iris *Iris pseudacorus*, reed sweet grass

Glyceria fluitans, false fox-sedge *Carex otrubae* and occasional sharp-flowered rush *Juncus articulatus* and carnation sedge *Carex panicea*. The edges of this reed swamp and southern section of the ditch comprised abundant common couch, tall fescue, false oat-grass and creeping bent with frequent to occasional fleabane, common reed, hogweed, amphibious bistort *Persicaria amphibia* and silverweed *Potentilla anserina*.

Scattered trees and scrub

- 3.49 Dense scrub comprised dominant bramble, abundant elder *Sambucus nigra*, locally abundant ivy *Hedera helix* and frequent hawthorn *Crataegus monogyna*. Grey willow *Salix cinerea* and broad-leaved spindle *Euonymus latifolia* were locally abundant along the northern boundary of the site, near to New Salts Farm Road.
- 3.50 Scattered trees of willow *Salix* species were present along ditches/streams. Sycamore *Acer pseudoplatanus* was locally frequent along the west boundary, adjacent to the allotments and East Lancing Recreation Ground. Scattered trees in gardens included deodar cedar *Cedrus deodara*, ash *Fraxinus excelsior*, false acacia *Robinia pseudoacacia* etc.
- 3.51 Scattered trees and scrub present along the entrance road to the Dogs Trust and around its car park, included broad-leaved spindle, elder, poplar *Populus sp.*, spruce *Picea sp.* and stag's-horn sumach *Rhus typhina*.

Hedgerows

- 3.52 Mixed hedgerows were present as boundaries between properties on New Salts Farm Road and comprised bramble, ivy, broad-leaved spindle, elder, honeysuckle *Lonicera periclymenum* and cypress *Cupressus sp.*
- 3.53 Non-native hedgerows along property boundaries comprised locally abundant garden privet *Ligustrum ovalifolium*, escallonia *Escallonia micrantha* and cypress species.

Introduced shrub

- 3.54 Planting in front of Old Court Farm included Mexican orange bush *Choisya ternata*, hebe *Hebe sp.*, oleaster *Elaeagnus x ebbingei*, box-leaved honeysuckle *Lonicera pileata*, Japanese rose *Rosa rugosa* and bramble. Japanese rose is an invasive plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

Target Notes

Target Note 1

Raised track with locally frequent black medick, yarrow, creeping cinquefoil *Potentilla reptans* and bird's-foot trefoil *Lotus corniculatus*.

Target Note 2

- 3.55 Compost pile of potential value to hibernating reptiles and as an egg laying site for species such as grass snake.

Target Note 3

- 3.56 Marginal vegetation either side of a culverted ditch with locally abundant common water-starwort *Callitriche stagnalis* and locally frequent hemlock water dropwort *Oenanthe crocata*. Common reed was locally dominant to the east of the culvert.

Target Note 4

- 3.57 Marginal and floating aquatic vegetation along the banks of the main on-site stream. Water slow flowing around the meanders, with 2-3m high, steep sided, banks. Common water-starwort was locally abundant. Extent of aquatic vegetation appeared to be limited, but access was very restricted.

Target Note 5

- 3.58 Location of red-star thistle *Centaurea calcitrapa* along the field edge, growing with a tall ruderal community at the back of New Salts Farm (National Grid Reference 520325.709 104628.777). Approximately 20+ plants, some well developed into sub-shrub form. A nationally rare plant listed as 'critical' in the Red Data Book of Vascular Plants (Cheffings & Farrell (Eds), 2005) and a UK BAP priority species.

Target Note 6

- 3.59 Pile of horticultural arisings of potential value to hibernating reptiles and as egg laying sites for species such as grass snake.

Target Note 7

- 3.60 Raised bank with potential badger latrine and snuffle holes from foraging/digging.

Target Note 8

- 3.61 Marginal vegetation adjacent to EA flood control gates with locally dominant common reed, locally abundant to frequent watercress *Nasturtium officinale*, gypsywort *Lycopus europaeus*, water mint *Mentha aquatica*, fool's watercress *Apium nodiflorum*, great willowherb and fleabane. Hogweed and sea club-rush were occasional.

Target Note 9

- 3.62 Sown grassland on the banks of the EA flood control gate. Grasses included abundant red fescue and frequent Yorkshire fog and perennial ryegrass. Wildflowers included abundant black medick, red clover, ox-tongue species and bird's-foot trefoil and frequent to occasional common mallow, ribwort plantain, ribbed melilot *Melilotus officinalis*, common knapweed *Centaurea nigra*, wild carrot *Daucus carota* and smooth tare *Vicia tetrasperma*.

Target Note 10

- 3.63 Open area of water at confluence of two streams. Marginal vegetation north of bridge included locally abundant common reed, common club-rush, fool's watercress and frequent water mint, great willowherb, fleabane and arrowhead *Sagittaria sagitifolia*. A similar flora was present south of the bridge with sea club-rush, clustered dock *Rumex conglomeratus* and wild celery *Apium graveolens* being notable additions.

Target Note 11

- 3.64 Ditch flowing south-east towards the Dogs Trust, dominated by common reed with sea club-rush occasional along its margins.

Fauna

- 3.65 Sixteen bird species were recorded during the PEA. Additional species, to those already recorded at the site (see Section 3.16) included; wood pigeon *Columba palumbus*, moorhen, magpie *Pica pica*, herring gull *Larus argentatus*, crow *Corvus corone*, pheasant *Phasianus colchicus*, goldfinch *Carduelis carduelis* and mallard *Anas platyrhynchos*. Herring gull is a BoCC Red-list and UK BAP species, and it is listed in the NERC Act (2006) as a species of principal importance for the conservation of biodiversity. Mallard is an Amber BoCC List species.

3.66 The site also provided suitable habitat for large and small mammals. Evidence of the presence of badger, fox *Vulpes vulpes*, mole *Talpa europaea* and rabbit *Oryctolagus cuniculus* were observed during the survey.

PROTECTED AND INVASIVE SPECIES ASSESSMENT

3.67 The habitats at the site were evaluated as to their likelihood to provide sheltering, roosting, nesting and foraging habitat for the following species/species groups:

- Breeding birds;
- Reptiles;
- Bats;
- Water vole;
- Invertebrates;
- Badgers; and,
- Great crested newt.

3.68 These species were selected for further consideration because the results of the desk study revealed that they occur in the vicinity of the site and potentially suitable habitat is present within the site. The results of the field survey, combined with information from the desk study, are presented in Table 3 below. The relevant legislation and policies relating to protected species is presented within Appendix 4.

Table 3: Assessment of potential presence of invasive, protected and/or BAP priority and notable species at the proposed development site

Species	Main legislation and policy (see Appendix 4)	Reason for consideration	Likelihood of occurrence
Breeding birds	Wildlife and Countryside Act 1981 (as amended) – selected species Schedule 1 and 8	Site located in Lancing Strategic Gap with large area of countryside to the north and west. On-site gardens and allotments/gardens adjacent to the west and south boundary, may extend available habitat. On-site hedgerows, scrub, trees, reed bed and grassland provide potential nesting and foraging habitat.	HIGH. Suitable breeding habitat present on-site for a wide range of species including those requiring tree/scrub and ground cover for nest building. The PEA and data search confirms 72 species present on-site.
Widespread reptile species	Wildlife and Countryside Act, 1981 (as amended) -Schedule 5 (partial protection)	The railway embankment, field boundaries, long grassland and habitat mosaics provide suitable hibernation sites and foraging habitat for species such as slow worm and common lizard. Ditches/streams may also support grass snake. On-site and adjacent domestic gardens and allotments may extend available habitat. There are records for all four widespread species from the data search area, the closest being for common lizard and slow worm, 0.1km to the north of the site.	HIGH. The areas of greatest value are habitat mosaics around field margins, especially where they border ditches/streams, trees-scrub lines and gardens. Waste piles of value for hibernating and egg-laying are also present (see Target Note 2 and 6). Heavily grazed fields of improved and poor semi-improved grassland have low potential for reptiles as they are sub-optimal habitat due to disturbance, poor vegetation structure and low plant diversity.
Badger	Protection of Badgers Act 1992.	A widespread species in the UK, ranging over large distances. The site is located in Lancing Strategic Gap and includes farmland which is a preferred location for badger populations. Tree/scrub lines, the railway embankment, hedgerows and grassland provide suitable foraging and breeding habitat.	HIGH. Sett building habitat is present on-site, most notably in the north of the site where raised ground and tree-and scrub cover is more common. Fields provide a large area of suitable foraging habitat.
Great crested newt	Wildlife and Countryside Act 1981 (as amended) -Schedule 5. The Conservation of Habitats and Species Regulations 2010 (as amended) - Schedule 2.	Lakes, ponds and seasonally wet areas provide suitable breeding habitat for great crested newt. Where blocked/slow-flowing ditches and streams, with a shallow profile, are present they should also be considered. The railway embankment, hedgerows, scrub and tall grass provide suitable terrestrial habitat for foraging and hibernating amphibians.	MEDIUM. Habitats in the north and north-east section of the site and any hedgerows, tree/scrub habitat and field margins connected to on-site water bodies provide good quality terrestrial habitat. On-site breeding habitat includes blocked/slower flowing ditches. Wider ditch/stream sections with limited marginal vegetation and stronger flow are considered unsuitable. 1:50,000 OS and aerial maps show that there are a series of ditches adjacent to the north boundary that provide suitable breeding habitat. The nearest

Table 3: Assessment of potential presence of invasive, protected and/or BAP priority and notable species at the proposed development site

Species	Main legislation and policy (see Appendix 4)	Reason for consideration	Likelihood of occurrence
			pond is 0.61km north-west, just outside of the recommended 500m radius that this species is known to commute between breeding sites.
Bats	Wildlife and Countryside Act 1981 (as amended) - Schedule 5. The Conservation of Habitats and Species Regulations 2010 (as amended) - Schedule 2.	Semi-mature trees and on-site buildings provide suitable roosting habitat. Boundary features such as hedgerows, tree/scrub lines and ditches/streams provide suitable foraging and commuting habitat. The site is located in Lancing Strategic Gap with connectivity to open countryside to the north and west and domestic buildings to the west and south. Four species of bat have been recorded within a 2km radius. The closest record is for common pipistrelle, 0.21km south-west of the site.	HIGH. On-site buildings are considered suitable for foraging bats. Trees with features of potential value to roosting bats such as split limbs and dense ivy growth were limited. Poor semi-improved grassland, field margins, water bodies, hedgerows and tree/scrub-lined boundaries provide suitable foraging and commuting habitat that has good connectivity to the wider landscape.
Invertebrates	69 species are protected by the Wildlife and Countryside Act, 1981 (as amended), including 25 butterflies.	The site comprises a range of habitat types providing a variety of foraging and nesting opportunities for both widespread and uncommon insect species. Thirty-two records for stag beetle, the closest being 0.64km west of the site.	MEDIUM/HIGH. The site provides a moderately diverse range of terrestrial and aquatic habitats. Botanical and structural diversity is strongly associated with the mosaic of habitats present around field margins and along water bodies and connected wetland habitats. Resources include long grassland/tall ruderal/scrub mosaics, nectar rich plants and bare ground/mixed substrates (for xeric species). Areas of running water are also present including marginal vegetation and reed swamp.
Water vole	Wildlife and Countryside Act 1981 (as amended); Schedule 5.	Water courses within Sussex support populations of this species. Ditches/streams are present on-site providing areas of bank above water level with cover from marginal vegetation. Two on-site records of water vole from 1988 and 1990 were returned from the data search. Evidence of past use of a ditch located 0.04km north of the site was found in 2011.	PRESENT. No specific survey for water voles and their signs was undertaken and access to banks was very restricted. The ditch/stream network provides habitat of potential value to water vole that is connected to a wider network of suitable off-site habitat located to the north. Ditch sections along tree/scrub lines were shallow, heavily shaded and considered sub-optimal. Remaining on-site ditches/streams had suitable bank profiles, vegetation cover, food plants and areas of open water.
Invasive plant species	Section 14 and Part II of Schedule 9 of the	Invasive species are widespread in many habitats and commonly found on disturbed sites, old	PRESENT. One Schedule 9 plant species (Japanese rose) is present on-site. No other Schedule 9 species were recorded

Table 3: Assessment of potential presence of invasive, protected and/or BAP priority and notable species at the proposed development site

Species	Main legislation and policy (see Appendix 4)	Reason for consideration	Likelihood of occurrence
	Wildlife and Countryside Act 1981 (as amended)	gardens and herb/grassland/scrub mosaics around woodland and stream/ditch edges. A number of commonly planted ornamental species are on the Schedule 9 list.	during the PEA. However, this does not preclude the possibility of their presence.

4 Evaluation

- 4.1 On the basis of the information available from the PEA, data search, and review of national and regional BAPs, the site has been evaluated in terms of its potential for biodiversity, support of protected species and habitats, and the contribution the area makes as part of the wider landscape. The nature conservation value of the site has been assessed following standard criteria developed by IEEM (2006) and is provided in Table 4 below.
- 4.2 The biodiversity value of protected and BAP species within the site is a preliminary evaluation based upon the desk study records, habitat suitability, and the conservation status of the species in question. It should be noted that where European Protected Species or BAP species are present on-site they may be valued at a lower level/scale where it is considered likely that populations would not be of sufficient importance to justify designation at a higher level. However, regardless of their biodiversity value, such species are still subject to national and/or European legislation.
- 4.3 Key aspects of relevant planning policy regarding conservation, including an explanation of species referred to as being of ‘Principal Importance for Conservation of Biodiversity’, European Protected Species and BAP species and habitats, are provided in Appendix 4.

Table 4: IEEM Evaluation

Criteria	Remarks
Features of International Importance	<ul style="list-style-type: none"> The site is not subject to any international statutory nature conservation designations. The closest site of International Importance is Arun Valley SAC, SPA and Ramsar Site located approximately 18km to the north-west. It is important for its wet meadows and ditches with surrounding woodland that support nationally important wintering wildfowl, breeding waders and rich aquatic flora and invertebrate fauna. It is one of the three main population centres for ramshorn snail <i>Anisus vorticulus</i> in the UK and is the main UK site for the BAP plant species cut-grass <i>Leersia oryzoides</i>. No floodplain meadow or ditch habitat or any supporting habitats that maintain the integrity of this designated area are present within the site.

Table 4: IEEM Evaluation

Criteria	Remarks
Features of National Importance	<ul style="list-style-type: none"> The site is not subject to any national statutory nature conservation designations and it is not considered that any habitats or populations or assemblages of species within the site would meet the criteria for the designation of SSSIs at an appropriate geographic level⁹. The nearest statutory site is Adur Estuary SSSI which is contiguous with on-site water bodies in the south-east corner of the site, via EA flood control gates.
Features of Regional (Sussex) Value	<ul style="list-style-type: none"> The site is not subject to any non-statutory nature conservation designations such as SNCI and is not known to contain features that would meet the criteria for designation as a Local Wildlife Site following Defra (2006) guidance.
Features of District (Adur) Importance	<ul style="list-style-type: none"> On-site ditches/streams (2km linear habitat) and associated marginal vegetation/reed bed, form part of a wider network of water bodies present across Lancing Strategic Gap, including Adur Estuary SSSI. In this regard they perform an important hydrological role and are considered to be of up to district value. The site comprises areas of grassland connected to on-site water bodies. These habitats are also considered to be of up to district value as they provide the following; <ul style="list-style-type: none"> - roosting and foraging opportunities over-winter and during high tide periods, for wading species associated with Adur Estuary SSSI, such as lapwing. Any assemblage or population is likely to be of at least district value¹⁰, but this should be determined through further survey. Further survey will also help to determine the degree of support the site provides to Adur Estuary SSSI. - extensive areas (25ha) of floodplain grassland (UK BAP habitat); and, - an important role in buffering the network of on-site water bodies in Lancing Strategic Gap, including Adur Estuary SSSI. A good population of red-star thistle is present on-site. This is a nationally rare plant (Stewart <i>et al</i>, 1994) listed as 'critical' in the Red Data Book of Vascular Plants (Cheffings & Farrell (Eds), 2005) and a UK BAP priority species (JNCC, 2010a). Its typical habitat is dry banks on chalk and it is questionable as to whether it is native to the site/locality. It is considered to be of at least district value.
Features of Local (Shoreham-Lancing-Sompting) Importance	<ul style="list-style-type: none"> A number of protected and UK BAP species and habitats are present or may occur at the site, as follows: <ul style="list-style-type: none"> - Reptiles, including slow-worm, common lizard and grass snake; - Birds such as house sparrow, tree sparrow, starling, skylark, lapwing; - Invertebrates such as stag beetle;

⁹ JNCC Guidelines for selection of biological SSSIs (see <http://jncc.defra.gov.uk/page-2303#download>).

¹⁰ The total number of lapwing records in Sussex during 2011 was 19,000. A site may be considered to be of Regional (Sussex) importance if it supports >1% of the county total. The monthly WeBS count in 2011 for the Lower Adur Estuary had a peak count of 830 (December). In the same month the county total derived from the 8 principal WeBS sites surveyed was 8686. The Lower Adur Estuary therefore represented 9.6% of the county total in December 2011 and adjacent sites are known to provide a supporting role for notable populations (*pers. comm.* Paul James)

Table 4: IEEM Evaluation

Criteria	Remarks
	<ul style="list-style-type: none"> - Amphibians such as common toad and great crested newt; and, - Mammals such as hedgehog; water vole, brown hare, badger and bats; • Based on the quality and extent of habitat present, it is considered that populations of these BAP species would be significant at, of least, the local level. • Remaining UK/Sussex BAP priority habitat present on-site includes reed bed¹¹. This habitat is limited in extent and/or not considered to be an outstanding example of its type. It is therefore considered to be of local importance.
Features of Value within the immediate vicinity of the site	<ul style="list-style-type: none"> • The remaining habitats at the site comprising buildings, hardstanding, bare ground, ephemeral/short perennial and tall ruderal vegetation, amenity grassland, introduced shrub, non-native and mixed hedgerows, scattered trees and scrub are likely to be of some value as foraging, cover and breeding sites for a range of generalist species and are therefore of value in maintaining the ecology of the area. However, they are common and widespread habitats, not subject to BAPs, that do not generally support rare species or diverse assemblages of species and are therefore of value in the immediate vicinity of the site.
Features of Secondary and Supporting Value	<ul style="list-style-type: none"> • The network of ditches/streams and habitats that buffer them (notably floodplain grazing marsh) play an important hydrological role in maintaining water levels to the wider network of wetland habitats present in Lancing Strategic Gap. • The site is located on the urban edge of Lancing and provides a wildlife corridor for mobile species moving across the urban-rural fringe both through the Lancing Strategic Gap, north towards the South Downs National Park and east towards the River Adur.
Social Value	<ul style="list-style-type: none"> • The site is privately owned, but provides aesthetic value to on-site residents living on New Salts Farm Road and those whose properties border the site along the west and south boundary, by affording them views across Lancing Strategic Gap.
Economic Value	<ul style="list-style-type: none"> • All improved and poor-semi-improved fields (15 in total) are farmed and currently provide revenue through grazing/fodder. All remaining habitats (and species) do not currently provide a resource that could be exploited for their economic value. Ecosystem services <i>viz.</i> flood attenuation provides indirect economic value by reducing the impacts of flooding on housing and transport infrastructure.

LOCAL PLANNING POLICY

4.4 On the basis of the completed surveys it is considered that the statutory South East Plan (2009) and Adur District Local Plan (1996) contain the following nature conservation and green infrastructure policies relevant to the site. A summary of these policies is detailed in Table 5 over page. The full text of the relevant policies is

¹¹ There are approximately 230ha of reedbed in Sussex (East and West) however, only 38 of these stands are over 1ha in size. On-site reed bed (measuring more than 5m in width) measures approximately 0.9ha which represents 0.4% of the county's resource (Southgate, 2012).

contained in Appendix 4 and this should be referred to. It should be noted however that policies in the 1996 Local Plan will be superseded by policies in the emerging Local Plan once it is adopted.

Table 5: Regional and local planning policies relevant to the site.

Policy	Relevance to the site
South East Plan (2009)	
<p>CC1: Sustainable Development Conserve and enhance the natural environment and prepare for the impacts of climate change.</p>	<ul style="list-style-type: none"> • Development proposals should seek to protect and increase the biodiversity value of the site through appropriate mitigation, compensation and enhancement, and provide climate change adaptation (see policies below for further detail). • Habitats of highest ecological value are associated with the network of ditches/streams and associated wetland habitats including floodplain grazing marsh. Under the principles of sustainable development it is recommended that, where possible, development is avoided in these areas. It is highly likely that any development of floodplain grazing marsh would require further studies to determine its hydrological value in terms of flood storage. • The site is adjacent and connected to Adur Estuary SSSI and any potential impacts on this statutory designated site should be avoided.
<p>CC2: Climate Change Mitigate and adapt to the effects of climate change by guiding development to locations which offer protection from flooding impacts, incorporating SuDS, increasing flood storage capacity and promoting opportunities for sustainable flood management and the migration of habitats and species.</p>	<ul style="list-style-type: none"> • The ditch/stream network and associated features provide local wildlife corridors. Where possible proposals should buffer and enhance these linear habitats to facilitate the movement of mobile species across the urban-rural fringe. • Sustainable Drainage Systems (SuDS) should be an integral part of the scheme and designed in collaboration with ecologists to maximise their value to wildlife. • The ditch/stream network and associated habitats provide an important hydrological role to off-site wetland features present in Lancing Strategic Gap and are connected to Adur Estuary SSSI. Development should avoid any changes to the hydrology of these features and SuDS schemes should be carefully designed to avoid potential changes to the water quantity and quality entering ditches/streams and the Adur estuary SSSI. • The installation of green roofs as part of the SuDS for the site will provide climate change adaptation through the amelioration of storm water and urban heat island effects, amongst others.

Table 5: Regional and local planning policies relevant to the site.

Policy	Relevance to the site
<p>CC4: Sustainable Design And Construction Proposals must adopt and incorporate sustainable construction standards and techniques including considering how a development can contribute to biodiversity gain.</p>	<ul style="list-style-type: none"> • Under NPPF (2012) and the NERC Act (2006) there is a requirement to build biodiversity into design proposals, including hard landscaped areas and the fabric of buildings. The following measures should be considered: green roofs, green walls, artificial bat and bird boxes, vegetated swales, attenuation ponds etc. • Details on the protection of any retained ecological features and mitigation required during the construction phase should form part of the wider Construction Environmental Management Plan (CEMP) for the site.
<p>CC6: Sustainable Communities And Character Of The Environment Proposals should be environmentally sensitive and respect and enhance the character and distinctiveness of settlements and landscapes.</p>	<ul style="list-style-type: none"> • Landscape proposals should include species typical of the local landscape and/or Natural Area and published plant species lists should be consulted.
<p>CC8: Green Infrastructure Proposals should seek to provide and contribute to networks of multi-functional green space to deliver environmental and social benefits including conserving and enhancing biodiversity, landscape, recreation and water management.</p>	<ul style="list-style-type: none"> • Any proposals should buffer and enhance the linear habitats present along boundaries, particularly those associated with the ditch/stream network and railway embankment. Planting should be positioned so as to enhance existing green corridors and provide connections between water bodies, tree/scrub-lines and new on-site habitats including both terrestrial and aquatic types. • Consideration should be given to designing pedestrian connections between the site and existing adjacent residential areas. Additional footpaths could also link southwards to connect to existing footpaths to Widewater Lagoon SNCI and the coast.
<p>NRM1: Sustainable Water Resources and Groundwater Quality To set out circumstances where sustainable drainage solutions should be incorporated.</p>	<ul style="list-style-type: none"> • SuDS should be an integral part of the scheme and designed in collaboration with ecologists to maximise their value to wildlife. Interventions such as green roofs, green walls, rain gardens, vegetated swales, permeable paving, and attenuation ponds etc. should be considered at the masterplanning stage. • See comments under Policy CC2 above.
<p>NRM4: Sustainable Flood Risk Management Requirement incorporation and management of Sustainable Drainage Systems (SuDS) and other water retention and flood storage measures to minimise direct surface run-off.</p>	<ul style="list-style-type: none"> • See Policy CC2 and NRM1 above.

Table 5: Regional and local planning policies relevant to the site.

Policy	Relevance to the site
<p>NRM5: Conservation and Improvement Of Biodiversity. Local planning authorities and other bodies shall avoid damage to nationally important SSSIs, a net loss of biodiversity, and actively pursue opportunities to achieve a net gain across the region. Access to areas of wildlife importance will be supported. GI is required to be identified, developed and implemented with new development.</p>	<ul style="list-style-type: none"> • A range of protected, rare/notable and BAP species have potential to be present on-site, including plants, reptiles, bats, badgers, great crested newts, water vole, invertebrates and breeding birds. Potential impacts to these species should be avoided through appropriate mitigation, compensation and enhancement which may include further surveys (see Section 5). • There is an opportunity to conserve and potentially increase local biodiversity through habitat creation (see Section 5).
<p>Policy C4: Landscape and Countryside Management Outside National Parks and AONBs, proposals should respect, protect and enhance the diversity and local distinctiveness of the District's landscape. Appropriate mitigation should be implemented where damage to the landscape cannot be avoided.</p>	<ul style="list-style-type: none"> • See Policy CC6 above.
<p>C5: Managing The Rural-Urban Fringe Positive management should be considered as part of any urban extension development proposal. Consideration should be given to landscape, biodiversity enhancement, woodland management, recreation provision and access routes.</p>	<ul style="list-style-type: none"> • See Policy CC8 above.
<p>C6: Countryside Access And Rights Of Way Management Access to the countryside should be encouraged through maintaining, enhancing and promoting the PROW system, identify opportunities for routes within and between settlements, creating multi-functional routes for multiple users and promoting appropriate access and management measures for Natura 2000/Ramsar sites.</p>	<ul style="list-style-type: none"> • See Policy C5 above.
<p>Adur District Local Plan (1996)</p>	

Table 5: Regional and local planning policies relevant to the site.

Policy	Relevance to the site
<p>AB25-27: Trees and Landscaping Trees should be retained where possible and sufficient space shall be left around them to avoid threatening their survival. Tree planting should be appropriate to the scale of the development. Any landscaping should form an integral part of the proposal and be appropriate to the coastal environment of Adur District, including the planting of predominantly native trees.</p>	<ul style="list-style-type: none"> • The planting of native trees and shrubs should be central to any landscape scheme. Native and non-native plants of known wildlife value should be considered for other landscaped areas. • Any retained trees should be protected following <i>BS 5837 Trees in Relation to Design, Demolition and Construction – Recommendations</i> (2012).

Evaluation Summary

- 4.5 Habitats of highest ecological value are strongly associated with the network of on-site ditches and streams. Overall, on the basis of the above criteria (IEEM, 2006) the network of on-site ditches/streams and their associated riparian habitats are of considered to be of up to district value. This is in regard to the important role they play in terms of both ecology and hydrology. They are also connected (via EA flood control gates) to Adur Estuary SSSI..
- 4.6 The site may also provide a supporting role to Adur Estuary SSSI in terms of providing extended foraging and roosting habitat for wading birds associated with the SSSI, such as lapwing. Any assemblage or population of wading birds is likely to be of at least district value, but this should be determined through further survey. Further survey will also help to determine the level of importance this supporting role has in terms of the integrity of Adur Estuary SSSI.
- 4.7 Grassland is also considered to be of up to district value as it is designated as floodplain grazing marsh (UK BAP priority habitat) and performs a buffering role to the network of on-site water bodies and Adur Estuary SSSI.
- 4.8 The population of red-star thistle present on-site is considered to be of at least district value as this is a nationally rare plant listed as 'critical' in the Red Data Book of Vascular Plants (Cheffings & Farrell (Eds), 2005) and a UK BAP priority species. Its natural habitat is chalk and its native status on-site (as part of a tall ruderal community on a farm) is uncertain.
- 4.9 Reed bed is the only other UK BAP priority habitats present on-site. Due to its limited extent it is not considered to be an outstanding example of its type and is of local importance only.
- 4.10 All other remaining habitats comprising buildings, bare ground, ephemeral short/perennial vegetation, amenity grassland, tall ruderal vegetation, introduced shrub, non-native and mixed hedgerows, scattered trees and scrub, are common and widespread habitats within the locality. At most they are considered to be of ecological value within the immediate vicinity of the site.
- 4.11 On-site habitats potential to support a range of protected, rare/notable and BAP species. Species protected under UK and European legislation, including breeding

birds, bats, reptiles, badger, great crested newt, invertebrates and water vole. The legal and policy implications associated with these species are detailed in Section 5.

4.12 Field boundaries, riparian habitats and the railway embankment provide potential wildlife corridors for a range of species such as bats, birds, invertebrates, badgers, grass snake and small mammals that may commute both within the site and across the urban-rural fringe into Lancing Strategic Gap, north towards the South Downs National Park and east towards the River Adur.

5 Conclusions and Recommendations

CONCLUSIONS

- 5.1 The site is not subject to any statutory or non-statutory nature conservation designations. The nearest non-statutory designated nature conservation site is Widewater Lagoon SNCI and LNR located 0.05km to the south. The nearest statutory designated site for nature conservation is Adur Estuary SSSI, which is contiguous with on-site water bodies in the south-east corner of the site, via EA flood control gates.
- 5.2 Adur Estuary SSSI is designated for its estuarine plant communities and intertidal mudflats that support nationally significant populations of wading birds. It receives legal protection under the Wildlife and Countryside Act 1981 (as amended) and any direct or indirect impact on this SSSI, or the species for which it is designated, as a result of development, therefore, should be avoided. The most likely constraints are disturbance to wading birds during construction and operational phases, and contamination of the river.
- 5.3 The proximity of the development to the SSSI is likely to trigger the requirement for an Environmental Impact Assessment and a screening opinion should be sought from the Local Planning Authority.
- 5.4 Overall, and on the basis of the PEA the site is considered to be of ecological value of at least a district level. Features of highest ecological value include the following;
- Network of on-site ditches/streams (2km in length) that perform an important hydrological role in maintaining the wider network of off-site water bodies present across Lancing Strategic Gap;
 - Extensive areas (25ha) 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.
- 5.5 It is strongly recommended that, where possible, development of the network of ditches/streams (and associated riparian habitat) and floodplain grazing marsh is avoided. These habitats should be retained and protected, except where loss is unavoidable, and only after an appropriate programme of mitigation, compensation and enhancement has been put in place. It is highly likely that any development of

floodplain grazing marsh would require further studies to determine its hydrological value in terms of flood storage.

- 5.6 Remaining habitats at the site comprise buildings, bare ground, ephemeral short/perennial vegetation, amenity grassland, tall ruderal vegetation, non-native and mixed hedgerows, scattered trees and scrub. They are common and widespread in the locality and are considered to be of ecological value within the immediate vicinity of the site. However, they do have potential to support protected species groups (see below).
- 5.7 On-site habitats have potential to support a range of protected, rare/notable and BAP species. Species protected under UK and European legislation and that are potentially present, include breeding birds, roosting and foraging bats, widespread species of reptile, badgers, water vole, invertebrates and great crested newts.
- 5.8 The following UK BAP habitats/species are present or have potential to be present within the site:
- Reed bed (present);
 - Floodplain grazing marsh (present);
 - Reptiles, including slow-worm, common lizard and grass snake;
 - Birds such as house sparrow, tree sparrow, starling, herring gull, lapwing, skylark (all present);
 - Invertebrates such as stag beetle;
 - Amphibians such as common toad and great crested newt; and,
 - Mammals such as badgers (present), water vole (present), bats, brown hare and hedgehog.
- 5.9 BAP habitats/species are not necessarily rare but under NPPF (2012) and the Natural Environment and Rural Communities (NERC) Act 2006 are all of principal importance for the conservation of biodiversity and are of material consideration in the planning process. None of the BAP habitats or populations of BAP species currently known to be present on-site are considered as notable or exceptional examples of their type.
- 5.10 The site may also provide an important secondary and supporting role to the network of ecological receptors surrounding it, primarily by providing wildlife corridors for a range of mobile species such as bats, birds, invertebrates, badgers, grass snake and small mammals. These species may commute both within the site and across the urban-rural fringe into Lancing Strategic Gap, north towards the South Downs National Park and east towards the River Adur.

RECOMMENDED FURTHER SURVEYS

Overview

- 5.11 As discussed above it is strongly recommended that that construction works that may result in the loss of or other impacts on the network of ditches/streams and associated riparian habitat (including tree/scrub lines and floodplain grazing marsh) is avoided.
- 5.12 The surveys recommended below assume the loss or degradation of suitable habitat. There is potential to avoid and/or limit impacts through habitat retention and protection (see below). The final approach to surveys will have to be based on consideration of detailed proposals for the redevelopment of the site, though in all cases published best practice should be followed with regard to survey methodology etc.
- 5.13 To provide a sufficient baseline of data and mitigate against any potential impact on declining, BAP and protected species/habitats at the site, further survey for breeding birds, widespread species of reptile, roosting and foraging bats, badger, aquatic plants, aquatic invertebrates, water vole and great crested newts is recommended.

Breeding Birds

- 5.14 The site contains a variety of on-site habitats considered suitable for breeding bird species, such as hedgerows, scattered trees, dense scrub, reed bed, unmanaged grasslands. The PEA and data search confirms 72 species as using the site including 13 BoCC Red List and 33 BoCC Amber List species. A breeding bird survey, therefore, is recommended to determine the species and numbers of breeding birds at the site and to ensure that any potential future works have minimal impact on less-common species and to inform mitigation and future management plans at the site. The spring survey should comprise a minimum of four visits spaced out during the peak breeding season March to August.

Wintering Birds

- 5.15 The Sub-area supports a large area of grassland that may be of foraging and roosting value to flocks of wintering birds for which, in part, the adjacent Adur Estuary SSSI is designated. Boundary habitats such as lines of scattered trees and scrub may also provide supporting habitat for other winter bird species such as starlings and thrush *Turdus* species.
- 5.16 Surveys should be carried out to assess the value of the site to wintering birds, and to determine the level of importance this supporting role has in terms of the integrity of Adur Estuary SSSI. These should follow standard methodology including transect and

vantage point watches and comprise several visits spread over the winter, from November through to March.

Reptiles

- 5.17 The site provides the habitat mosaic and vegetation structure suitable for a number of widespread reptile species, including grass snakes. Field and ditch/stream boundaries provide areas for foraging and basking, cover against predation as well as potential hibernation spots.
- 5.18 A minimum of a seven survey visits, following current guidelines (Froglife, 1999; English Nature, 2004), should be carried out to establish the presence/absence and distribution of reptiles. The grassland/scrub mosaic and edge habitats should be targeted. The optimum time is generally late spring, from April to mid June and in the early autumn during September. Where possible, survey effort should be spread across the recording season i.e. March-October.

Bats

- 5.19 On-site habitats are of value to foraging, commuting and roosting bats when judged against current assessment criteria provided by the Bat Conservation Trust (Hundt, 2012). Habitats of highest value are associated with buildings and linear features such as the railway embankment and the ditch/stream network.
- 5.20 Following current guidelines (Hundt, 2012) further bat surveys are recommended to assess the presence or potential presence of any bat roosts, as well as the function the site might provide for foraging and commuting. This should include building inspections, tree inspections, and emergence and activity surveys as appropriate. Emergence and activity surveys must be carried out during the peak season which is between May and August.

Badger

- 5.21 Evidence of badgers was found on-site during the PEA and habitats on-site and across connected areas of Lancing Strategic Gap provide suitable areas for sett building and extensive areas for foraging.
- 5.22 In order to assess the use of the site by badger a survey should be carried out in all areas of suitable on-site sett-building and foraging habitat to look for signs and evidence of this species. Survey effort should also include suitable off-site and accessible areas of the site boundary.

5.23 In line with current methodology holes in the ground attributed to badger should be classified as well used, partially used or disused and setts should be classified as main, annexe, subsidiary and outlier (Cresswell *et al*, 1990; Wilson *et al*, 1997). Surveys to identify setts should be carried out in the winter while surveys to establish the level of foraging and the likely impact of loss of foraging habitat and mitigation required should be conducted in the summer.

Great Crested Newt

5.24 The site provides breeding and terrestrial habitat in the form of ditches/streams, reed bed, long grassland, hedgerows, trees-scrub lines. Several ditches that potentially provide suitable breeding habitat for great crested newt are present within a 500m radius, which is the guideline distance (English Nature, 2001) that great crested newt may commute between breeding ponds. The nearest pond is 0.61km north-west. It is recommended that a Habitat Suitability Index (HSI) survey, following Oldham *et al* (2000), is carried out on all suitable water bodies within a 500m radius of site boundaries, which do not have significant barriers to dispersal between them and the site.

5.25 Utilising the results from the HSI, presence/absence surveys of ponds within 500m of the site may need to be carried out. Four presence/absence surveys should be carried out following best practice guidelines (English Nature, 2001) and must be carried out between mid-March and mid-June with at least two between mid-April and mid-May

5.26 The requirement for further survey will depend on the quality of the ponds as breeding habitat and the number and distance of suitable breeding ponds from the site. They are likely to be required to determine population size (if presence is confirmed), and the degree to which great crested newt are a constraint to any proposed development in terms of planning construction works, and whether works will require a European Protected Species Mitigation (EPSM) licence.

Aquatic invertebrates

5.27 The site comprises a range of aquatic and riparian habitats that provide a variety of foraging and nesting opportunities for both widespread and rare/notable insect species, such as grassland/tall ruderal/scrub mosaics, floodplain grazing marsh, nectar rich marginal plants, reed bed and running water.

5.28 It is recommended that aquatic invertebrate surveys are carried out, using a variety of sampling techniques in order to provide baseline information for key habitats. Aquatic invertebrate surveys should focus on macro-invertebrate diversity using sampling methods devised to make a general assessment regarding the quality of

ditches/streams, such as outlined in *A Manual for the Survey and Evaluation of the Aquatic Plant and Invertebrate Assemblages of Grazing Marsh Ditch Systems* (Buglife, 2011).

Aquatic/invasive plants

- 5.29 Due to restricted access it was not possible to accurately assess the aquatic flora of the ditch/stream network. However, the limited survey effort has shown that water bodies have the potential to support a relatively diverse aquatic flora, which may include invasive plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).
- 5.30 Therefore, it is recommended that a survey of the ditch/stream network for both native and non-native aquatic plants is carried out to ensure that any potential future works have minimal impact on any rare/uncommon species and to inform mitigation and future management plans at the site for water bodies, including treatment of invasive plant species that may be required.
- 5.31 Survey effort should include both open water and bankside vegetation. As aquatic species can reappear in quantity after dredging, ditches/streams with recent management should be included. Buglife (2011) methodology (see above) will be an effective approach as it requires a survey of aquatic plant species to be carried out simultaneously with aquatic invertebrate surveys.

Water vole

- 5.32 The network of on-site ditches/streams is connected to a more extensive off-site wetland system to the north. Historic records for water vole are known on-site and off-site at Shoreham Airport. Suitable habitat for water vole, however, is restricted to sections with a suitable bank profile, vegetation cover, food plants and areas of deeper, open water. As no specific survey for water voles and their signs was undertaken as part of the PEA, and access to banks was very restricted, it is recommended that a further survey for evidence of water vole is carried out.
- 5.33 Surveys of ditches/streams and adjacent areas of reed bed are recommended and should include a search of all suitable off-site habitat, located approximately 50m up and downstream. This would involve an ecologist walking the banks and possibly using a small boat/canoe to search for signs of water voles such as footprints, burrows, latrines, feeding stations or other field signs. The surveys would ideally be undertaken from Mid March-September and follow best practice guidelines (Strachan and Moorhouse, 2011).

MITIGATION

Water Courses

- 5.34 All works near to ditches/streams should adhere to best practice guidance to avoid adverse effects upon water quality and Adur Estuary SSSI, such as *Pollution Prevention Guidance 5: Works and maintenance in or near water* (Environment Agency, 2007). Any development proposals should also ensure that ditches/streams are buffered by planting (without increasing shading) to provide adjacent habitat and reduce risk of runoff from hard surfaces.

Habitat retention and protection

- 5.35 Retention of habitat along riparian corridors and associated habitats such as floodplain grazing marsh and tree/scrub lines has already been recommended on the basis of their hydrology and supporting/buffering role to Adur Estuary SSSI. It is also important to maintain lines of scattered trees and scrub around field margins and site boundaries as they provide a supporting green corridor role. In accordance with *Policy CC8: Green Infrastructure* and *Policy C5: Managing the Urban-Rural Fringe* of The South East Plan (2009) a key part of masterplanning will be to ensure that these links are retained and protected as part of development proposals.
- 5.36 All construction works taking place in the vicinity of retained hedgerows, lines of scattered trees/scrub and individual mature trees should conform to *British Standard 5837:2012 Trees in Relation to Design, Demolition and Construction* to maintain the integrity of these habitats.

Vegetation clearance and breeding birds

- 5.37 The site contains a variety of habitats considered suitable for breeding birds and a breeding bird survey is recommended. Any clearance of vegetation suitable for breeding birds, such as scattered trees, scrub, hedgerows, buildings etc. should be implemented outside of the bird nesting season i.e. between September and February. In addition, it is recommended that compensation is provided for any breeding bird habitat lost as an integral part of any landscaping plan for the site.

Invasive plant species

- 5.38 One invasive plant species included on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) is present on-site i.e. Japanese Rose. Under this act it is an offence to plant or otherwise cause these species to grow in the wild. It is possible that they could spread during and, therefore, it is recommended that if removed it is correctly disposed of, following best practice guidelines (Environment Agency, 2010).

Bats and lighting

- 5.39 While different species of bat react differently to night time lighting, research has found that bats are sensitive to artificial lighting. Excessive lighting can delay bats from emerging, thus shortening the time available for foraging, as well as causing bats to move away from suitable foraging grounds or roost sites, to alternative dark areas (Jones, 2000).
- 5.40 Currently large parts of the site remain dark at night. In order to retain as many dark areas as possible, light spillage and glare associated with any development should be minimised. This can be achieved by following accepted best practice (Institute of Ecology and Environmental Management, 2006: Institute of Lighting Engineers, 2007):
- The level of artificial lighting including flood lighting should be kept to a minimum;
 - Where this does not conflict with health and safety and/or security requirements, the site should be kept dark during peak bat activity periods (0 to 1.5 hours after sunset and 1.5 hours before sunrise);
 - Lighting that is required for security or safety reasons should use a lamp of no greater than 2000 lumens (150 Watts) and should comprise sensor activated lamps;
 - Low pressure sodium lights are a preferred option to high pressure sodium or mercury lamps;
 - Lighting should be directed to where it is needed with minimal light spillage. This can be achieved by limiting the height of the lighting columns and by using as steep a downward angle as possible and/or a shield or hood that directs the light below the horizontal plane; and
 - Artificial lighting should not directly illuminate any potential bat roosting features or habitats of value to commuting/foraging bats. Similarly, any newly planted linear features should not be directly lit.

COMPENSATION AND ENHANCEMENT

Management plan

- 5.41 A site wide landscape and ecological management plan should be drawn up to cover the long-term maintenance of retained and newly created on-site habitats. This should form part of the contractual agreement for the future management of the site, including any wetland systems.

Sustainable Drainage Systems (SuDS)

- 5.42 Where proposed development comprises large areas of buildings and hardstanding the use of SuDS schemes, including green roofs (see below) are recommended.

- 5.43 A linked system comprising green roofs, rain water harvesting, ponds, vegetated swales, below ground drainage and porous surfacing utilising materials such as grasscrete¹² should be considered as part of the masterplanning for the site. Such systems will increase biodiversity and reduce surface water run-off at the site. The creation of ponds (see below) and/or swales would also contribute to the UK Standing Water/Ponds BAP and provide a habitat for a range of wetland wildlife. Once established such features would provide a habitat for a range of wetland wildlife and could be used as an educational resource, for example, by local schools.
- 5.44 The design of any SuDS system must take full account of any potential impacts on the ditch/stream network, such as the potential for a reduction in volume or pollution of surface and ground water reaching off-site wetland habitats *viz.* Adur Estuary SSSI.

Green roofs

- 5.45 Any proposals for green roofs should include a specification of proven ecological value for foraging birds and invertebrates as pioneered by the Green Roof Consultancy¹³. Such roofs are typified by substrates of varying type and depth, include dead wood habitat and open areas of vegetation, require low levels of maintenance, and are attractive to people as well as wildlife. They also provide opportunities for natural colonisation by plants and invertebrates. Such roofs are preferable to standard stonecrop *Sedum spp.* dominated roofs that deliver little in the way of biodiversity value as they are typically less species-rich and have a shallower substrate depth¹⁴.

Ponds

- 5.46 Subject to the findings of further surveys and/or hydrological investigations, the creation of new ponds could improve conditions for amphibians potentially breeding in the locality and strengthen links between any breeding populations associated with nearby ponds. Ponds would also provide an important resource for invertebrates, reptiles such as grass snake and foraging bats. Information on locating, designing,

¹² Grasscrete comprises a range of cellular grassed pavement systems made from concrete or plastic and back-filled with recycled materials from the construction process and/or top-soil. The surface can be left to colonise naturally or can be planted with grass and low growing herbs.

¹³ Green Roof Consultancy website <http://greenroofconsultancy.com>

¹⁴ Please note that the UK's *Green Roof Code of Best Practice* (GRO, 2011) advocates a minimum depth of 80mm for extensive green roofs.

constructing and managing ponds should follow the advice provided by the Pond Creation Toolkit on the Pond Conservation website¹⁵.

Hedgerows

- 5.47 Native hedgerows provide an important habitat for a wide range of species and contribute to green infrastructure. Therefore, it is recommended that native hedgerows be planted as linear features around the site and are used to link other ecological features, such as retained hedgerows, woodland, lines of scattered trees/scrub.
- 5.48 Trimming of hedgerows should be carried out on a 2-3 year rotation to give a variety of heights and side growth and to ensure plenty of flowers, berries and fruit. To achieve this, sections of hedge could be cut in different years or opposite sides cut in alternate years.
- 5.49 Trimming should ideally be carried out in the late winter (although not in severe frost), to avoid the bird nesting season and ensure that the autumn berry crop remains available for as long as possible. Wherever feasible a 0.5 to 2m wide strip of grassland and/or tall ruderal vegetation should be allowed to develop along either side of the hedge and be managed by cutting 1-2 times per year or preferably biennially.
- 5.50 Tree regeneration should also be encouraged to provide young hedgerow trees that will fulfil an ecological and landscape role in the future.

Landscape Planting

- 5.51 The use of native and non-native planting in landscape schemes is recommended to both compensate for any loss of habitat and to provide enhancements for wildlife. Where possible the following guidelines should be followed:
- Replacement planting to compensate for the loss of any woodland, tree and scrub habitat should use only native species;
 - Native tree and shrub species should be typical of the local landscape and/or Natural Area and published plant species lists should be consulted;
 - It is best practice to use British native stock for tree, shrub and hedgerow planting and woodland schemes should follow guidance given in Forestry Commission

¹⁵ Pond Conservation website <http://www.pondconservation.org.uk/millionponds/pondcreationtoolkit>

Practice Note 8a (Herbert, Samuel & Patterson, 1999). A list of reputable suppliers is available from the Flora Locale website¹⁶;

- The use of invasive species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) as part of landscape planting, for example cotoneaster species and rhododendron, should be avoided;
- Non-Schedule 9 plant species that are potentially invasive or aggressive should also be avoided in areas adjacent to semi-natural habitats e.g. the planting of cherry laurel, shallon and snowberry in areas adjacent to woodland;
- Planting should be positioned so as to enhance existing green corridors, especially those identified on the Ecological Constraints and Opportunities Map;
- New tree planting should not shade mature trees that have been retained and where this is a risk, adequate space should be provided or only smaller shrub species planted;
- Any non-native planting schemes should comprise a high percentage of species of known wildlife value; and,
- Double flowering forms of both native and non-native species, such as '*Flore Pleno*', should be avoided.

Birds

5.52 Recommendations to both compensate for the loss of trees and shrubs of potential value to birds and to enhance sites for this species group include the use of artificial bird boxes. Boxes should include a combination of models suitable for colonial, semi-colonial and territorial species. Where possible the following guidelines should be followed:

- With exception to orientating the box due south, the direction that it faces makes little difference provided that it is sheltered from prevailing wind, rain and strong sunlight. The sector from north through east to south-east is possibly the most favourable;
- Boxes should not be positioned on the wet side of a tree trunk where the rain water flows down heavily. It is usually possible to see where the rain water runs down the trunk from the growth of green algae;

¹⁶ Flora Locale website <http://www.floralocale.org>

- Small boxes should be angled forwards to give additional shelter to the entrance. Larger open boxes should be mounted tilted slightly upwards so that the nest rests naturally in the rearmost part of the box;
- For many common songbird species the height of the box is not important and may range from 1m upwards;
- It is preferable to site nest boxes in locations that are accessible for maintenance, away from bird feeders, a discrete distance away from other nest boxes (unless targeting a colonial species) and so that they provide some protection from predators and vandalism; and,
- Standard hole and open fronted boxes can be attached at varying heights using either standard hanging devices or bespoke attachments to suitable structures.

5.53 In addition, any on-site buildings could include specially designed features within their structure, for example to attract house sparrows (a UK BAP species), swift and house martins. House sparrow boxes are usually erected on buildings in locations such as under eaves. Swift and house martin boxes are located in similar open locations on building facades, but require an uninterrupted drop of at least 3-5m below them.

Bats

5.54 Consideration could be given to the installation of bat boxes in suitable locations in mature trees and also to include integrated bat 'boxes' or 'bricks' in any new buildings. These will provide warm and favourable conditions for crevice roosting species such as pipistrelles (soprano pipistrelle is a UK BAP species). Ideally they should be south or south-west facing with a clear flight entry path and away from artificial lighting (see *Bats and lighting* above). Information from any further bat surveys, regarding bat flight-lines to commuting and foraging habitat should be used to inform the positioning of these new roosts.

5.55 Building designs should consider using hanging tiles or weather boarding made from natural timber since these will provide suitable crevices for bats. Soffits or fascia boards should be made from natural timber in preference to PVC, and where possible, traditional bitumen and hessian roofing felt should be used in preference to breathable membranes such as Tyvec™. Any timbers including soffits should be treated with substances that are non-toxic to bats such as those that comprise a copper, zinc or boron compound in emulsion or aqueous solution. A list of approved treatments can be obtained from Natural England.

5.56 Any new building with a pitched or hipped roof could also include a dedicated open loft space with bat access points located at the gable ends and along the soffits.

Ideally suitable bat access slots (20 x 100 slots) should be located along the ridge at approximately three metre intervals at the gable ends and along the soffits.

- 5.57 Where possible, any roof voids created for bats should ideally have restricted access to avoid future disturbances and to ensure an unobstructed flight space by limiting the use of the loft to only low level storage. This can be achieved by restricting the loft hatch size (i.e. 500 x 500mm).

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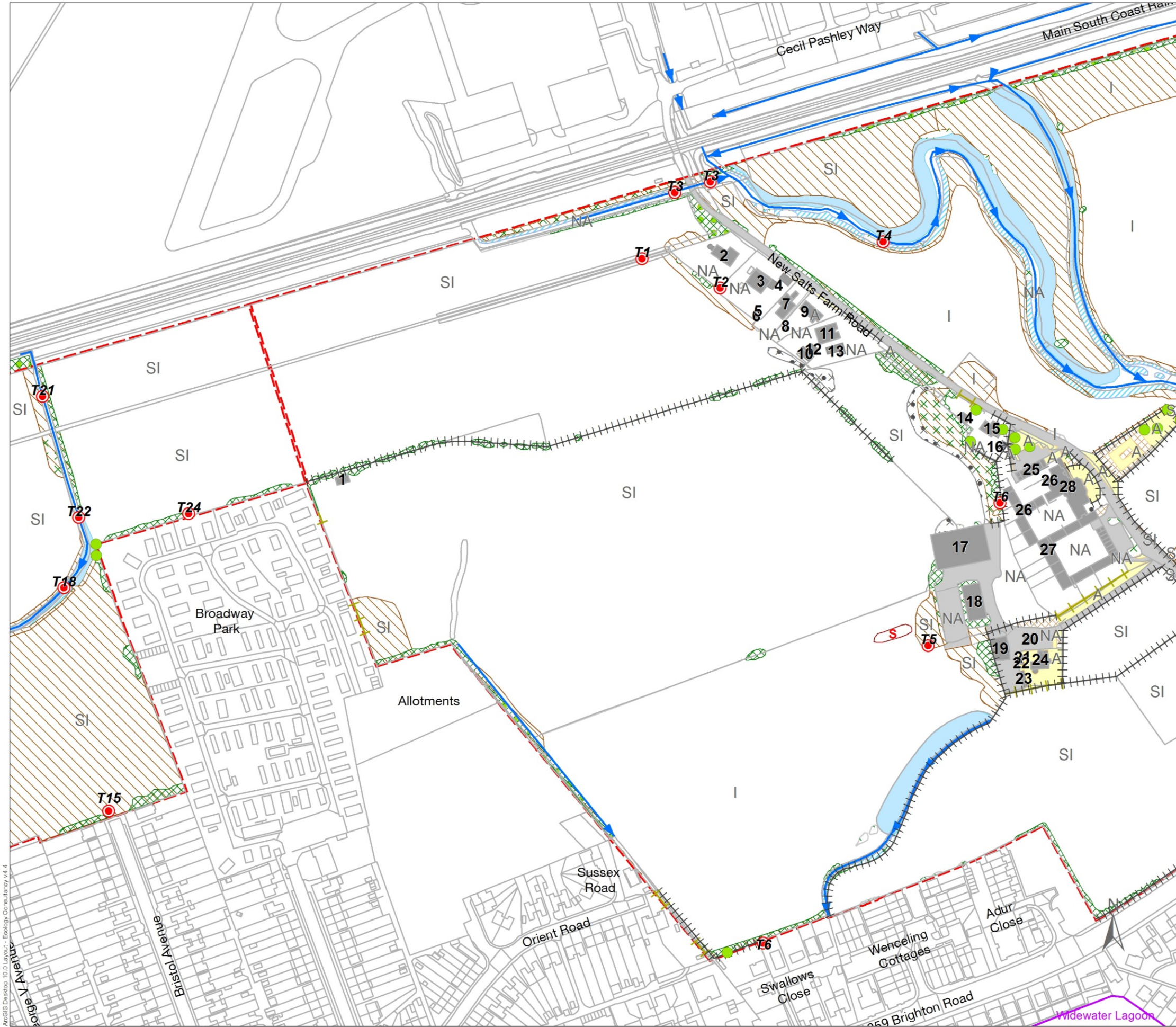
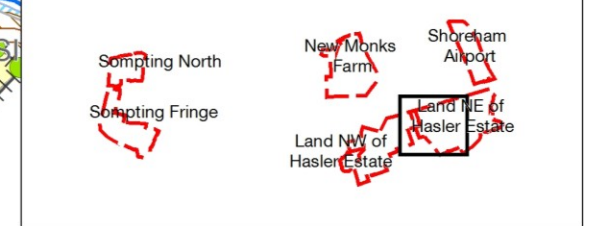
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Appendix 1: Habitat Map

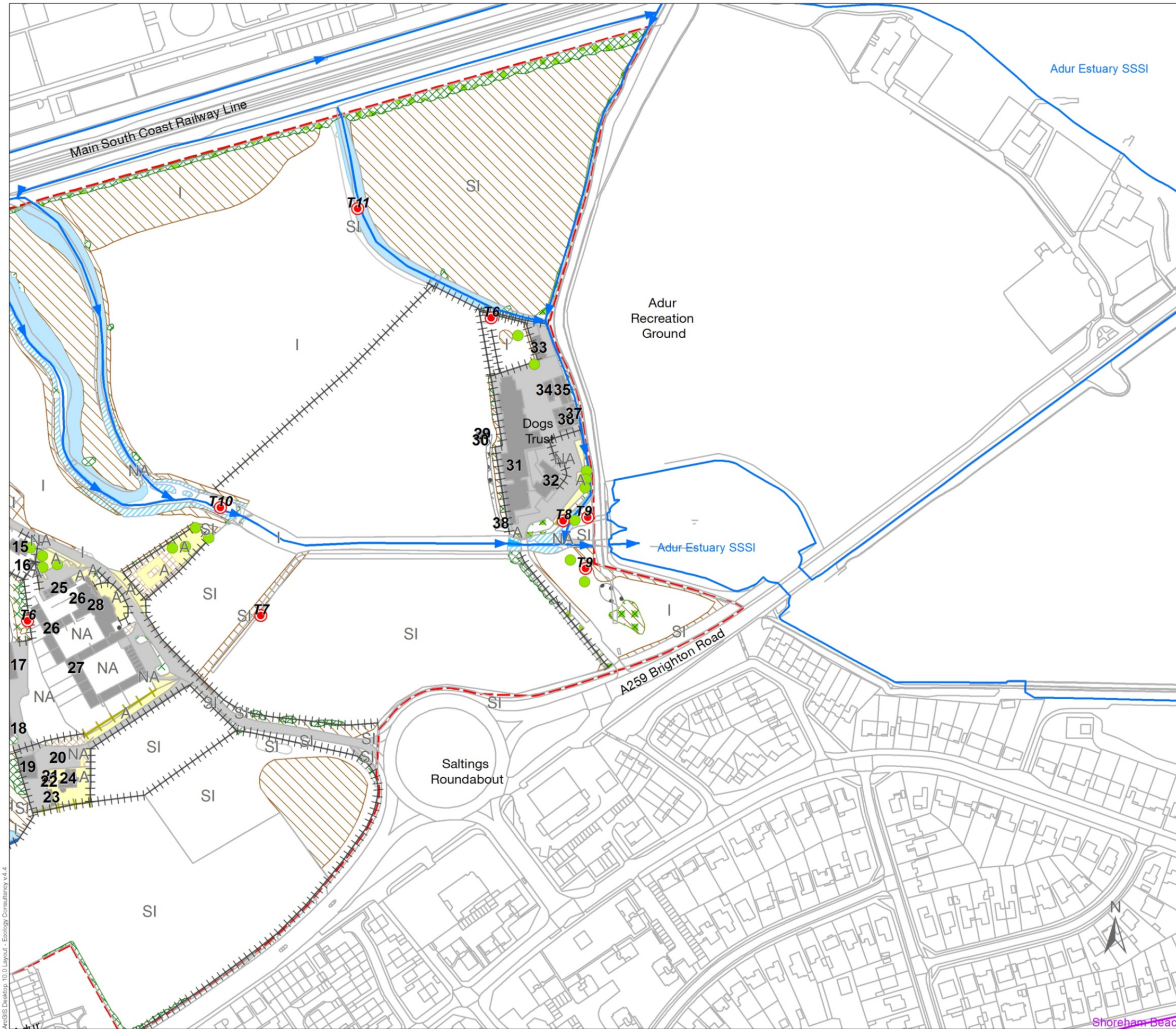
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Client	Sheils Flynn		
Drawing title	HABITAT SURVEY MAP		
Site (Sectors)	Land NE of Hasler Estate (1 of 2)		
Date of survey	July 2012	Surveyor	BK
			Scale (at A3) 1:2,500
Drawn/Checked/Approved	CAJ/GS/CC/BK	Date	28/08/2012



KEY	
[Red dashed line]	Site boundary
[Blue hatched]	Marginal vegetation
[Grey rectangle]	Buildings
[Light blue]	Swamp
[Dark grey rectangle]	Hardstanding
[Blue rectangle]	Standing water-Pond
[Green rectangle]	Broad-leaved semi-natural woodland
[Light green rectangle]	Vegetable plot
[Green rectangle with diagonal lines]	Plantation woodland (native)
[Red rectangle with 'S']	Spoil
[Green circle]	Mixed woodland
[Pink rectangle]	Roughland
[Brown rectangle]	Tall ruderal vegetation
[Blue rectangle]	SSSI boundary
[Green rectangle with cross-hatch]	Continuous scrub
[Purple rectangle]	SNCI boundary
[Green rectangle with 'x']	Scattered scrub
[NA in a box]	Private Garden (not accessed)
[Green circle with dot]	Scattered trees
[Green line with dots]	Native species-poor hedge and trees
[Yellow rectangle]	Amenity grassland
[Yellow line with dots]	Non-native species-poor hedge
[SI in a box]	Poor semi-improved grassland
[Green line]	Native species-poor hedge
[A in a box]	Arable
[Blue arrow]	Running water
[I in a box]	Improved grassland
[Brown rectangle]	Stone wall
[Orange rectangle]	Introduced shrubbery
[Black rectangle]	Fence
[White rectangle with cross-hatch]	Short perennial/ephemeral
[Green circle]	Tree (indicative)
[Black rectangle]	Bare ground
[Red circle]	Target note

ArcGIS Desktop 10.0 Linc. Ecology Consultancy v4.4
 10/01/2012
 Sheils Flynn

This plan is provided solely for the purpose of supporting the description of the ecological features of the site as contained in the accompanying report



The Ecology Consultancy

Job title: Adur District Council
ECL Job no. 120618

Client: Sheils Flynn

Drawing title: HABITAT SURVEY MAP

Site (Sectors): Land NE of Hasler Estate (2 of 2)

Date of survey: July 2012
Surveyor: BK
Scale (at A3): 1:2,500

Drawn/Checked/Approved: CAJ/GS/CC/BK
Date: 28/08/2012

KEY

[Red dashed line]	Site boundary	[Blue hatched]	Marginal vegetation
[Black outline]	Buildings	[Light blue]	Swamp
[Grey fill]	Hardstanding	[Blue square]	Standing water-Pond
[Green fill]	Broad-leaved semi-natural woodland	[Green hatched]	Vegetable plot
[Green hatched]	Plantation woodland (native)	[Red 'S' in box]	Spoil
[Green circle]	Mixed woodland	[Pink fill]	Roughland
[Orange hatched]	Tall ruderal vegetation	[Blue outline]	SSSI boundary
[Green cross-hatched]	Continuous scrub	[Purple outline]	SNCI boundary
[Green 'x' in box]	Scattered scrub	[Grey box with NA]	Private Garden (not accessed)
[Green circle]	Scattered trees	[Green line with dots]	Native species-poor hedge and trees
[Yellow 'A' in box]	Amenity grassland	[Yellow line with dots]	Non-native species-poor hedge
[Grey 'SI' in box]	Poor semi-improved grassland	[Green line with dots]	Native species-poor hedge
[Grey 'A' in box]	Arable	[Blue arrow]	Running water
[Grey 'I' in box]	Improved grassland	[Brown line]	Stone wall
[Orange cross-hatched]	Introduced shrubbery	[Black dashed line]	Fence
[Grey 'x' in box]	Short perennial/ephemeral	[Green circle]	Tree (indicative)
[Black circle]	Bare ground	[Red circle]	Target note

ArcGIS Desktop 10.0 Layout - Ecology Consultancy v4.4

This plan is provided solely for the purpose of supporting the description of the ecological features of the site as contained in the accompanying report

Appendix 2: Photographs

Photograph 1

View south-west from New Salts Farm. Reed swamp (darker green band) follows the line of the ditch across floodplain grazing marsh.



Photograph 2

View west from the Dogs Trust along length of water body. A wide band of common reed, scrub and tall ruderal vegetation is present along the upper banks.



Photograph 3

View south-west from EA flood control gates (see Target Note 8) showing marginal vegetation and reed swamp dominated by common reed.



Photograph 4

Standing water and marginal vegetation along the sites main stream (see Target Note 10).



Photograph 5

Field of poor semi-improved grassland dominated by tall ruderal vegetation. Tree-scrub line along the railway embankment is to the left of picture.



Photograph 6

Field of recently cut poor semi-improved grassland in north-west corner of the site.



Photograph 7

Red-star thistle at New Salts Farm (see pink flowering plant centre-right of picture).



Photograph 8

View south from Target Note 11 showing reed swamp (dark green in picture) in north-east corner of the site.



Photograph 9

View west from culvert under New Salts Farm Road (see Target Note 3). Railway embankment to the right of picture.



Appendix 3: Plant Species List

Plant Species List for Land North-East of the Hasler Estate, Lancing, West Sussex compiled from the Preliminary Ecological Appraisal carried out on 07th August 2012.

Scientific nomenclature follows Stace (2010) for vascular plant species. Vascular plant common names follow the Botanical Society of the British Isles 2003 list, published on its web site, www.bsbi.org.uk. Please note that this plant species list was generated as part of a PEA, does not constitute a full botanical survey and should be read in conjunction with the associated PEA report.

Abundance was estimated using the DAFOR scale as follows:

D = dominant, A = abundant, F = frequent, O = occasional, R = rare, L = locally
c=clumped, e=edge only, g=garden origin, p=planted, y = young, s=seedling or sucker, t=tree, h=hedge, w=water, d=dry,

Scientific Name	Common Name	Abundance	Qualifier
<i>Acer pseudoplatanus</i>	Sycamore	O	t, p
<i>Achillea millefolium</i>	Yarrow	O/LF	d
<i>Agrimonia eupatoria</i>	Agrimony	R	e
<i>Agrostis stolonifera</i>	Creeping bent	A	
<i>Allium vineale</i>	Wild onion	R	
<i>Alnus glutinosa</i>	Alder	O	t, w
<i>Alopecurus myosuroides</i>	Black-grass	R	
<i>Anagallis arvensis</i>	Scarlet pimpernel	R	
<i>Anthriscus sylvestris</i>	Cow parsley	D	
<i>Apium graveolens</i>	Wild celery	O/LF	w
<i>Apium nodiflorum</i>	Fool's watercress	LF	w
<i>Arctium minus</i>	Lesser burdock	O	
<i>Arrhenatherum elatius</i>	False oat-grass	A	
<i>Artemisia vulgaris</i>	Mugwort	O/LF	
<i>Atropa belladonna</i>	Deadly nightshade	R	
<i>Avena fatua</i>	Wild-oat	R	
<i>Ballota nigra</i>	Black horehound	O/LA	
<i>Bellis perennis</i>	Daisy	O	
<i>Beta vulgaris</i>	Root beet	R	
<i>Bolboscheonus maritimus</i>	Sea club-rush	R/LA	w
<i>Brassica napus</i>	Rape	O	
<i>Bromus hordeaceus</i>	Soft-brome	R	
<i>Buddleja davidii</i>	Buddleia	R	
<i>Callitriche stagnalis</i>	Common water-starwort	F/LA	w
<i>Calystegia sepium</i>	Hedge bindweed	LF	

<i>Calystegia silvatica</i>	Large bindweed	O	
<i>Capsella bursa-pastoris</i>	Shepherd's-purse	R	
<i>Carex otrubae</i>	False fox-sedge	R/LF	w
<i>Carex panicea</i>	Carnation sedge	R	w
<i>Carex pendula</i>	Pendulous sedge	R	w
<i>Cedrus deodara</i>	Deodar Cedar	R	t, p
<i>Centaurea calcitrapa</i>	Red star thistle	R/LF	
<i>Centaurea nigra</i>	Common knapweed	R	
<i>Centaurea scabiosa</i>	Greater knapweed	R	
<i>Centaureum erythraea</i>	Common centaury	R	
<i>Cerastium fontanum</i>	Common mouse-ear	O	
<i>Chamaecyparis lawsoniana</i>	Lawson's cypress	R/LF	h, p
<i>Chamerion angustifolium</i>	Rosebay willowherb	O/LF	
<i>Chenopodium album</i>	Fat-hen	R/LA	
<i>Choisya ternata</i>	Mexican orange bush	R	p
<i>Cirsium arvense</i>	Creeping thistle	A	
<i>Cirsium vulgare</i>	Spear thistle	F/LA	
<i>Convolvulus arvensis</i>	Field bindweed	A	
<i>Conyza canadensis</i>	Canadian fleabane	R	
<i>Coronopus squamatus</i>	Swine-crest	O/LF	
<i>Crataegus monogyna</i>	Hawthorn	A	
<i>Cupressus</i> sp.	Cypress	LF	p, h
<i>Cupressus macrocarpa</i>	Monterey cypress	R	t, p
<i>Dactylis glomerata</i>	Cock's-foot	F	
<i>Daucus carota</i>	Wild carrot	R	
<i>Dipsacus fullonum</i>	Wild teasel	F	
<i>Echium vulgare</i>	Viper's-bugloss	F	
<i>Elaeagnus x ebbingei</i>	Oleaster	R/LF	h, p
<i>Elytrigia repens</i>	Common couch	F/LA	
<i>Epilobium hirsutum</i>	Great willowherb	F	
<i>Epilobium tetragonum</i>	Square-stalked willowherb	O	
<i>Equisetum arvense</i>	Field horsetail	O/LA	
<i>Escallonia macrantha</i>	Escallonia	R	p, h
<i>Euonymus latifolius</i>	Large-leaved spindle	R/LA	p, e
<i>Eupatorium cannabinum</i>	Hemp-agrimony	O	
<i>Euphorbia cyparissias?</i>	Cypress spurge	R	g/p?
<i>Fallopia convolvulus</i>	Black-bindweed	R	
<i>Festuca arundinacea</i>	Tall fescue	A	
<i>Festuca rubra</i>	Red fescue	O/LA	p
<i>Foeniculum vulgare</i>	Fennel	R/LA	
<i>Fraxinus excelsior</i>	Ash	R	t

<i>Galium aparine</i>	Cleavers	O/LF	
<i>Galium mollugo</i>	Hedge bedstraw	R	
<i>Galium verum</i>	Lady's bedstraw	R	
<i>Geranium dissectum</i>	Cut-leaved crane's-bill	R	
<i>Geranium molle</i>	Dove's-foot crane's-bill	O	
<i>Glechoma hederacea</i>	Ground-ivy	F/LA	e
<i>Glyceria fluitans</i>	Reed sweet-grass	F	w, e
<i>Hebe</i> sp.	Hedge veronica	R	p, h
<i>Hedera helix</i>	Ivy	F/LA	
<i>Heracleum sphondylium</i>	Hogweed	A	
<i>Hirschfeldia incana</i>	Hoary mustard	O/LF	
<i>Holcus lanatus</i>	Yorkshire-fog	O	
<i>Hordeum murinum</i>	Wall barley	O	
<i>Hordeum secalinum</i>	Meadow barley	O	
<i>Iris pseudacorus</i>	Yellow iris	F	w
<i>Juncus acutiflorus</i>	Sharp-flowered rush	R/O	w
<i>Lamium album</i>	White dead-nettle	O	
<i>Leontodon autumnalis</i>	Autumn hawkbit	O	
<i>Leucanthemum vulgare</i>	Oxeye daisy	R	e
<i>Ligustrum ovalifolium</i>	Garden privet	R/LF	h, p
<i>Linaria purpurea</i>	Purple toadflax	R/LF	m
<i>Lolium perenne</i>	Perennial rye-grass	A/LD	
<i>Lonicera periclymenum</i>	Honeysuckle	R/LF	h
<i>Lonicera pileata</i>	Box-leaved honeysuckle	R/LF	p, h
<i>Lotus corniculatus</i>	Common bird's-foot-trefoil	O	d
<i>Lycopus europaea</i>	Gypsywort	F	w
<i>Malus domestica</i>	Apple	R/LF	y, p, e
<i>Malva sylvestris</i>	Common mallow	F	
<i>Matricaria discoidea</i>	Pineappleweed	R/LF	
<i>Medicago arabica</i>	Spotted medick	R	
<i>Medicago lupulina</i>	Black medick	F/LA	d
<i>Medicago sativa</i>	Lucerne	R	
<i>Melilotus officinalis</i>	Ribbed melilot	R	
<i>Mentha aquatica</i>	Water mint	O	w
<i>Mercurialis annua</i>	Annual mercury	R	
<i>Nasturtium officinale</i>	Watercress	LF/A	w
<i>Nigella damascena</i>	Love-in-the-mist	R	g, e
<i>Nymphoides peltata</i>	Fringed water lily	R/LF	c, w
<i>Oenanthe crocata</i>	Hemlock water-dropwort	R/LF	w
<i>Oxalis articulata</i>	Pink-sorrel	R	g, e
<i>Papaver somniferum</i>	Opium poppy	R	g, e

<i>Parthenocissus quinquefolia</i>	Virginia-creeper	R	h, p
<i>Persicaria amphibia</i>	Amphibious bistort	O	w
<i>Petasites fragrans</i>	Winter heliotrope	O/LA	
<i>Phleum pratense</i>	Timothy	O/LA	
<i>Phragmites australis</i>	Common reed	LD	w
<i>Helminthotheca echioides</i>	Bristly oxtongue	A/LD	
<i>Picris hieracioides</i>	Hawkweed oxtongue	A/LD	
<i>Picea</i> sp.	Spruce species	R	t, p, e
<i>Plantago lanceolata</i>	Ribwort plantain	F	
<i>Plantago major</i>	Greater plantain	O/LF	f, e
<i>Poa annua</i>	Annual meadow grass	F	
<i>Polygonum aviculare</i>	Knotgrass	O/LF	
<i>Populus</i> sp.	Poplar species	R	t, p, e
<i>Potentilla anserina</i>	Silverweed	F/LA	w, e
<i>Potentilla reptans</i>	Creeping cinquefoil	O	d
<i>Prunella vulgaris</i>	Selfheal	R/LF	
<i>Prunus domestica</i>	Wild plum	R	y, p
<i>Pulicaria dysenterica</i>	Fleabane	O	w
<i>Pyrus communis</i>	Pear	R	y, p
<i>Ranunculus repens</i>	Creeping buttercup	F	
<i>Ranunculus sceleratus</i>	Celery-leaved buttercup	R	w, e
<i>Reseda lutea</i>	Wild mignonette	R	
<i>Rhus typhina</i>	Stag's-horn sumach	R	g, e
<i>Robinia pseudoacacia</i>	False-acacia	R	p, t
<i>Rosa rugosa</i>	Japanese rose	R	p, h
<i>Rubus fruticosus</i> agg.	Bramble	A/LD	e
<i>Rumex conglomeratus</i>	Clustered dock	R	w
<i>Rumex crispus</i>	Curled dock	O	
<i>Rumex obtusifolius</i>	Broad-leaved dock	F/LA	
<i>Sagittaria sagitifolia</i>	Arrowhead	O	w
<i>Salix caprea</i>	Goat willow	O	e, y, w
<i>Salix cinerea</i>	Grey willow	R	e, y, w
<i>Salix fragilis</i>	Crack willow	R	t
<i>Sambucus nigra</i>	Elder	A	
<i>Schoenoplectus lacustris</i>	Common club-rush	LA	w
<i>Sedum album</i>	White stonecrop	R	
<i>Senecio jacobaea</i>	Common ragwort	A	
<i>Senecio vulgaris</i>	Groundsel	O	
<i>Silene latifolia</i>	White campion	R	
<i>Sisymbrium officinale</i>	Hedge mustard	O	
<i>Smyrniololus atrum</i>	Alexanders	R/LF	e

<i>Solanum dulcamara</i>	Bittersweet	O	w, e
<i>Solidago canadensis</i>	Canadian goldenrod	R	c
<i>Sonchus arvensis</i>	Perennial sow-thistle	R/LF	e, w
<i>Sonchus asper</i>	Prickly sow-thistle	O	
<i>Sonchus oleraceus</i>	Smooth sow-thistle	R	
<i>Sorbus intermedia</i>	Swedish whitebeam	R	t, p, e
<i>Stachys palustris</i>	Marsh woundwort	R	w
<i>Stellaria media</i>	Common chickweed	R/LF	
<i>Taraxacum</i> sp.	Dandelion	F	
<i>Trifolium dubium</i>	Lesser trefoil	R	
<i>Trifolium pratense</i>	Red clover	F	
<i>Trifolium repens</i>	White clover	A	
<i>Tripleurospermum inodorum</i>	Scentless mayweed	O	
<i>Ulmus procera</i>	English elm	R	y
<i>Urtica dioica</i>	Common nettle	A	
<i>Verbascum thapsus</i>	Great mullein	R	
<i>Verbena officinalis</i>	Vervain	R	
<i>Veronica arvensis</i>	Wall speedwell	R	
<i>Veronica persica</i>	Common field-speedwell	R	
<i>Veronica serpyllifolia</i>	Thyme-leaved speedwell	R	
<i>Vicia sativa</i>	Common vetch	O	
<i>Vicia tetrasperma</i>	Smooth tare	R	
<i>x Cupressocyparis leylandii</i>	Leyland Cypress	R/LF	h, p

Appendix 4: Legislation and Policy

Important Notice: This section contains details of legislation and planning policy applicable in Britain only (i.e. not including the Isle of Man, Northern Ireland, the Republic of Ireland or the Channel Islands) and is provided for general guidance only. While every effort has been made to ensure accuracy, this section should not be relied upon as a definitive statement of the law.

A NATIONAL LEGISLATION AFFORDED TO SPECIES

The objective of the EC Habitats Directive¹⁷ is to conserve the various species of plant and animal which are considered rare across Europe. The Directive is transposed into UK law by The Conservation of Habitats and Species Regulations 2010 (as amended) (formerly The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) and The Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007 (as amended).

The Wildlife and Countryside Act 1981 (as amended) is a key piece of national legislation which implements the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and implements the species protection obligations of Council Directive 2009/147/EC (formerly 79/409/EEC) on the Conservation of Wild Birds (EC Birds Directive) in Great Britain.

Since the passing of the Wildlife & Countryside Act 1981, various amendments have been made, details of which can be found on www.opsi.gov.uk. Key amendments have been made through the Countryside and Rights of Way (CRoW) Act (2000) and Nature Conservation (Scotland) Act 2004.

Other legislative Acts affording protection to wildlife and their habitats include:

- Deer Act 1991
- Countryside and Rights of Way (CRoW) Act 2000
- Natural Environment & Rural Communities (NERC) Act 2006
- Protection of Badgers Act 1992
- Wild Mammals (Protection) Act 1996

Species and species groups that are protected or otherwise regulated under the aforementioned domestic and European legislation, and that are most likely to be affected by development activities, include herpetofauna (amphibians and reptiles), badger, bats, birds, dormouse, invasive plant species, otter, plants, red squirrel, water vole and white clawed crayfish.

Explanatory notes relating to species protected under The Conservation of Habitats and Species Regulations 2010 (as amended) (which includes smooth snake, sand lizard, great crested newt and natterjack toad), all bat species, otter, dormouse and some plant species) are given below. **These should be read in conjunction with the relevant species sections that follow.**

- In the Directive, the term 'deliberate' is interpreted as being somewhat wider than intentional and may be thought of as including an element of recklessness.

¹⁷ Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora

- The Conservation of Habitats and Species Regulations 2010 (as amended) does not define the act of ‘migration’ and therefore, as a precaution, it is recommended that short distance movement of animals for e.g. foraging, breeding or dispersal purposes are also considered.
- In order to obtain a European Protected Species Mitigation (EPSM) licence, the application must demonstrate that it meets all of the following three ‘tests’: i) the action(s) are necessary for the purpose of preserving public health or safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequence of primary importance for the environment; ii) that there is no satisfactory alternative and iii) that the action authorised will not be detrimental to the maintenance of the species concerned at a favourable conservation status in their natural range.

Herpetofauna (Amphibians and Reptiles)

The sand lizard *Lacerta agilis*, smooth snake *Coronella austriaca*, natterjack toad *Epidalea calamita* and great crested newt *Triturus cristatus* receive full protection under The Conservation of Habitats and Species Regulations 2010 (as amended) through their inclusion on Schedule 2. The pool frog *Pelophylax lessonae* is also afforded full protection under the same legislation. Regulation 41 prohibits:

- Deliberate killing, injuring or capturing of species listed on Schedule 2
- Deliberate disturbance of any Schedule 2 species as:
 - a) to impair their ability:
 - (i) to survive, breed, or reproduce, or to rear or nurture young;
 - (ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate
 - b) to affect significantly the local distribution or abundance of the species
- Deliberate taking or destroying of the eggs of a Schedule 2 species
- Damage or destruction of a breeding site or resting place
- Keeping, transporting, selling, exchanging or offering for sale whether live or dead or of any part thereof.

With the exception of the pool frog, these species are also currently listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Under this Act, they are additionally protected from:

- Intentional or reckless disturbance (at any level)
- Intentional or reckless obstruction of access to any place of shelter or protection
- Selling, offering or exposing for sale, possession or transporting for purpose of sale.

Other native species of herpetofauna are protected solely under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). Species such as the adder *Vipera berus*, grass snake *Natrix natrix*, common lizard *Zootoca vivipara* and slow-worm *Anguis fragilis* are listed in respect to Section 9(1) & (5). For these species, it is prohibited to:

- Intentionally (or recklessly in Scotland) kill or injure these species
- Sell, offer or expose for sale, possess or transport for purpose of sale these species, or any part thereof.

Common frog *Rana temporaria*, common toad *Bufo bufo*, smooth newt *Lissotriton vulgaris* and palmate newt *L. helveticus* are listed in respect to Section 9(5) only which affords them

protection against sale, offering or exposing for sale, possession or transport for the purpose of sale.

How is the legislation pertaining to herpetofauna liable to affect development works?

A European Protected Species (EPS) Licence issued by the relevant countryside agency (e.g. Natural England) will be required for works liable to affect the breeding sites or resting places of those amphibian and reptile species protected under The Conservation Habitats and Species Regulations 2010. A licence will also be required for operations liable to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (e.g. survive, breed, rear young and hibernate). The licences are to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and their efficacy to be monitored.

Although not licensable, appropriate mitigation measures may also be required to prevent the intentional killing or injury of adder, grass snake, common lizard and slow worm, thus avoiding contravention of the Wildlife and Countryside Act 1981 (as amended).

Badger

Badgers *Meles meles* 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 sett¹⁸ or any part thereof
- Intentionally or recklessly disturb¹⁹ a badger when it is occupying a badger sett
- Intentionally or recklessly cause a dog to enter a badger sett
- Sell or offers for sale, possesses or has under his control, a live badger

How is the legislation pertaining to badgers liable to affect development works?

A Development Licence²⁰ will be required from the relevant countryside agency (e.g. Natural England) for any development works liable to affect an active badger sett, or to disturb

¹⁸ 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. Natural England (2009) have issued guidance on what is likely to constitute current use of a badger sett: www.naturalengland.org.uk/Images/WMLG17_tcm6-11815.pdf

¹⁹ For guidance on what constitutes disturbance and other licensing queries, see Natural England (2007) Badgers & Development: A Guide to Best Practice and Licensing. www.naturalengland.org.uk/Images/badgers-dev-guidance_tcm6-4057.pdf, Natural England (2009) Interpretation of 'Disturbance' in relation to badgers occupying a sett www.naturalengland.org.uk/Images/WMLG16_tcm6-11814.pdf, Scottish Natural Heritage (2002) Badgers & Development. www.snh.org.uk/publications/online/wildlife/badgersanddevelopment/default.asp and Countryside Council for Wales (undated) Badgers: A Guide for Developers. www.ccw.gov.uk.

²⁰ Natural England will only consider issuing a licence where detailed planning permission (if applicable to operation) has already been granted

badgers whilst in the sett. Depending on the nature of the works and the specifics of the sett and its environs, badgers could be disturbed by work near the sett even if there is no direct interference or damage to the sett itself. The countryside agencies have issued guidelines on what constitutes a licensable activity. N.B. there is no provision in law for the capture of badgers for development purposes and therefore it is not possible to obtain a licence to translocate badgers from one area to another.

Bats

All species of bat are fully protected under The Conservation of Habitats and Species Regulations 2010 (as amended) through their inclusion on Schedule 2. Regulation 41 prohibits:

- Deliberate killing, injuring or capturing of Schedule 2 species (e.g. all bats)
- Deliberate disturbance of bat species as:
 - a) to impair their ability:
 - (i) to survive, breed, or reproduce, or to rear or nurture young;
 - (ii) to hibernate or migrate³
 - b) to affect significantly the local distribution or abundance of the species
- Damage or destruction of a breeding site or resting place
- Keeping, transporting, selling, exchanging or offering for sale whether live or dead or of any part thereof.

Bats are also currently protected under the Wildlife and Countryside Act 1981 (as amended) through their inclusion on Schedule 5. Under this Act, they are additionally protected from:

- Intentional or reckless disturbance (at any level)
- Intentional or reckless obstruction of access to any place of shelter or protection
- Selling, offering or exposing for sale, possession or transporting for purpose of sale.

How is the legislation pertaining to bats liable to affect development works?

A European Protected Species (EPS) Licence issued by the relevant countryside agency (e.g. Natural England) will be required for works liable to affect a bat roost or for operations likely to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (e.g. survive, breed, rear young and hibernate). The licence is to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and their efficacy to be monitored.

Though there is no case law to date, the legislation may also be interpreted such that, in certain circumstances, important foraging areas and/or commuting routes can be regarded as being afforded *de facto* protection, for example, where it can be proven that the continued usage of such areas is crucial to maintaining the integrity and long-term viability of a bat roost²¹.

²¹ Garland & Markham (2008) Is important bat foraging and commuting habitat legally protected? Mammal News, No. 150. The Mammal Society, Southampton.

Birds

With certain exceptions, all birds, their nests and eggs are protected under Sections 1-8 of the Wildlife and Countryside Act 1981 (as amended). Among other things, this makes it an offence to:

- Intentionally (or recklessly in Scotland) kill, injure or take any wild bird
- Intentionally (or recklessly in Scotland) take, damage or destroy (or, in Scotland, otherwise interfere with) the nest of any wild bird while it is in use or being built
- Intentionally take or destroy an egg of any wild bird
- Sell, offer or expose for sale, have in his possession or transport for the purpose of sale any wild bird (dead or alive) or bird egg or part thereof.
- In Scotland only, intentionally or recklessly obstruct or prevent any wild bird from using its nest

Certain species of bird, for example the barn owl, black redstart, hobby, bittern and kingfisher receive additional special protection under Schedule 1 of the Act and Annex 1 of the European Community Directive on the Conservation of Wild Birds (2009/147/EC). This affords them protection against:

- Intentional or reckless disturbance while it is building a nest or is in, on or near a nest containing eggs or young
- Intentional or reckless disturbance of dependent young of such a bird
- In Scotland only, intentional or reckless disturbance whilst lekking
- In Scotland only, intentional or reckless harassment

How is the legislation pertaining to birds liable to affect development works?

To avoid contravention of the Wildlife and Countryside Act 1981 (as amended), works should be planned to avoid the possibility of killing or injuring any wild bird, or damaging or destroying their nests. The most effective way to reduce the likelihood of nest destruction in particular is to undertake work outside the main bird nesting season which typically runs from March to August²². Where this is not feasible, it will be necessary to have any areas of suitable habitat thoroughly checked for nests prior to vegetation clearance.

Those species of bird listed on Schedule 1 are additionally protected against disturbance during the nesting season. Thus, it will be necessary to ensure that no potentially disturbing works are undertaken in the vicinity of the nest. The most effective way to avoid disturbance is to postpone works until the young have fledged. If this is not feasible, it may be possible to maintain an appropriate buffer zone or standoff around the nest.

²² It should be noted that this is the main breeding period. Breeding activity may occur outside this period (depending on the particular species and geographical location of the site) and thus due care and attention should be given when undertaking potentially disturbing works at any time of year.

How is the legislation pertaining to dormice liable to affect development works?

A European Protected Species (EPS) Licence issued by the relevant countryside agency (e.g. Natural England) will be required for works liable to affect dormouse breeding or resting places (N.B. this is usually taken to mean dormouse 'habitat') or for operations likely to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (e.g. survive, breed, rear young and hibernate). The licence is to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and their efficacy to be monitored.

Wild Mammals (Protection) Act 1996

All wild mammals are protected against intentional acts of cruelty under the above legislation. This makes it an offence to:

- Mutilate, kick, beat, nail or otherwise impale, stab, burn, stone, crush, drown, drag or asphyxiate any wild mammal with intent to inflict unnecessary suffering.

To avoid possible contravention, due care and attention should be taken when carrying out works (for example operations near burrows or nests) with the potential to affect any wild mammal in this way, regardless of whether they are legally protected through other conservation legislation or not.

Plants

With certain exceptions, all wild plants are protected under the Wildlife and Countryside Act 1981 (as amended). This makes it an offence for an 'unauthorised' person to intentionally (or recklessly in Scotland) uproot wild plants. An authorised person can be the owner of the land on which the action is taken, or anybody authorised by them.

Certain rare species of plant, for example some species of orchid, are also fully protected under Schedule 8 of the Wildlife and Countryside Act 1981 (as amended). This prohibits *any* person:

- Intentionally (or recklessly in Scotland) picking, uprooting or destruction of any wild Schedule 8 species (or seed or spore attached to any such wild plant in Scotland only)
- Selling, offering or exposing for sale, or possessing or transporting for the purpose of sale, any wild live or dead Schedule 8 plant species or part thereof
- In addition to the UK legislation outlined above, several plant species are fully protected under Schedule 5 of The Conservation of Habitats and Species Regulations 2010. These are species of European importance. Regulation 45 makes it an offence to:
- Deliberately pick, collect, cut, uproot or destroy a wild Schedule 5 species
- Be in possession of, or control, transport, sell or exchange, or offer for sale or exchange any wild live or dead Schedule 5 species or anything derived from such a plant.

How is the legislation pertaining to protected plants liable to affect development works?

A European Protected Species (EPS) Licence issued by the relevant countryside agency (e.g. Natural England) will be required for works liable to affect species of plant listed under The Conservation of Habitat and Species Regulations 2010. The licence is to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and their efficacy to be monitored.

Invasive Plant Species

Certain species of plant, including Japanese knotweed *Fallopia japonica*, giant hogweed *Heracleum mantegazzianum* and Himalayan balsam *Impatiens glandulifera* are listed on Part II of Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) in respect to Section 14(2). Such species are generally non-natives whose establishment or spread in the wild may be detrimental to native wildlife. Inclusion on Part II of Schedule 9 therefore makes it an offence to plant or otherwise cause these species to grow in the wild.

How is the legislation pertaining to invasive plants liable to affect development works?

Although it is not an offence to have these plants on your land *per se*, it is an offence to *cause* these species to grow in the wild. Therefore, if they are present on site and development activities (for example movement of spoil, disposal of cut waste or vehicular movements) have the potential to cause the further spread of these species to new areas, it will be necessary to ensure appropriate measures are in place to prevent this happening prior to the commencement of works.

Plants: Injurious Weeds

Under the Weeds Act 1959 any land owner or occupier may be required prevent the spread of certain 'injurious weeds' such as spear thistle *Cirsium vulgare*, creeping thistle *Cirsium arvense*, curled dock *Rumex crispus*, broad-leaved dock *Rumex obtusifolius*, and common ragwort *Senecio jacobaea*. It is a criminal offence to fail to comply with a notice requiring such action to be taken. The Ragwort Control Act 2003 establishes a ragwort control code of practice as common ragwort is poisonous to horses and other livestock. This code provides best practice guidelines and is not legally binding.

B NATIONAL AND EUROPEAN LEGISLATION AFFORDED TO HABITATS

Statutory Designations: National

Nationally important areas of special scientific interest, by reason of their flora, fauna, or geological or physiographical features, are notified by the countryside agencies as statutory **Sites of Special Scientific Interest** (SSSIs) under the National Parks and Access to the Countryside Act 1949 and latterly the Wildlife & Countryside Act 1981 (as amended). As well as underpinning other national designations (such as **National Nature Reserves** which are declared by the countryside agencies under the same legislation), the system also provides statutory protection for terrestrial and coastal sites which are important within a European context (Natura 2000 network) and globally (such as Wetlands of International Importance). See subsequent sections for details of these designations. Improved provisions for the protection and management of SSSIs have been introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and the Nature Conservation (Scotland) Act 2004.

The Wildlife & Countryside Act 1981 (as amended) also provides for the making of **Limestone Pavement Orders**, which prohibit the disturbance and removal of limestone from such designated areas, and the designation of **Marine Nature Reserves**, for which byelaws must be made to protect them.

Statutory Designations: International

Special Protection Areas (SPAs), together with **Special Areas of Conservation** (SACs) form the **Natura 2000** network. The Government is obliged to identify and classify SPAs under the

EC Birds Directive (Council Directive 2009/147/EC (formerly 79/409/EEC)) on the Conservation of Wild Birds). SPAs are areas of the most important habitat for rare (listed on Annex I of the Directive) and migratory birds within the European Union. Protection afforded SPAs in terrestrial areas and territorial marine waters out to 12 nautical miles (nm) is given by The Conservation of Habitats & Species Regulations 2010. The Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007 (as amended) provide a mechanism for the designation and protection of SPAs in UK offshore waters (from 12-200 nm).

The Government is obliged to identify and designate SACs under the EC Habitats Directive (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora). These are areas which have been identified as best representing the range and variety of habitats and (non-bird) species listed on Annexes I and II to the Directive within the European Union. SACs in terrestrial areas and territorial marine waters out to 12 nautical miles are protected under The Conservation of Habitats & Species Regulations 2010. The Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007 (as amended) provide a mechanism for the designation and protection of SACs in UK offshore waters (from 12-200 nm).

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. The Convention covers all aspects of wetland conservation and wise use, in particular recognizing wetlands as ecosystems that are globally important for biodiversity conservation. Wetlands can include areas of marsh, fen, peatland or water and may be natural or artificial, permanent or temporary. Wetlands may also incorporate riparian and coastal zones adjacent to the wetlands. Ramsar sites are underpinned through prior notification as Sites of Special Scientific Interest (SSSIs) and as such receive statutory protection under the Wildlife & Countryside Act 1981 (as amended) with further protection provided by the Countryside and Rights of Way (CROW) Act 2000. Policy statements have been issued by the Government in England and Wales highlighting the special status of Ramsar sites. This effectively extends the level of protection to that afforded to sites which have been designated under the EC Birds and Habitats Directives as part of the Natura 2000 network (e.g. SACs & SPAs).

Statutory Designations: Local

Under the National Parks and Access to the Countryside Act 1949 **Local Nature Reserves** (LNRs) may be declared by local authorities after consultation with the relevant countryside agency. LNRs are declared for sites holding special wildlife or geological interest at a local level and are managed for nature conservation, and provide opportunities for research and education and enjoyment of nature.

Non-Statutory Designations

Areas considered to be of local conservation interest may be designated by local authorities as a **Wildlife Site**, under a variety of names such as **County Wildlife Sites** (CWS), **Listed Wildlife Sites** (LWS), **Local Nature Conservation Sites** (LNCS), **Sites of Biological Importance** (SBIs), **Sites of Importance for Nature Conservation** (SINCs), or **Sites of Nature Conservation Importance** (SNCIs). The criteria for designation may vary between counties.

Together with the statutory designations, these are defined in local and structure plans under the Town and Country Planning system and are a material consideration when planning applications are being determined. The level of protection afforded to these sites through local planning policies and development frameworks may vary between counties.

Regionally Important Geological and Geomorphological Sites (RIGS) are the most important places for geology and geomorphology outside land holding statutory designations such as SSSIs. Locally-developed criteria are used to select these sites, according to their value for education, scientific study, historical significance or aesthetic qualities. As with local Wildlife Sites, RIGS are a material consideration when planning applications are being determined.

The Hedgerow Regulations 1997

The Hedgerow Regulations 1997 are intended to protect 'important' countryside hedgerows from destruction or damage. A hedgerow is considered important if (a) has existed for 30 years or more; and (b) satisfies at least one of the criteria listed in Part II of Schedule 1 of the Regulations.

Under the Regulations, it is against the law to remove or destroy certain hedgerows without permission from the local planning authority. Hedgerows on or adjacent to common land, village greens, SSSIs (including all terrestrial SACs, NNRs and SPAs), LNRs, land used for agriculture or forestry and land used for the keeping or breeding of horses, ponies or donkeys are covered by these regulations. Hedgerows '*within or marking the boundary of the curtilage of a dwelling-house*' are not.

C NATIONAL PLANNING POLICY

National Planning Policy Framework 2012

The National Planning Policy Framework replaces PPS9 (from April 2012) and emphasises the need for sustainable development. The Framework specifies the need for protection of designated sites and priority habitats and priority species. An emphasis is also made for the need for ecological networks via preservation, restoration and re-creation. The protection and recovery of priority species – presumably those listed as UK Biodiversity Action Plan priority species – is also listed as a requirement of planning policy. In determining planning application, planning authorities should aim to conserve and enhance biodiversity by ensuring that: designated sites are protected from adverse harm; there is appropriate mitigation or compensation where significant harm cannot be avoided; opportunities to incorporate biodiversity in and around developments are encouraged; planning permission is refused for development resulting in the loss or deterioration of irreplaceable habitats including aged or veteran trees and also ancient woodland.

The Natural Environment and Rural Communities Act 2006 and The Biodiversity Duty

The Natural Environment and Rural Communities (NERC) Act came into force on 1st October 2006. Section 40 of the Act requires all public bodies to have regard to biodiversity conservation when carrying out their functions. This is commonly referred to as the 'biodiversity duty'. Section 41 of the Act (Section 42 in Wales) requires the Secretary of State to publish a list of habitats and species which are of 'principal importance for the conservation of biodiversity.' This list is intended to assist decision makers such as public bodies in implementing their duty under Section 40 of the Act. Under the Act these habitats and species are regarded as a material consideration in determining planning applications. A developer must show that their protection has been adequately addressed within a development proposal.

D REGIONAL AND LOCAL PLANNING POLICY

The South East Plan (also known as the Regional Spatial Strategy for the South East) sets out the overall vision for the South East Region up to 2026 (Communities and Local Government, 2009). It outlines challenges facing the region, such as housing, economy, transport and environmental protection. More specifically it provides direction for Local Development Frameworks (LDFs) and includes the following Core Regional Policies that are relevant to the site.

Policy NRM5: Conservation and Improvement of Biodiversity

“Local planning authorities and other bodies shall avoid a net loss of biodiversity, and actively pursue opportunities to achieve a net gain across the region.

- (i) They shall ensure appropriate access to areas of wildlife importance, identifying areas of opportunity for biodiversity improvement and setting targets reflecting those in the table headed 'Regional Biodiversity Targets - Summary for 2010 and 2026' below. Opportunities for biodiversity improvement, including connection of sites, large-scale habitat restoration, enhancement and re-creation in the areas of strategic opportunity for biodiversity improvement (Diagram NRM3) should be pursued*
- (ii) They shall influence and applying agri-environment schemes, forestry, flood defence, restoration of mineral extraction sites and other land management practices to:*
 - deliver biodiversity targets
 - increase the wildlife value of land
 - reduce diffuse pollution
 - protect soil resources.
- (iii) They shall promote policies that integrate the need to accommodate the changes taking place in agriculture with the potential implications of resultant development in the countryside.*
- (iv) They shall require green infrastructure to be identified, developed and implemented in conjunction with new development”.*

Policy C4: Landscape and Countryside management

“Outside nationally designated landscapes, positive and high quality management of the region’s open countryside will be encouraged and supported by local authorities and other organisations, agencies, land managers, the private sector and local communities, through a combination of planning policies, grant aid and other measures.

In particular, planning authorities and other agencies in their plans and programmes should recognise, and aim to protect and enhance, the diversity and local distinctiveness of the region’s landscape, informed by landscape character assessment.

Positive land management is particularly needed around the edge of London and in other areas subject to most growth and change. In such areas long-term goals for landscape conservation and renewal and habitat improvement should be set, and full advantage taken of agri-environmental funding and other management tools.

Local authorities should develop criteria-based policies to ensure that all development respects and enhances local landscape character, securing appropriate mitigation where damage to local landscape character cannot be avoided.”

Policy CC1: Sustainable Development

“The principal objective of the Plan is to achieve and to maintain sustainable development in the region. Sustainable development priorities for the South East are identified as:

- (i) achieving sustainable levels of resource use*
- (ii) ensuring the physical and natural environment of the South East is conserved and enhanced*
- (iii) reducing greenhouse gas emissions associated with the region*

- (iv) ensuring that the South East is prepared for the inevitable impacts of climate change
- (v) achieving safe, secure and socially inclusive communities across the region, and ensuring that the most deprived people also have an equal opportunity to benefit from and contribute to a better quality of life.

Policy CC4: Sustainable Design and Construction

“The design and construction of all new development, and the redevelopment and refurbishment of existing building stock will be expected to adopt and incorporate sustainable construction standards and techniques. This will include: consideration of how all aspects of development form can contribute to securing high standards of sustainable development including aspects such as energy, water efficiency and biodiversity gain” ,,,,,

Policy CC6: Sustainable Communities and Character of the Environment

“Actions and decisions associated with the development and use of land will actively promote the creation of sustainable and distinctive communities. This will be achieved by developing and implementing a local shared vision which:

- (i) respects, and where appropriate enhances, the character and distinctiveness of settlements and landscapes throughout the region.*
- (ii) uses innovative design processes to create a high quality built environment which promotes a sense of place. This will include consideration of accessibility, social inclusion, the need for environmentally sensitive development and crime reduction”*

The Adur District Local Plan (1996) was adopted in 1996, but is to be replaced by suite of documents as part of the Local Development Framework, which will eventually replace the Local Plan. Nature conservation policies An1-An5 in Chapter 6 of the Local Plan have not been saved. The following policies relating to trees and landscaping have been saved:

Policy AB25

Planning permission for development which would adversely affect existing trees will only be granted where:-

- (a) the trees are in poor health;
- (b) the trees are of poor appearance and of little public amenity value.

Sufficient space shall be left around trees to be retained to avoid threatening their survival. Applications for development (including outline applications) shall include where appropriate an accurate site survey showing the precise location and canopy spread of all existing trees.

Policy AB26

Planning permission for new development which could appropriately accommodate tree planting will normally only be granted where such provision is made on a significant scale as an integral part of the overall design of the development. Conditions will be imposed accordingly and consideration will be given to making Tree Preservation Orders for the future protection of the trees to be planted. Proposals incorporating insufficient tree planting relative to the scale of development proposed (or not providing adequate space for the growth of the trees) will be refused unless there are exceptional reasons.

Policy AB27

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, including the planting of predominantly native trees.

E BIODIVERSITY ACTION PLANS (BAPs)

The UK BAP was published in 1994 to comply with obligations under the Convention on Biological Diversity (The Biodiversity Treaty, 1992). It describes the UK's biological resources and commits to developing detailed plans to conserve these resources. The UK BAP comprises Habitat Action Plans (HAPs) and Species Action Plans (SAPs). In addition, local authorities promote habitat and species conservation at a regional level through development of Local BAPs (LBAPs).

UK Priority BAP species and habitats, that are potentially relevant to the site include:

- Birds such as house sparrow, dunnock, linnet, starling, skylark, lapwing, reed bunting and song thrush;
- Reptiles such as slow worm, common lizard and grass snake;
- Amphibians such as great crested newt and common toad;
- Small mammals such as hedgehog, water vole, dormouse and brown hare;
- Invertebrates such as grizzled skipper and stag beetle;
- Bats such as soprano pipistrelle, noctule and brown long eared bat, and;
- Habitats such as reed beds, standing water, coastal and floodplain grazing marsh, lowland mixed deciduous woodland and wet woodland.

The most up to date targets and actions, including latest progress reports, for UK HAPs and SAPs can be viewed on the DEFRA website²³.

In addition to the UK BAP, BAPs are also produced at the regional/county level. **The Sussex BAP** is managed by the Sussex Biodiversity Partnership. The aims and objectives of the Sussex BAP (2010) are to reflect UK targets for habitats and species of conservation concern and translate them at a local level and to integrate the needs of species and habitats within landscape-scale delivery. Currently, no county specific targets have been set, but the old Sussex BAP has been archived and can be viewed on the Sussex Biodiversity Partnership website²⁴.

The distribution of BAP habitats present across the South-East has been used to identify Biodiversity Opportunity Areas (The South East Biodiversity Forum, 2009). BOAs represent a targeted landscape-scale approach to biodiversity conservation in the county and form the basis for an ecological network and opportunity for restoration and creation of BAP habitats. Where possible, BAP targets should be linked to BOAs, increasing effectiveness of work and making reporting easier. There are 75 BOAs across Sussex and 6 within Adur District.

²³ DEFRA website

<http://ukbars.defra.gov.uk/plans/national.asp?S=&L=1&O=&SAP=&HAP=&submitted=1&flipLang=&txtLogout>

²⁴ Sussex Biodiversity Partnership <http://www.biodiversitysussex.org/>



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