

The



Ecology Consultancy



**Land North-west 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 31st July 2012 and the main findings are as follows:

- The site supports a moderately diverse range of habitats, including; buildings, hardstanding, bare ground, improved and poor semi-improved grassland, ephemeral/short perennial and tall ruderal vegetation, standing and running water, marginal vegetation, swamp (reed bed), introduced shrub, continuous and scattered scrub, scattered trees, roughland, non-native hedgerows and two woodland types.
- The 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 130m to the south of the site.
- Overall, and on the basis of the PEA, parts of the site are considered to be of ecological value up to a district level. These areas are strongly associated with the network of ditches/streams and associated riparian habitats including adjacent fields, tree/scrub lines and wet woodland. This value is based on their potential to support a range of protected, rare/notable and BAP species, presence of floodplain grazing marsh (a UK Biodiversity Action Plan (BAP) priority habitat) and the important hydrological role they play in buffering the network of water bodies in Lancing Strategic Gap.
- It is strongly recommended that, where possible, construction works that may result in the loss of, or other impacts on, the network of ditches/streams (and associated habitat) are 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.
- Roughland and other UK BAP habitats present on-site (see list below) are considered to be of value at a local level.

- Remaining habitats at the site comprise buildings, bare ground, ephemeral short/perennial vegetation, improved grassland, tall ruderal vegetation, non-native 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 *viz.* bats, breeding birds and widespread reptiles (see below).
- The site provides an important secondary and supporting role to the network of ecological receptors surrounding it, primarily by providing wildlife corridors for species moving across the urban-rural fringe into Lancing Strategic Gap and north towards the South Downs National Park.
- 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 the National Planning Policy Framework (NPPF) 2012 and the Natural Environment and Rural Communities (NERC) Act 2006 are all of principal importance for biodiversity and are of material consideration in the planning process. None of the BAP habitats or populations of BAP species currently present on-site are considered as notable or exceptional examples of their type.
- Further surveys are recommended for winter and breeding birds, roosting and foraging bats, widespread species of reptile, badgers, terrestrial and aquatic invertebrates, native and non-native (invasive) aquatic plants, water vole and great crested newts. 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 development presents opportunities to improve the site for wildlife, and 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-west 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 on the south-east edge of Lancing. It is located south of the Main Coast Railway Land and north of housing (Hasler Estate) situated off West Way, parallel to Brighton Road (A259). The west and north-west boundary is broadly delimited by Old Salt's Farm Road and associated properties/businesses such as The Barn Caravan Park, Minstrel's Gallery, and Old Salt's Nursery. Broadway Park forms part of the west boundary with the north-west corner of the site continuous with farmland.
- 1.8 The National Grid Reference for the centre of the site is TQ 194 044 and it includes an area of 24.27 hectares (ha).

DESCRIPTION OF THE PROPOSALS

- 1.9 Significant further work is required to assess the acceptability of this site. However, initial capacity work has indicated that between 300 and 600 new homes could potentially be provided on land both north-west and north-east of the Hasler Estate.

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 methodology (JNCC, 2010) was carried out on 31st July 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 indications 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), Sites of Special Scientific Interest (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 and non-statutory designated site is Widewater Lagoon LNR and SNCI, located 0.13km to the south of the site (see citation summary Table 1). Adur Estuary SSSI is located 1.3km to the east of the site.

Table 1: Widewater Lagoon LNR and SNCI

Citation Summary
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.

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), CWS (County Wildlife Sites) or SBIs (Sites of Biological Importance). All are described generally as Local Wildlife sites by the UK Government.

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).

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)	See Table 1 above for site description.	8.2	0.13
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	1.6
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	0.46
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	1.9
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	1.7

Landscape and Habitat Designations/Classifications

National Parks

- 3.4 The South Downs National Park is located 1.1km north of the site.

Coastal and floodplain grazing marsh

- 3.5 Eight out of 10 fields of poor semi-improved grassland and the eastern half of the field of improved grassland are classified as coastal and floodplain grazing marsh⁵ (MAGIC, 2012). This excludes the two smaller fields located south-east of Minstrel's Gallery (owned by Mr. Gobles).

Ancient Woodland

- 3.6 The nearest Ancient Semi-Natural Woodland (ASNW) within a 2km radius is Clapham Wood ASNW located approximately 8.3km 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 habitats⁶. 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 located approximately 0.15km to the south. 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 This is a spatial dataset that describes the geographic extent and location of the UK Biodiversity Action Plan coastal and floodplain grazing marsh priority habitat in England (MAGIC, 2012).

⁶ 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 Areas of running water (ditches and streams) cross the site from north-east to south-west with three shorter sections of connecting ditches. These form part of a wider network of water bodies present in Lancing Strategic Gap and along the South Coast Railway Line. At East Lancing, on the western edge of the site, they converge into one stream (The Fairway) which becomes subterranean before outfall into the sea. The site, therefore, forms part of the local hydrological system.
- 3.11 An area of standing water is present in a field to the north of the site. The nearest standing water marked on a 1:50,000 OS map is a pond located 310m north 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 NERC⁷ Act (2006)); invasive species; and, otherwise notable species such as Birds of Conservation Concern⁸ (BoCC).

Plants

- 3.12 The data search returned records of 33 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

⁷ 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).

⁸ 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.

uncommon/rare in the county and included on the Sussex Rare Species Inventory Species.

- 3.13 The nearest record for a nationally⁹ and Sussex¹⁰ scarce plant is that for yellow vetch *Vicia lutea* from 1993. This plant was recorded 70m south of the site at Widewater Lagoon LNR and SNCI. It is associated with coastal habitats not present at the Hasler site.

Invertebrates

- 3.14 30 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.

- 3.15 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*

- 3.16 There were 23 records for stag beetle *Lucanus cervus* between 1998 and 2011, the closest being a 2007 record 0.55km west of the site.

Birds

- 3.17 There was a large number of bird records (15,000+) returned for the search area. The following species have been recorded within the site boundary; chiffchaff, black redstart *Phoenicurus ochruros*, snipe *Gallinago gallinago*, curlew *Numenius arquata*,

⁹ Nationally scarce plants appear in *Scarce Plants in Britain* (Stewart *et al.* 1994) and occur in 16-100 of the 10x10km grid squares throughout Britain. This category includes some species which occur in more than four sites in either vice county.

¹⁰ Sussex scarce plants occur in less than four sites in either vice county (Briggs (Ed.), 2001).

grey wagtail *Motacilla cinerea*, sand martin *Riparia riparia*, stonechat *Saxicola torquata*, waxwing *Bombycilla garrulous*, hobby *Falco subbuteo*, house martin *Delichon urbicum*, swallow *Hirundo rustica*, grey heron *Ardea cinerea*, little plover *Charadrius dubius*, redshank *Tringa tetanus* and little egret *Egretta garzetta*.

3.18 This list does not include any BoCC red list species. BoCC amber list species include; black redstart, snipe, curlew, sand martin, house martin, swallow, redshank and little egret. Most of these species are either passage migrants, winter birds or utilise the site as foraging habitat. Few will be dependent on the site as breeding habitat.

Bats

3.19 There are records of four different bat species within the search area including; serotine *Eptesicus serotinus* (1999), common pipistrelle *Pipistrellus pipistrellus* (1994-2010), soprano pipistrelle *Pipistrellus pygmaeus* (1998) and grey long-eared bat *Plecotus austriacus* (1998). There is one on-site record from 1998, for common pipistrelle on Old Salt's Farm Road.

Reptiles

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

- Forty-nine slow-worm records, the closest being a 1990 record 195m to the north-east of the site;
- Twenty-five common lizard records, the closest being a 1990 record 195m north-east of the site;
- Twenty-three records of grass snake *Natrix natrix*, the closest being a 1992 record 275m north-west of the site; and,
- Seven adder records, the closest being a 2001 record 855m north-east of the site.

Amphibians

3.21 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 1.5km east of the site.

3.22 There were seventeen records of common toad *Bufo bufo* returned from within the search area, the closest being a 1991 record at Boundary Road, Lancing, 270m south of the site.

Water vole

- 3.23 There was one record of water vole returned within the search area, a 1989-1990 record at Shoreham Backwater, 0.8km east of the site.
- 3.24 A water vole survey of a ditch located 0.3km north-east 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

- 3.25 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 three-cornered leek *Allium triquetrum*, wall cotoneaster *Cotoneaster horizontalis*, Japanese knotweed *Fallopia japonica* and montbretia *Crocsmia x crocosmiiflora*.

HABITAT SURVEY

Overview

- 3.26 Habitats on-site included; buildings, hardstanding, bare ground, improved and poor semi-improved grassland, ephemeral/short perennial and tall ruderal vegetation, standing and running water, marginal vegetation, swamp (reed bed), introduced shrub, continuous and scattered scrub, scattered trees, non-native hedgerows, roughland and woodland.

Buildings/structures

- 3.27 Two light-weight structures were present in a field in the northern section of the site. Both had flat roofs, were used as stables, and constructed from wooden scaffold boards and panels.

Hardstanding and bare ground

- 3.28 Hardstanding was present along Old Salt's Farm Road and associated entrance tracks. Bare ground was common in heavily grazed fields, often sparsely vegetated with ephemeral/short perennials (see description below).

Ephemeral/short perennial vegetation

3.29 Ephemeral/short perennial species had become self-established in disturbed, open ground in fields. Fat-hen *Chenopodium album*, knotgrass *Polygonum aviculare*, greater plantain *Plantago major*, shepherd's purse *Capsella bursa-pastoris*, annual meadow grass *Poa annua*, pineappleweed *Matricaria discoidea* and swine-cress *Coronopus didymus* were abundant to locally frequent.

Improved grassland

3.30 The field north of Minstrel's Gallery was dominated by perennial ryegrass *Lolium perenne* with frequent annual meadow grass and common bent *Agrostis capillaris*. Ephemeral/short perennial species formed a distinctive part of the sward (see description above). Wildflowers comprised abundant to locally frequent white clover *Trifolium repens*, cat's-ear *Hypochaeris radicata*, and daisy *Bellis perennis*. Subterranean clover *Trifolium subterraneum* and bird's-foot trefoil *Lotus corniculatus* were occasional. The eastern half of this field is classified as floodplain grazing marsh.

Poor semi-improved grassland

3.31 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 grass species. With exception to the two smaller fields located south-east of Minstrel's Gallery (owned by Mr. Gobles – see below) all are classified as floodplain grazing marsh.

3.32 The two fields owned by Mr. Gobles were heavily grazed with poached/open ground dominated by ephemeral/short perennial (see description above) and tall ruderal vegetation. The southern ends of both fields were more botanically diverse. Grasses included abundant perennial ryegrass and frequent to occasional Timothy *Phleum pratense*, meadow barley *Hordeum secalinum* and annual meadow grass. Wildflowers included locally abundant to frequent white clover, daisy, creeping cinquefoil *Potentilla reptans*, silverweed *Potentilla anserina*, yarrow *Achillea millefolium*, red clover *Trifolium pratense*, strawberry clover *Trifolium fragiferum*, black medick *Medicago lupulina*, selfheal *Prunella vulgaris*, meadow buttercup *Ranunculus acris*, ragwort *Senecio vulgaris*, scentless mayweed *Tripleurospermum inodorum* and broad-leaved dock *Rumex obtusifolius*.

- 3.33 The two fields owned by Mr. Jeffries were bought 27 years ago and are thought to have been unploughed since the war. Tussock forming species such as tall fescue *Festuca arundinacea*, cock's-foot *Dactylis glomerata* and common couch *Elytrigia repens* were locally abundant in the north-west corner and southern end of the field, between the bund and ditch.
- 3.34 The field to the west of Barn Caravan Park was dominated by false-oat grass *Arrhenatherum elatius* with abundant to locally frequent tall fescue, Timothy, cock's-foot and creeping bent *Agrostis stolonifera*. Wildflowers included locally abundant to frequent hedge bindweed *Calystegia silvatica*, creeping thistle *Cirsium arvense*, field bindweed *Convolvulus arvensis* and great willowherb *Epilobium hirsutum*. In areas of wetter ground common reed *Phragmites australis* was locally abundant, extending up to 8m into the field from the stream edge. Pockets of locally abundant amphibious bistort *Persicaria amphibia*, fleabane *Pulicaria dysenterica* and silverweed were also present in wet ground.
- 3.35 The field adjacent to both the Hasler Estate and Broadway Park was dominated by tall ruderal vegetation (see description below). Grass species included abundant false-oat grass and tall fescue and frequent creeping bent and common couch.
- 3.36 Four fields (effectively two large fields divided by a raised trackway) were present in the northernmost section of the site. The westernmost fields comprised dominant false-oat grass, abundant creeping bent, locally abundant to frequent tall fescue, Timothy, Yorkshire fog and cock's-foot. Wildflowers included locally abundant to frequent hogweed, field bindweed, red clover and field horsetail. Meadow vetchling *Lathyrus pratensis*, common vetch *Vicia sativa*, creeping thistle and silverweed were locally frequent. The two fields to the east had been recently cut. They had a similar composition to the aforementioned fields, but the cover of perennial ryegrass and white clover indicated a higher level of improvement.

Tall ruderal vegetation

- 3.37 This habitat type was located around field margins, on disturbed and enriched ground and alongside ditches and streams where a band (typically 2-4m wide) of dense tall ruderal vegetation often lined the upper bank (see Target Note 19).

- 3.38 Disturbed and enriched ground in paddocks included locally abundant fat-hen, broad-leaved dock, common nettle *Urtica dioica* and lesser burdock *Arctium minus* and locally frequent common mallow *Malva sylvestris* and black horehound *Ballota nigra*.
- 3.39 Dense bands of tall ruderal vegetation, present alongside ditches/streams, included abundant hedge bindweed, great willowherb, common nettle, creeping thistle, ragwort *Senecio jacobaea*, bristly ox-tongue *Helminthotheca echioides* and hogweed *Heracleum sphondylium*. Broad-leaved dock, amphibious bistort, fleabane and field horsetail *Equisetum arvense* were locally frequent.
- 3.40 The field adjacent to both the Hasler Estate and Broadway Park had been left fallow under a countryside stewardship agreement and was dominated by ox-tongue species with locally abundant thistle *Cirsium* species and field horsetail, and frequent field bindweed and Michaelmas daisy *Aster sp.*

Running water, standing water, marginal vegetation and swamp

- 3.41 A key characteristic of the site was its water bodies and associated wetland habitats. The main stream running south-west across the site had developed sections of reed swamp which were dominated by common reed, with reed canary grass *Phalaris arundinacea* locally abundant. More open sections of water had common reed fringing the banks with floating aquatic and emergent vegetation present along margins. In localised areas, not dominated by invasive plant species, this marginal vegetation was moderately diverse (see Target Notes 4-8, 10-14, 18, 19, 21 and 22). Dense bands of tall ruderal vegetation were present along the upper banks of most water bodies.
- 3.42 One area of standing water was present in a field in the northern section of the site (see Target Note 1).

Scattered trees and scrub

- 3.43 Dense scrub comprised dominant bramble *Rubus fruticosus* agg. and hawthorn *Crataegus monogyna* with frequent elder *Sambucus nigra*. Common reed also formed part of the scrub mix in areas of wet ground.
- 3.44 Scattered trees along the boundary with Minstrel's Gallery, comprising Leyland cypress *x Cupressocyparis leylandii* and sycamore *Acer pseudoplatanus*.

- 3.45 Scattered trees and scrub formed the northern boundary to the field of improved grassland. Hybrid black poplar *Populus x canadensis* (See Target Note 3) and bramble was abundant with frequent elder.
- 3.46 Scattered trees and scrub lined a ditch to the north of the site and comprised abundant alder *Alnus glutinosa*, hawthorn, bramble, ivy and frequent hybrid black polar and crack willow *Salix fragilis* (see Target Note 20).

Hedgerows

- 3.47 Sections of non-native hedgerow were present along the boundary of Barn Caravan Park and gardens in the Hasler Estate. Species included western red cedar *Thuja plicata*, cherry laurel *Prunus laurocerasus* and large-leaved spindle *Euonymus latifolia*.

Roughland

- 3.48 A mosaic of scattered trees and scrub, tall ruderal vegetation and poor semi-improved grassland was present in the south of the site, north of West Avenue. In localised areas of wet ground, moisture loving plants also formed part of the mosaic. Common reed and amphibious bistort was locally abundant, hard rush *Juncus inflexus* locally frequent and yellow iris *Iris pseudacorus* occasional.
- 3.49 Scattered tree and scrub species comprised dominant hawthorn and bramble, and frequent to occasional dogwood *Cornus sanguinea*, dog rose *Rosa canina*, grey willow *Salix cinerea* and goat willow *Salix caprea*.
- 3.50 Tall ruderal vegetation comprised abundant to locally frequent great willowherb, bristly ox-tongue, creeping thistle, hedge bindweed, fleabane, common nettle, hogweed and teasel *Dipsacus fullonum*. Clumps of Canadian goldenrod *Solidago canadensis* and Michaelmas daisy *Aster* sp. had become naturalised.
- 3.51 The grassland was very tussocky with ant hills distributed throughout. Tall fescue was dominant, false-oat grass abundant and cock's-foot, Yorkshire fog *Holcus lanatus* and rough meadow grass *Poa trivialis* locally frequent. Wildflowers included abundant black medick, frequent agrimony *Agrimonia eupatoria*, silverweed and field bindweed and occasional red clover, white clover, common vetch, selfheal and perforate St. John's-wort *Hypericum perforatum*.

Woodland

- 3.52 A small block of broad-leaved semi-natural woodland was present alongside Old Salt's Farm Road. A ditch was present along its south-east boundary. The ditch was heavily shaded, filled with accumulated leaf litter and had limited marginal vegetation with only pendulous sedge *Carex pendula* and bittersweet *Solanum dulcamara* occasional. Hawthorn and elder were abundant in the canopy. Ivy and bramble locally abundant and cow parley *Anthriscus sylvestris* and common nettle frequent in the ground layer.
- 3.53 A larger, rectangular-shaped, block of broad-leaved semi-natural woodland was present to the north of Prince Avenue. The majority was coppiced-willow wet woodland. The western edge was sinuous, grading into roughland habitat to the west (see description above). The north-west edge of the woodland graded into wetland habitats.
- 3.54 The canopy comprised dominant grey willow and goat willow and locally abundant ivy. The shrub layer comprised abundant hawthorn, frequent mountain ash *Sorbus aucuparia* and elder and locally frequent to occasional dogwood, blackthorn *Prunus spinosa* and hybrid black poplar. The ground flora comprised abundant to frequent ivy, bramble, common nettle, wood avens *Geum urbanum*, cock's-foot and rosebay willowherb *Chamerion angustifolium*. Enchanter's nightshade *Circaea lutetiana* and herb-Robert *Geranium robertianum* were locally frequent.

Target Notes

Target Note 1

Area of standing water (UK BAP habitat) present in field, which is likely to be ephemerally wet. Used by gull species at time of PEA. Silverweed was locally abundant.

Target Note 2

- 3.55 Raised bank between two fields providing habitat of potential value to widespread species of reptile.

Target Note 3

- 3.56 Over-mature/decaying hybrid black poplar with features of potential value to bats and saproxylic invertebrates such as standing and fallen deadwood.

Target Note 4

- 3.57 Marginal vegetation dominated by common reed. Emergent vegetation in more open areas along the bank comprised locally frequent reed sweet-grass *Glyceria maxima* and common water-starwort *Callitriche stagnalis*, watercress *Nasturtium officinale* and occasional gypsywort *Lycopus europaeus* and false fox-sedge *Carex otrubae*. Wild celery *Apium graveolens* was observed here and at a few other locations across the site.

Target Note 5

- 3.58 Diverse marginal vegetation adjacent to reed swamp. Locally frequent to occasional false fox-sedge, common reed, fleabane, gypsywort, common club-rush *Schoenoplectus lacustris*, sharp-flowered rush *Juncus acutiflorus*, hoary willowherb *Epilobium parviflorum*, water mint *Mentha aquatica* and common water-crowfoot *Ranunculus aquatilis*.

Target Note 6

- 3.59 Common reed locally dominant along channel edges with locally abundant to frequent pink water-speedwell *Veronica catenata*, arrowhead *Sagittaria sagitifolia*, common duckweed *Lemna minor* and common water-crowfoot (in areas of deeper water) and great willowherb, great horsetail *Equisetum telmateia*, hogweed, common nettle, false-oat grass, cock's-foot and amphibious bistort (as dense vegetation along banks).

Target Note 7

- 3.60 Shaded ditch along wood edge with locally abundant creeping buttercup *Ranunculus repens* and occasional clumps of pendulous sedge. Common reed is locally abundant at the western end where the wood opens up, mixed with bramble,

Target Note 8

- 3.61 Narrow, meandering stream approximately 2-3m wide. Situated adjacent to housing with west bank artificial (sand bags etc.) and east bank with sloping natural profile. Marginal vegetation with locally abundant common reed (extending up to 8m into the adjacent field), common duckweed, mare's tail *Hippuris vulgaris* and New Zealand pigmyweed *Crassula helmsii* and locally frequent fool's water-cress *Apium nodiflorum* and amphibious bistort.

Target Note 9

3.62 Young fox *Vulpes vulpes* observed.

Target Note 10

3.63 Multiple locations of New Zealand pigmyweed, an invasive plant species listed under schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

Target Note 11

3.64 Narrow bands of marginal vegetation comprising locally frequent common reed, common club-rush, fleabane and great willowherb.

Target Note 12

3.65 Common reed locally dominant along edges of stream with locally frequent to occasional reed canary grass, gypsywort, water mint and bittersweet. Open part of channel with locally abundant watercress, common duckweed, and occasional arrowhead and fringed water lily *Nymphoides peltata*. Hogweed locally frequent along bank.

Target Note 13

3.66 Similar marginal vegetation to T12, but with a more graded bank profile and including fleabane, hoary willowherb, water forget-me-not *Myosotis scorpioides* and hard rush.

Target Note 14

3.67 Side ditch that dries out at southern end. Common reed locally abundant, reed canary grass and amphibious bistort locally frequent and yellow iris occasional.

Target Note 15

3.68 Compost pile/horticultural arisings of potential value to widespread reptile species with adjacent gardens providing supporting habitat.

Target Note 16

3.69 Location of montbretia *Crocsmia x crocosmiiflora*, an invasive plant species listed under schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

Target Note 17

3.70 Location of wall cotoneaster *Cotoneaster horizontalis*, an invasive plant species listed under schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

Target Note 18

3.71 Wide channel with dense common reed. Small area of open water around bridge with locally dominant common duckweed and water fern *Azolla filiculoides* and occasional arrowhead and pink water-speedwell.

3.72 Water fern was located at a numerous locations along channels (see Target Notes 18, 19 and 21) and is an invasive plant species listed under schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

Target Note 19

3.73 Wide channel dominated by common reed, forming closed stands of reed swamp along the length of the channel. Common duckweed and water fern locally dominant in more open areas of water. Arrowhead, pink water-speedwell, fool's water-cress and gypsywort occasional. Wide band of tall ruderal vegetation on either side of bank comprised of locally abundant to frequent creeping thistle, common nettle, great willowherb, fleabane, ox-tongue species and hedge bindweed.

Target Note 20

3.74 Scattered trees and scrub alongside ditch. Hybrid black poplar, crack willow and alder trees with features of potential value to roosting bats and saproxylic invertebrates.

Target Note 21

3.75 Shaded ditch with low water level, dense leaf litter and therefore limited marginal and floating aquatic vegetation. Common reed locally frequent with water fern and amphibious bistort occasional.

Target Note 22

3.76 Ditch with locally abundant reed canary grass and watercress and locally frequent common reed, common club-rush, arrowhead and pink water-speedwell. Reed and rush species forming closed stands of reed swamp.

Target Note 23

3.77 Dense scrub adjacent to railway embankment with evidence of fox runs. Anecdotal evidence from dog walker of a fox den being located in this area, as young have been observed.

Target Note 23

3.78 Location of Japanese rose *Rosa rugosa*, an invasive plant species listed under schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

Fauna

3.79 Twenty bird species were recorded during the PEA. Additional species, to those already recorded at the site (see Section 3.17) included; collared dove *Streptopelia decaocto*, green woodpecker *Picus viridis*, mallard *Anas platyrhynchos*, pied wagtail *Motacilla alba*, wood pigeon *Columba palumbus*, coot *Fulica atra*, moorhen *Gallinula chloropus*, magpie *Pica pica*, black headed gull *Chroicocephalus ridibundus*, herring gull *Larus argentatus*, crow *Corvus corone*, pheasant *Phasianus colchicus*, jay *Garrulus glandarius*, buzzard *Buteo buteo*, house sparrow *Passer domesticus*, starling *Sturnus vulgaris*, mute swan *Cygnus olor*, goldcrest *Regulus regulus* and reed warbler *Acrocephalus scirpaceus*.

3.80 House sparrow, herring gull and starling are BoCC red list and UK BAP species and listed in the NERC Act (2006) as Species of Principal Importance for the Conservation of Biodiversity. Black headed gull and green woodpecker are BoCC amber list species.

3.81 The following butterflies were recorded during the PEA; meadow brown *Maniola jurtina*, speckled wood *Pararge aegeria*, brimstone *Gonepteryx rhamni*, small skipper *Thymelicus sylvestris* and holly blue.

3.82 Anecdotal evidence of elvers (young eels) *Anguilla anguilla* was provided by a local resident in the south-west corner of the site. The nearest record from the data search is 380m to the south and, therefore, this is highly likely to be accurate. Eels are a UK BAP species listed in the NERC Act (2006) as Species of Principal Importance for the Conservation of Biodiversity. Anecdotal evidence was provided by several residents and dog walkers of grass snake, common frog *Rana temporaria* and common newt *Lissotriton vulgaris*

3.83 The site also provided suitable habitat for large and small mammals. Evidence of the presence of fox (see Target Notes 9 and 23) and rabbit *Oryctolagus cuniculus* were observed during the survey.

PROTECTED AND INVASIVE SPECIES ASSESSMENT

3.84 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.

3.85 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 east. Domestic gardens, adjacent to west and south boundaries, may extend available habitat. On-site woodland, non-native hedgerow, 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 34 species present on-site.
Widespread reptile species	Wildlife and Countryside Act, 1981 (as amended) - Schedule 5 (partial protection)	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 and standing water may also support grass snake. Domestic gardens adjacent to the west and south boundaries 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, 195m to the north-east.	HIGH. The areas of greatest value are habitat mosaics forming roughland and 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 15). 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 in close proximity to farmland which is a preferred location for badger populations. Tree/scrub lines, woodland and grassland provide suitable foraging and breeding habitat.	HIGH. Sett building habitat is present on-site, most notably in the south of the site which is not classified as floodplain grazing marsh and woodland and tree/scrub habitats are 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. Woodland, non-native hedgerow, scrub and tall grass provide suitable terrestrial habitat for foraging and hibernating amphibians.	MEDIUM. Habitats in the south-west section of the site and any woodland, tree/scrub habitat and field margins connected to on-site water bodies provide good quality terrestrial habitat. On-site breeding habitat includes one area of standing water in the north (see Target Note 1) and blocked/slower flowing side ditches (see Target Notes 4, 7, 14, 21). Wider ditch/stream sections with limited marginal vegetation and stronger flow are considered unsuitable. 1:50,000 OS and aerial maps show that

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
			there is one pond (310m north) and a series of ditches to the north-east that potentially provides suitable breeding habitat for great crested newt within a distance of 500m of the site boundaries.
Bats	Wildlife and Countryside Act 1981 (as amended) - Schedule 5. The Conservation of Habitats and Species Regulations 2010 (as amended) - Schedule 2.	Mature/semi-mature trees provide suitable roosting habitat. Woodland and boundary features such as 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 east 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, on-site at Old Salt's Farm Road.	HIGH. On-site buildings/structures are considered unsuitable for foraging bats. Mature trees provide features of value to roosting bats such as split limbs and dense ivy growth (see Target Notes 3 and 20). All remaining on-site trees were generally too young to contain potential roosting features. Poor semi-improved grassland, field margins, woodland, water bodies 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. Twenty-three records for stag beetle, the closest being 0.55km west.	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 in the south-west section of the site and the network of water bodies and connected wetland habitats. Resources include fallen and standing deadwood (see Target Notes 3 and 20) long grassland/tall ruderal/scrub mosaics, nectar rich plants and bare ground/mixed substrates (for xeric species). Areas of standing and 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. Evidence of past use of a ditch located 0.3km north-east of the site was found in 2011 by The Ecology Consultancy. A 1990 record, 0.8km east of the site, was returned	MEDIUM. 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-east. Ditch sections in woodland and along tree/scrub lines were shallow, heavily shaded and considered sub-optimal. Remaining on-site ditches/streams had suitable bank profiles, vegetation cover,

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
		from the data search.	food plants and areas of open water.
Invasive plant species	Section 14 and Part II of Schedule 9 of the Wildlife and Countryside Act 1981 (as amended)	Invasive species are widespread in many habitats and commonly found on disturbed sites, old 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.	PRESENT. Five Schedule 9 plant species are present on-site i.e. water fern (aquatic), New Zealand pigmyweed (aquatic), wall cotoneaster, Japanese rose and montbretia (see Target Notes 10, 16, 17, 18 and 23). No other Schedule 9 species were recorded 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 17.5km 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 level¹¹.
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 (1.6km length) and associated marginal vegetation including reed bed, form part of a wider network of water bodies present across Lancing Strategic Gap. In this regard they perform an important hydrological role and are considered to be of up to district value. Grassland, wet woodland and tree/scrub lines that are adjacent to on-site water bodies are also considered to be of up to district value for the following reasons: <ul style="list-style-type: none"> - potential to support a range of protected, rare/notable and BAP species; - grassland classified as coastal floodplain grassland (UK BAP habitat); and, - perform an important role in buffering the network of water bodies in Lancing Strategic Gap.
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, starling, reed bunting, linnets, skylark, lapwing; - Invertebrates such as stag beetle; - 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 habitats present on-site include standing water, reed bed, lowland mixed deciduous woodland and wet woodland. These habitats are limited in extent and/or not considered to be outstanding examples of their type. They are therefore considered to be of local importance. Due to its structural and botanical diversity roughland is also considered to be of value at the local level.
Features of Value within the immediate	<ul style="list-style-type: none"> The remaining habitats at the site comprising buildings, hardstanding, bare ground, ephemeral/short perennial, improved grassland, tall ruderal vegetation, non-native hedgerows, scattered trees and scrub are likely to

¹¹ JNCC Guidelines for selection of biological SSSIs (see <http://jncc.defra.gov.uk/page-2303#download>).

Table 4: IEEM Evaluation

Criteria	Remarks
vicinity of the site	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 and north towards the South Downs National Park.
Social Value	<ul style="list-style-type: none"> The site is privately owned, but provides aesthetic value to residents whose properties border the site along the south and east boundary, by affording them views across Lancing Strategic Gap. A series of informal footpaths are present in the southern half of the site and are well used by residents from Hasler Estate for recreation.
Economic Value	<ul style="list-style-type: none"> The five fields in the north-west section of the site are farmed and currently provide revenue through grazing/fodder. The smaller fields owned by Mr. Jeffries and Mr. Gobles are used as horse paddocks. Due to restricted access and the small size of woodland, opportunities available for income generation would be very limited. All remaining habitats (and species) do not currently provide a resource that could be exploited for their economic value.

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 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.
<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. 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. • 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.

<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. • A number of invasive plant species are present on-site and consideration should be given to their removal as part of development proposals, in particular aquatic species such as New Zealand pigmyweed and water fern.
<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. Planting should be positioned so as to enhance existing green corridors and provide connections between on-site woodland, roughland, 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 the existing adjacent residential areas, as well as for circular walks along retained GI corridors. • Improvements to the existing at-grade railway crossing at the end of Old Salt's Farm Road (just south of North Barn) would transform the accessibility of the western half of the Lancing Strategic Gap, with opportunities for walks between this neighbourhood and that of the New Monk's Farm site to the north.
<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.

<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>	
<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 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. Adjacent habitats such as wet woodland, grassland and tree/scrub lines are also considered to be of up to district value as they include floodplain grazing marsh (UK BAP priority habitat), perform a buffering role to the ditch/stream network and have potential to support a range of protected, rare/notable and BAP species.
- 4.6 Four other UK BAP priority habitats are present on-site i.e. reed bed, standing water, lowland mixed deciduous woodland and wet woodland. Due to their limited extent and/or current composition/condition they are not outstanding examples of their type and are considered to be of local importance only. Due to its structural and botanical diversity roughland is also considered to be of value at the local level.
- 4.7 All other remaining habitats comprised of buildings, bare ground, ephemeral short/perennial vegetation, improved grassland, tall ruderal vegetation, non-native 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.
- 4.8 On-site habitats have potential to support 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.
- 4.9 Field boundaries and riparian habitats 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 and north towards the South Downs National Park.

5 Conclusions and Recommendations

CONCLUSIONS

- 5.1 The site is not subject to any statutory nature conservation designations. The nearest statutory (and non-statutory) designated nature conservation site is Widewater Lagoon LNR and SNCI, located 0.13km to the south.
- 5.2 The network of on-site ditches/streams and their associated riparian habitats are 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. Adjacent habitats such as wet woodland, grassland and tree/scrub lines are also considered to be of up to district value as they include floodplain grazing marsh (UK BAP priority habitat), perform a buffering role to the ditch/stream network and have potential to support a range of protected, rare/notable and BAP species.
- 5.3 It is strongly recommended that, where possible, construction works that may result in the loss of, or other impacts on, the network of ditches/streams (and 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.
- 5.4 Roughland and UK BAP habitats present on-site, including standing water, reed bed, lowland mixed deciduous woodland and wet woodland are considered to be of local importance only.
- 5.5 Remaining habitats at the site comprise buildings, bare ground, ephemeral short/perennial vegetation, improved grassland, tall ruderal vegetation, non-native 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 *viz.* bats, breeding birds and widespread reptiles (see below).
- 5.6 On-site habitats have potential to support species protected under UK and European legislation, including breeding birds, roosting and foraging bats, widespread species of reptile, badgers, water vole, invertebrates and great crested newts.
- 5.7 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 and north towards the South Downs National Park.

5.8 The following UK BAP habitats/species are present or have potential to be present within the site:

- Reed bed (present);
- Standing water (present);
- Floodplain grazing marsh (present)
- Lowland mixed deciduous woodland (present)
- Wet woodland (present)
- Reptiles, including slow-worm, common lizard and grass snake;
- Birds such as house sparrow (present), starling (present), herring gull (present), lapwing, reed bunting and linnet;
- Invertebrates such as stag beetle;
- Amphibians such as common toad and great crested newt; and,
- Mammals such as badgers, water vole, 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 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.

RECOMMENDED FURTHER SURVEYS

Overview

5.10 As discussed above it is strongly recommended that construction works that may result in the loss of or other impacts on the network of ditches/streams and associated riparian habitat (including wet woodland, tree/scrub lines and floodplain grazing marsh) is avoided.

5.11 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.

- 5.12 To provide a sufficient baseline of data and mitigate against any potential impact on declining, BAP and protected species/habitats at the site, further surveys for breeding birds, widespread species of reptile, roosting and foraging bats, badger, aquatic plants, terrestrial and aquatic invertebrates, water vole and great crested newts is recommended.

Breeding Birds

- 5.13 The site contains a variety of on-site habitats considered suitable for breeding bird species, such as woodland, non-native hedgerows, scattered trees, dense scrub, reed bed, unmanaged grasslands. The PEA and data search confirms 34 species as using the site including three BoCC red list and 10 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

- 5.14 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 Adur Estuary SSSI (located 1.3km to the east of the site) is designated. Woodland and 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.
- 5.15 Surveys should be carried out to assess the value of the site to wintering birds following standard methodology including transects and vantage point watches and comprise several visits spread over the winter, from November through to March.

Reptiles

- 5.16 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. More extensive areas of suitable habitat are present in the south-west section of the site *viz.* roughland.
- 5.17 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

- 5.18 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 mature/semi-mature trees, woodland, roughland and the ditch/stream network.
- 5.19 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

- 5.20 Whilst no direct evidence of badgers was found during the PEA habitats on-site and across connected areas of Lancing Strategic Gap provide suitable areas for sett building and extensive areas for foraging.
- 5.21 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.
- 5.22 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

- 5.23 The site provides breeding and terrestrial habitat in the form of standing water, ditches/streams (and reed bed), non-native hedgerows, woodland, tree and scrub boundaries. One pond and 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. It is recommended that a Habitat Suitability Index (HSI) survey,

following Oldham et al (2000), is carried out on all ponds (and other suitable wetland habitats) within a 500m radius of site boundaries that do not have significant barriers to dispersal between them and the site.

- 5.24 Using 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
- 5.25 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 EPSM licence.

Invertebrates (aquatic and terrestrial)

- 5.26 The site comprises a range of terrestrial and aquatic habitats that provide a variety of foraging and nesting opportunities for both widespread and rare/notable insect species. Resources include fallen and standing deadwood in the woodland and tree/scrub lines, grassland/tall ruderal/scrub mosaics, nectar rich plants and bare ground/mixed substrates of value to xeric species. Areas of standing and running water are also present.
- 5.27 It is recommended that both terrestrial and aquatic invertebrate surveys are carried out, using a variety of sampling techniques in order to provide baseline information for key habitats such as those present along field boundaries and ditches/streams.
- 5.28 Surveys for terrestrial invertebrates should broadly follow the protocols and guidance as outlined in *Surveying Terrestrial and Freshwater Invertebrates for Conservation Evaluation* (Drake *et al*, 2007) with respect to survey methods and the species groups to be included, with multiple visits required to ensure an adequate seasonal coverage.
- 5.29 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

- 5.30 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. They also contain invasive plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).
- 5.31 Therefore, it is recommended that a survey of the ditch/stream network for both native and non-native aquatic plants is carried out. This is 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.
- 5.32 Survey effort should include both open water and bankside vegetation. As aquatic species can reappear in quantity after dredging; ditches/streams that have recently undergone 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

- 5.33 The network of on-site ditches/streams is connected to a more extensive off-site wetland system to the north-east where historic records for water vole are present. 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.
- 5.34 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 field signs of water voles such as footprints, burrows, latrines and feeding stations. The surveys would ideally be undertaken from Mid March-September and follow best practice guidelines (Strachan and Moorhouse, 2011).

MITIGATION

Water Courses

- 5.35 All works near to ditches/streams should adhere to best practice guidance to avoid adverse effects upon water quality, 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

- 5.36 Retention of habitat along riparian corridors, and associated habitats such as floodplain grazing marsh, tree/scrub lines and wet woodland, has already been recommended on the basis of their potential value to host protected, rare and BAP species, and the importance of such water courses for the hydrological status of the wider area. 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.
- 5.37 All construction works taking place in the vicinity of retained woodland, 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

- 5.38 The site contains a variety of on-site habitats considered suitable for breeding birds, and a breeding bird survey is recommended. Any clearance of vegetation suitable for breeding birds, such as woodland, scattered trees, scrub, non-native hedgerows 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

- 5.39 Five invasive plant species included on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) are present on-site. 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 development (particularly if work in and around water bodies is carried out) and, therefore, it is recommended that they be removed and correctly disposed of, following best practice guidelines (Environment Agency, 2010)

Bats and lighting

- 5.40 While different species of bat react differently to night time lighting, research has found that bats are sensitive to artificial lighting and that 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).
- 5.41 Currently the whole site remains dark at night and to minimise indirect impacts from lighting associated with development it will be necessary to limit light spillage and glare. 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

- 5.42 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 wetland systems.

Sustainable Drainage Systems (SuDS)

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

- 5.44 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. 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.
- 5.45 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.

Green roofs

- 5.46 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

- 5.47 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

- 5.48 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.
- 5.49 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.
- 5.50 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-herb should be allowed to develop along either side of the hedge and be managed by cutting 1-2 times per year or preferably biennially.
- 5.51 Tree regeneration should also be encouraged to provide young hedgerow trees that will fulfil an ecological and landscape role in the future.

Landscape Planting

- 5.52 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

5.53 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.
- Standard hole and open fronted boxes can be attached at varying heights using either standard hanging devices or bespoke attachments to suitable structures.

5.54 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

5.55 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.

5.56 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.

5.57 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.

- 5.58 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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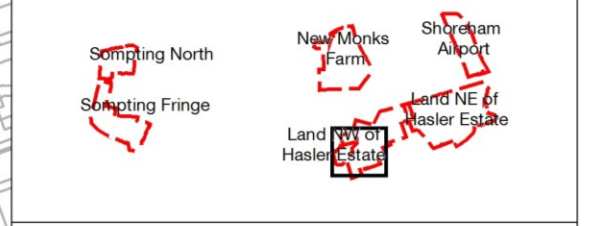
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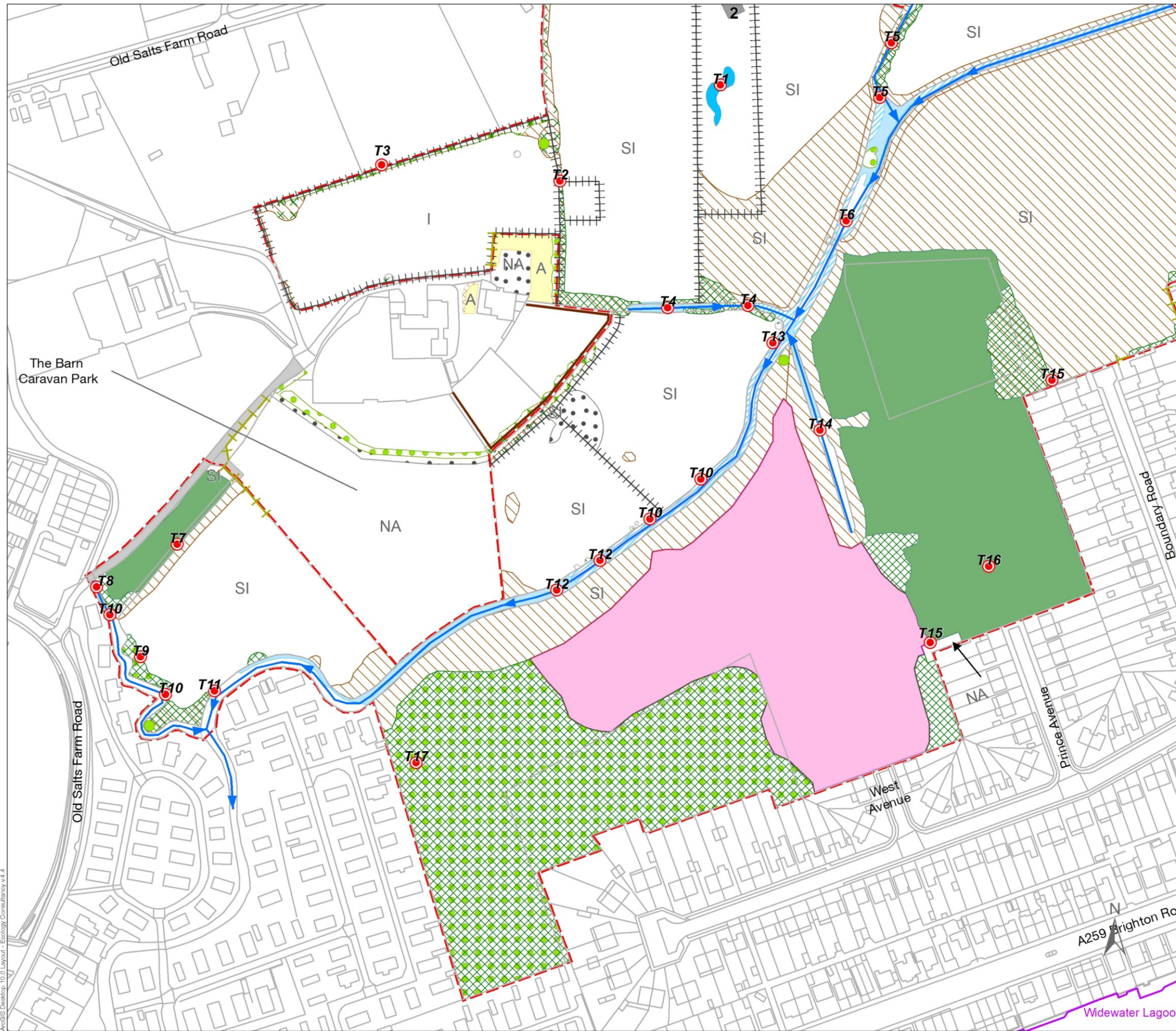
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Appendix 1: Habitat Map

Job title	Adur District Council ECL Job no. 120618		
Client	Sheils Flynn		
Drawing title	HABITAT SURVEY MAP		
Site (Sectors)	Land NW of Hasler Estate (1 of 2)		
Date of survey	July 2012	Surveyor	BK
		Scale (at A3)	1:2,000
Drawn/Checked/Approved	CAJ/GS/CC/BK	Date	28/08/2012



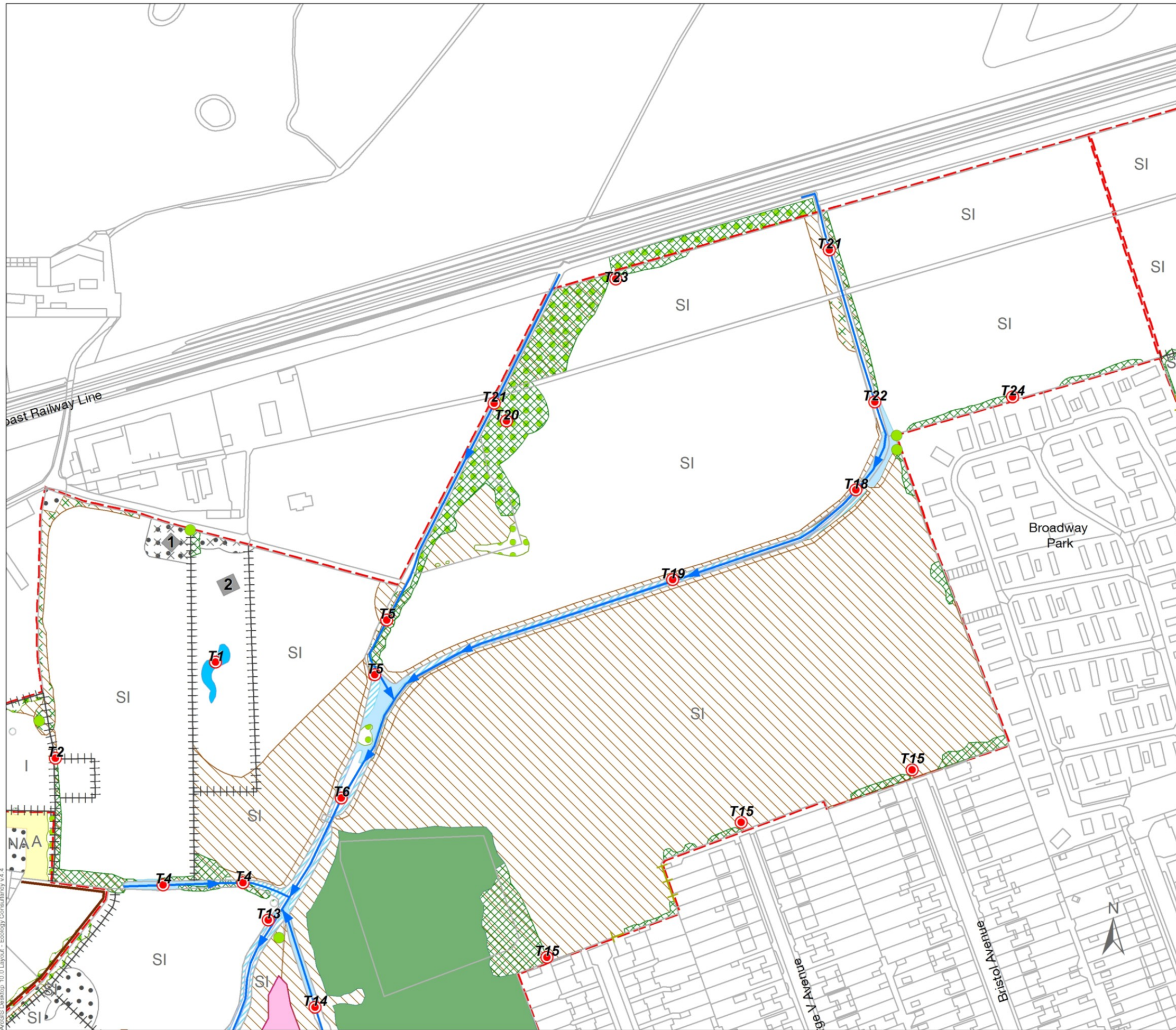
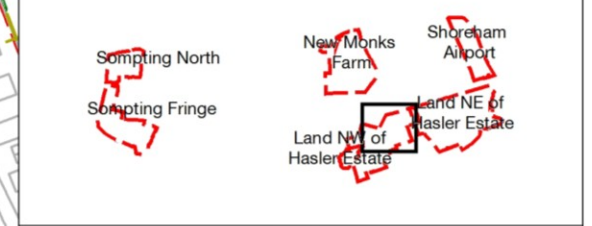
KEY	
	Site boundary
	Marginal vegetation
	Buildings
	Swamp
	Hardstanding
	Standing water-Pond
	Broad-leaved semi-natural woodland
	Vegetable plot
	Plantation woodland (native)
	Spoil
	Mixed woodland
	Roughland
	Tall ruderal vegetation
	Continuous scrub
	SSSI boundary
	Scattered scrub
	SNCI boundary
	Scattered trees
	Private Garden (not accessed)
	Amenity grassland
	Native species-poor hedge and trees
	Poor semi-improved grassland
	Non-native species-poor hedge
	Arable
	Native species-poor hedge
	Improved grassland
	Introduced shrubbery
	Running water
	Short perennial/ephemeral
	Stone wall
	Bare ground
	Fence
	Tree (indicative)
	Target note



ArcGIS Desktop 10.0 Layout - Ecology Consultancy v1.4

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

Job title	Adur District Council ECL Job no. 120618		
Client	Sheils Flynn		
Drawing title	HABITAT SURVEY MAP		
Site (Sectors)	Land NW of Hasler Estate (2 of 2)		
Date of survey	July 2012	Surveyor	BK
		Scale (at A3)	1:2,000
Drawn/Checked/Approved	CAJ/GS/CC/BK	Date	28/08/2012



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

Acropolis 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 west across largest field located immediately north of Hasler Estate. Poor semi-improved grassland dominated by tall ruderal vegetation.



Photograph 2

View north-east from bridge over stream (see Target Note 18). Open area of reed swamp with water fern (invasive plant species) locally dominant,



Photograph 3

View south towards reed swamp with Broadway Park to left of picture. Large bed of watercress present in centre of channel (see Target Note 22).



Photograph 4

Standing water in field towards north-west corner of the site, used by gull species at time of survey. Poached by horses.



Photograph 5

View north from Target Note 5, showing area of reed swamp at confluence of the site two main ditches/streams.



Photograph 6

Field of improved grassland in north-west corner of the site. Heavily grazed, but with some remnant wildflower species. Line of scattered trees and scrub in background, comprised of over-mature/decaying hybrid black poplar (see Target Note 3).



Photograph 7

Stream adjacent to housing with both native and non-native floating aquatic/emergent plant species (see Target Note 10). Westernmost bank was artificial, but easternmost bank was not modified.



Photograph 8

View north-east towards Target Note 6. Field of poor semi-improved grassland grades down towards marginal vegetation along bank of channel and then into reed swamp. Far bank dominated by tall ruderal vegetation grading into woodland edge.



Photograph 9

Largest area of deep, open water at the site with floating aquatic and marginal vegetation (see Target Note 6). Stream banks fringed by tall ruderal vegetation and common reed which becomes reed swamp towards the top of the picture.



Appendix 3: Plant Species List

Plant Species List for Land North-West of the Hasler Estate, Lancing, West Sussex
compiled from the Preliminary Ecological Appraisal carried out on 31st July 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	y, t, s
<i>Achillea millefolium</i>	Yarrow	O	
<i>Aegopodium podagraria</i>	Ground-elder	R/LF	c
<i>Agrimonia eupatoria</i>	Agrimony	R/LF	
<i>Agrostis capillaris</i>	Common bent	F	
<i>Agrostis stolonifera</i>	Creeping bent	F/LA	
<i>Alliaria petiolata</i>	Garlic mustard	O	
<i>Allium vineale</i>	Wild onion	O	
<i>Apium graveolens</i>	Wild celery	R	w
<i>Apium nodiflorum</i>	Fool's water-cress	f	w
<i>Arctium minus</i>	Lesser burdock	F	
<i>Arrhenatherum elatius</i>	False oat-grass	A/LD	
<i>Artemisia vulgaris</i>	Mugwort	O	
<i>Aster</i> sp.	Michaelmas daisy	R/LF	
<i>Avena fatua</i>	Wild-oat	R	
<i>Azolla filiculoides</i>	Water fern	LD	w
<i>Ballota nigra</i>	Black horehound	O	
<i>Bellis perennis</i>	Daisy	O/LF	
<i>Bergenia cordifolia</i>	Elephant-ears	R	p
<i>Betula pubescens</i>	Downy birch	R	w, e, t
<i>Buddleja davidii</i>	Buddleia	R	e
<i>Callitriche stagnalis</i>	Common water-starwort	O/LF	w
<i>Calystegia sepium</i>	Hedge bindweed	F/LA	e
<i>Calystegia silvatica</i>	Large bindweed	O/LF	e
<i>Capsella bursa-pastoris</i>	Shepherd's-purse	O	

<i>Carex otrubae</i>	False fox-sedge	R	w, e
<i>Carex pendula</i>	Pendulous sedge	R	w, e
<i>Cerastium fontanum</i>	Common mouse-ear	O	
<i>Chamerion angustifolium</i>	Rosebay willowherb	r/LF	c
<i>Chenopodium album</i>	Fat-hen	O/LF	
<i>Circaea lutetiana</i>	Enchanter's-nightshade	R/LF	c
<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/LF	
<i>Cornus sanguinea</i>	Dogwood	R/LF	
<i>Coronopus squamatus</i>	Swine-cress	R/LF	p
<i>Cotoneaster horizontalis</i>	Wall cotoneaster	R	
<i>Crassula helmsii</i>	New Zealand pigmyweed	O/LA	w, c, e
<i>Crataegus monogyna</i>	Hawthorn	a	h, t
<i>Crepis capillaris</i>	Smooth hawk's-beard	O/LF	
<i>Crocosmia x crocosmiiflora</i>	Montbretia	R	
<i>Cynosurus cristatus</i>	Crested dog's-tail	R/LF	
<i>Dipsacus fullonum</i>	Wild teasel	F	
<i>Dryopteris filix-mas</i>	Male-fern	R	
<i>Elaeagnus x ebbingei</i>	Elaeagnus	R/LF	m, p
<i>Elytrigia repens</i>	Common couch	F/LA	
<i>Epilobium ciliatum</i>	American willowherb	O	e
<i>Epilobium hirsutum</i>	Great willowherb	f/LA	w, e
<i>Epilobium parviflorum</i>	Hoary willowherb	O	w, e
<i>Epilobium tetragonum</i>	Square-stalked willowherb	F	w
<i>Equisetum arvense</i>	Field horsetail	F/LA	
<i>Equisetum telmateia</i>	Field horsetail	R/LF	w
<i>Euonymus latifolia</i>	Large-leaved spindle	R	g?
<i>Eupatorium cannabinum</i>	Hemp-agrimony	O	
<i>Festuca arundinacea</i>	Tall fescue	F/LA	w
<i>Festuca rubra</i>	Red fescue	O	
<i>Galium aparine</i>	Cleavers	R	
<i>Geranium dissectum</i>	Cut-leaved crane's-bill	O	
<i>Geranium molle</i>	Dove's-foot crane's-bill	R	
<i>Geranium robertianum</i>	Herb-Robert	R/LF	
<i>Geum urbanum</i>	Wood avens	R/LF	
<i>Glyceria maxima</i>	Reed sweet-grass	R/LF	w
<i>Hedera helix</i>	Ivy	F/LA	
<i>Hemerocallis sp</i>	Day-lily	R	p
<i>Heracleum sphondylium</i>	Hogweed	F/LA	

<i>Hippuris vulgaris</i>	Mare's-tail	R/LF	w
<i>Holcus lanatus</i>	Yorkshire-fog	F/LA	
<i>Hordeum murinum</i>	Wall barley	R/LF	f, e
<i>Hordeum secalinum</i>	Meadow barley	A	
<i>Hypericum perforatum</i>	Perforate St John's-wort	R/LF	
<i>Hypochaeris radicata</i>	Cat's-ear	O	
<i>Iris pseudacorus</i>	Yellow iris	O	w, e
<i>Juglans regia</i>	Walnut	R/LF	s, y
<i>Juncus acutiflorus</i>	Sharp-flowered rush	R/LF	w, e
<i>Juncus bufonius</i>	Toad rush	O/LF	w, e
<i>Juncus effusus</i>	Soft-rush	R	w
<i>Juncus inflexus</i>	Hard rush	O	w, e
<i>Lactuca serriola</i>	Prickly lettuce	R	
<i>Lamium album</i>	White dead-nettle	O	
<i>Lathyrus pratensis</i>	Meadow vetchling	R/LF	
<i>Lemna minor</i>	Common duckweed	F/LA	w, e
<i>Ligustrum ovalifolium</i>	Garden privet	F/LA	h, p
<i>Ligustrum vulgare</i>	Wild privet	R	
<i>Lolium perenne</i>	Perennial rye-grass	A	
<i>Lotus corniculatus</i>	Common bird's-foot-trefoil	O	
<i>Lycopus europaeus</i>	Gypsywort	LF	w
<i>Malus domestica</i>	Apple	R	y
<i>Malva sylvestris</i>	Common mallow	R	
<i>Matricaria discoidea</i>	Pineappleweed	O/LF	f, e
<i>Medicago arabica</i>	Spotted medick	R	
<i>Medicago lupulina</i>	Black medick	F/LA	
<i>Melilotus officinalis</i>	Ribbed melilot	R/LF	
<i>Mentha aquatica</i>	Water mint	O	w
<i>Myosotis scorpioides</i>	Water forget-me-not	R/LF	w
<i>Nymphoides peltata</i>	Fringed water-lily	O	w
<i>Odontites vernus</i>	Red bartsia	F	
<i>Papaver somniferum</i>	Opium poppy	R	
<i>Parietaria judaica</i>	Pellitory-of-the-wall	R	
<i>Persicaria amphibia</i>	Amphibious bistort	F/LA	w
<i>Persicaria maculosa</i>	Redshank	R	
<i>Petasites fragrans</i>	Winter heliotrope	R/LF	e
<i>Phalaris arundinacea</i>	Reed canary-grass	F/LA	w, e
<i>Phleum pratense</i>	Timothy	A	
<i>Phragmites australis</i>	Common reed	A/LD	w
<i>Helminthotheca echioides</i>	Bristly ox-tongue	F/LD	
<i>Picris hieracioides</i>	Hawkweed ox-tongue	F/LD	

<i>Pittosporum tenuifolium</i>	Kohuhu	R	p, h, 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>Poa pratensis</i>	Smooth meadow-grass	R	
<i>Poa trivialis</i>	Rough meadow-grass	O	
<i>Polygonum aviculare</i>	Knotgrass	O/LF	f, e
<i>Populus nigra 'italica'</i>	Lombardy-poplar	R	t, p
<i>Populus x canadensis</i>	Hybrid black-poplar	O/LF	w, t, p
<i>Potentilla anserina</i>	Silverweed	A	w
<i>Potentilla reptans</i>	Creeping cinquefoil	R	
<i>Prunella vulgaris</i>	Selfheal	O/LF	
<i>Prunus laurocerasus</i>	Cherry laurel	R	p
<i>Prunus spinosa</i>	Blackthorn	O	
<i>Pulicaria dysenterica</i>	Common fleabane	F/LA	w, e
<i>Ranunculus acris</i>	Meadow buttercup	O	
<i>Ranunculus aquatilis</i>	Common water-crowfoot	R/LF	w, e
<i>Ranunculus repens</i>	Creeping buttercup	F	
<i>Rhus typhina</i>	Stag's-horn sumach	R	e, g
<i>Nasturtium officinale</i>	Water-cress	F/LA	w, e
<i>Ranunculus aquatilis</i>	Common water-crowfoot	R/LF	w
<i>Rosa canina</i>	Dog-rose	O	
<i>Rosa rugosa</i>	Japanese rose	R	h, p
<i>Prunus lusitanica</i>	Portugal laurel	R	g?
<i>Rubus fruticosus agg.</i>	Bramble	A/LD	
<i>Rumex obtusifolius</i>	Broad-leaved dock	O	
<i>Rumex sanguineus</i>	Wood dock	R	
<i>Sagittaria sagitifolia</i>	Arrowhead	O	w, e
<i>Salix caprea</i>	Goat willow	O/LA	t, w
<i>Salix cinerea</i>	Grey willow	O	t, w
<i>Salix fragilis</i>	Crack-willow	F	t, w, e
<i>Salix x reichardtii</i>	Hybrid sallow	R	t, w
<i>Schoenoplectus lacustris</i>	Common club-rush	r/LF	w
<i>Senecio jacobaea</i>	Common ragwort	F/LA	
<i>Silene latifolia</i>	White campion	R	
<i>Sisymbrium officinale</i>	Hedge mustard	O	
<i>Skimmia japonica</i>	Skimmia	R	p, h, e
<i>Solanum nigrum</i>	Black nightshade	O	n, e
<i>Solanum dulcamara</i>	Bittersweet	O	w
<i>Solidago canadensis</i>	Canadian goldenrod	R	c
<i>Sonchus arvensis</i>	Perennial sow-thistle	R	

<i>Sonchus asper</i>	Prickly sow-thistle	O	
<i>Sonchus oleraceus</i>	Smooth sow-thistle	R	
<i>Sorbus aucuparia</i>	Rowan	R	y, t
<i>Sparganium erectum</i>	Branched bur-reed	O	w
<i>Spergularia rubra</i>	Sand spurrey	R	
<i>Stachys sylvatica</i>	Hedge woundwort	R	
<i>Tanacetum parthenium</i>	Feverfew	R	
<i>Thuja plicata</i>	Western red-cedar	LF	e, h
<i>Torilis japonica</i>	Upright hedge-parsley	R	
<i>Trifolium fragiferum</i>	Strawberry clover	R/LF	
<i>Trifolium micranthum</i>	Slender trefoil	O	
<i>Trifolium pratense</i>	Red clover	F/LA	
<i>Trifolium repens</i>	White clover	F/LA	
<i>Trifolium subterraneum</i>	Subterranean clover	R	
<i>Urtica dioica</i>	Common nettle	F	
<i>Veronica beccabunga</i>	Brooklime	R	w
<i>Veronica catenata</i>	Pink water-speedwell	O/LF	w, e
<i>Veronica persica</i>	Common field-speedwell	R	
<i>Vicia hirsuta</i>	Hairy tare	R/LF	
<i>Vicia sativa</i>	Common vetch	O/LF	
<i>x Cupressocyparis leylandii</i>	Leyland cypress	R/LF	e, p, h

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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