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The Steddles, Yapton

Preliminary Ecological Appraisal Report

November 2021

The Steddles, North End Road, Yapton

Preliminary Ecological Appraisal Report

Client:	Pallant Homes Ltd	
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Abbreviations

BoCC	Bird of Conservation Concern
CHS	Conservation of Habitats and Species Regulations 2017 (as amended)
HPI	Habitat of Principal Importance
HSI	Habitat Suitability Index
INNS	Invasive Non-Native Species
NERC	Natural Environment and Rural Communities Act 2006
NPPF	National Planning Policy Framework
PEA	Preliminary Ecological Assessment
PRA	Preliminary Roost Assessment
PRF	Potential (bat) Roost Feature
SPI	Species of Principal Importance
SxBRC	Sussex Biological Records Centre
TN	Target Note
WCA	Wildlife & Countryside Act 1981 (as amended)

0 Executive Summary

0.1 Introduction

- 0.1.1 A Preliminary Ecological Appraisal was undertaken for the site of a proposed residential development at The Steddles, North End Road, Yapton (Grid Reference: SU 97839 03831). The report was prepared to record the ecological baseline and identify key ecological features within and around the proposal site.

0.2 Results

- 0.2.1 There are no statutory or non-statutory important wildlife sites within the desk study search area. There are records of a range of protected or notable species in the locality, including amphibians, birds, invertebrates, terrestrial mammals, flowering plants, and terrestrial reptiles, together with at least two priority habitats: Deciduous Woodland, Traditional Orchard and open water.
- 0.2.2 The survey area is located to the north of the village of Yapton in the Arun District of West Sussex. The site comprises c.0.4ha of residential land, currently dominated by amenity grassland, with a areas of hardstanding, bare ground, ephemeral/short perennial vegetation, dense scrub and three buildings. Hedgerows, scattered trees and a small pond are also present. The wider landscape is characterised by a patchwork of arable land and pasture with a network of drainage ditches and hedgerows, as well as the villages of Yapton and Barnham. Two ponds lie within 500m of the survey area.

0.3 Evaluation

- 0.3.1 Table 0.1 presents a summary of ecological constraints and opportunities identified within the survey area.

Table 0.1: Summary of ecological constraints and opportunities

Feature	Detail
<u>Constraints:</u>	
Designated sites	There are no statutory or non-statutory designated sites within the desk study search area.
Priority habitats	Hedgerow H7 is classified as Hedgerows HPI. It is currently anticipated that H7 will be retained and protected during construction.
Other habitats	The proposed development would result in permanent losses of up to c.0.4ha of amenity grassland, bare ground with ephemeral/short perennial vegetation mosaic, dense scrub, standing water and scattered trees across the site. These areas are of low intrinsic ecological value and of negligible importance.
Birds (nesting)	Permanent loss of nesting habitats (hedgerows, scrub, buildings).

Feature	Detail
Bats (roosting)	Two summer day roosts for common pipistrelle were recorded within B2. Details of mitigation and compensatory methods are reported separately.
Invasive non-native species	Two species listed on the Sussex Invasive Non-Native Species report are present, cherry laurel and evergreen oak.
Opportunities:	
Priority habitats	The Hedgerows HPI within the survey area is of high intrinsic value and can provide a focus for ecological enhancement measures.
Habitat creation / enhancement	Habitat creation and enhancement opportunities include buffer planting, hedgerow creation, habitat piles and bird/bat boxes.

0.4 Recommendations

- 0.4.1 No further botanical or protected species surveys are required. Recommendations are made for the protection of important ecological features to avoid or mitigate ecological impacts, and to enhance the site for wildlife following construction; these are summarised in Table 0.2. It is intended that these preliminary recommendations should be considered during future changes to the design of development proposals so that protection of important ecological features is secured and opportunities for ecological enhancement are realised.

Table 0.2: Summary of recommendations

#	Summary of recommendations
Precautionary measures	
R1	Removal of nesting bird habitats (including vegetation and buildings) will be undertaken outside of the bird nesting season, which runs from 1 March to 30 September. It will therefore be carried out between October and February.
Ecological protection measures	
R2	Hedgerow H7 will be retained and protected during construction, and provide a focus for ecological enhancement measures.
R3	The log pile (TN3) will be retained and repositioned outside of the developable area.
R4	Standard site procedures to prevent impacts on the retained hedgerows, trees or shrubs should be adhered to during construction.
R5	The use of external lighting will be avoided or minimised to prevent impacts to nocturnal species. Lighting should not be directed towards hedgerows, trees or any newly created bat roosting features.
R6	A method statement will be prepared to ensure adequate control measures are adopted during to prevent the spread of invasive cherry laurel and evergreen oak during construction.
R7	Small access gaps will be provisioned at the base of new fence boundaries to enable continued dispersal of small mammals across the site.
R8	At the end of each working day excavations will be covered over and open pipework capped to prevent entrapment of mammals, amphibians and other fauna.

# Summary of recommendations	
<i>Ecological enhancement</i>	
R9	Buffers of less intensively managed vegetation will be created within soft landscaped areas within the development, towards the site boundaries and alongside hedgerows.
R10	Hedgerow creation and/or restoration will use a range of native fruit, seed, nut and nectar-bearing shrub species.
R11	The site's landscaping plans will utilise plant species which encourage bats by providing additional food sources or roosting opportunities.
R12	Habitat piles for amphibians, invertebrates and reptiles will be created within or close to boundary hedgerows.
R13	The value of the site for birds will be enhanced by installing a range of artificial nest boxes onto new buildings and retained trees.
R14	The value of the site for bats will be enhanced by installing a range of artificial roost boxes onto new buildings and retained trees.

0.5 Conclusions

- 0.5.1 The majority of land proposed for development is of low ecological value. Constraints to development were identified including priority hedgerow habitat and the potential presence of nesting birds, roosting bats, and non-native plants. However, proportionate and effective mitigation is available to protect against the risk of impacts. No further surveys are required prior to submitting a planning application.
- 0.5.2 Bat presence/likely absence surveys were carried out in 2021, which confirmed the presence of two summer day roosts for common pipistrelle within B2. Details of mitigation and compensatory methods are included within the bat survey technical note and should be read alongside this assessment (UEEC, 2021).

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1 Introduction

1.1 Purpose of this Report

- 1.1.1 This report presents a Preliminary Ecological Appraisal (PEA) for the site of a proposed residential development at The Steddles, North End Road, Yapton (Grid Reference: SU 97839 03831). The report was prepared to record the ecological baseline and identify key ecological features within and around the proposal site.

1.2 Objectives and Approach of the Study

- 1.2.1 The objectives of the PEA were to:
- ▶ Identify features present on the site or adjacent which are ecologically significant, and which may act as constraints or opportunities to the proposed development,
 - ▶ Consider the need for further ecological surveys which may be necessary; and
 - ▶ Make preliminary recommendations for the protection of important ecological features, to avoid or mitigate ecological impacts, and to enhance the site for wildlife following construction.
- 1.2.2 The approach to establishing the ecological baseline found within this report has been achieved through:
- ▶ A desk study involving a review of statutory and non-statutory nature conservation sites, and records of habitats and species from the local area (1km radius from the centre of the proposed development site);
 - ▶ An extended Phase 1 Habitat survey identifying the main habitats on site and adjacent, and the presence of, or potential for, protected and/or notable species; and
 - ▶ A PEA of the effects of development proposals with respect to the nature conservation value of the site.

1.3 Survey Area

- 1.3.1 The survey area is located to the north of the village of Yapton in the Arun District of West Sussex. The site comprises c.0.4ha of residential land, currently dominated by amenity grassland, with a areas of hardstanding, bare ground, ephemeral/short perennial vegetation, dense scrub and three buildings. Hedgerows, scattered trees and a small pond are also present.
- 1.3.2 The survey area is bounded to the east by North End Road and residential development, to the north by another large residential property and garden with mature trees, and to the south and west by horse paddocks and arable farmland beyond. The extent of the survey area is outlined in red on Figure 1.1.

- 1.3.3 The wider landscape is characterised by a patchwork of arable land and pasture with a network of drainage ditches and hedgerows, as well as the villages of Yapton and Barnham. Two ponds lie within 500m of the survey area.

1.4 Proposed Construction Activities

- 1.4.1 Planning consent is in place for the demolition of the existing buildings and construction of ten new residential dwellings, together with access, hard and soft landscaping and associated facilities (Y/121/19/PL).
- 1.4.2 A new planning application is proposed to amend the form of the proposed dwellings, albeit retaining the same layout as the consented scheme. Figure 1.2 illustrates the currently proposed site layout.
- 1.4.3 The planning application site boundary is expected to be the same as the survey area boundary.

1.5 Previous Ecological Assessments

- 1.5.1 A PEA was undertaken at the site in 2019, which included a Preliminary Roost Assessment (PRA) for bats (Ecosa, 2019). The principal habitats recorded were amenity grassland, ephemeral/short perennial vegetation, buildings, hardstanding, bare ground, standing water, hedgerows and scattered trees. The survey identified ecological constraints in relation to the following protected species/species groups: breeding birds, badger *Meles meles*, bats, and hedgehog *Erinaceus europaeus*.
- 1.5.2 The PRA identified the presence of one suspected *Pipistrellus* species dropping within the loft space of the main residential building and classified it as a confirmed roost. Subsequent presence/likely absence surveys in 2020 recorded a single common pipistrelle *Pipistrellus pipistrellus* returning to roost beneath the soffit on the northern elevation of the building (UEEC, 2020).
- 1.5.3 Updated bat presence/likely absence surveys were undertaken in 2021 to enable mitigation licensing in relation to proposals to demolish building B1. Two summer day roosts for low numbers of common pipistrelle were recorded in the building during the 2021 surveys (UEEC, 2021).

 Survey area

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Figure 1.2: Proposed site layout

2 Survey Methodology

2.1 Desk Study

- 2.1.1 A desk-based study was undertaken to examine published information and biological records from within the search area (site centroid plus 2km for bats, and 1km for all other data). This was extended to 5km for internationally designated sites and 2km for nationally designated sites. The desk study established the presence of designated sites of nature conservation interest, or records of protected/notable habitats/species within the site and its surrounding area. This information was collected from the following sources:

- ▶ The 'MAGIC' (Multi-agency Geographic Information for the Countryside) website: www.magic.gov.uk; and
- ▶ Sussex Biological Records Centre (SxBRC).

2.2 Preliminary Ecological Appraisal

- 2.2.1 The Preliminary Ecological Appraisal (compliant to British Standard BS42020:2013) is based on a survey of the site undertaken on 17 September 2021 by an experienced ecologist. Weather conditions were warm (21°C), dry, and mostly overcast with patches of sun (80% cloud cover).
- 2.2.2 Within the survey area every parcel of land was classified, recorded, and mapped using standard colour codes, in accordance with a list of ninety habitat types specified within the methodology for Phase 1 Habitat survey (Joint Nature Conservation Council, 2010). This allows rapid visual assessment of the extent and distribution of different habitat types. Target notes (TN) were used to provide supplementary information on features which were particularly interesting or significant to specific construction proposals, or too small to map, or to provide additional details, for example relating to species composition and structure.
- 2.2.3 This basic methodology was extended to provide more detail in relation to habitats with potential to support rare or protected fauna, as described by the Chartered Institute of Ecology and Environmental Management's *Guidelines for Preliminary Ecological Appraisal* (CIEEM, 2017b). The assessment of habitat suitability for protected, rare or priority species is based on current good practice guidance such as that presented in the *Herpetofauna Workers' Manual* (Gent and Gibson, 2003) and *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (Collin (ed.), 2016). Where a species/group is not specifically evaluated, this indicates that no habitat of potential value for the species was identified during the survey.

Scope of the survey

- 2.2.4 The buffer zone for the desk study was set at 1km from the centre of the site (5km for international sites / 2km for bats and national sites) – a distance within which any notable ecological features likely to be affected by the proposed scheme would be identified.

- 2.2.5 All habitats within the survey area as indicated on Figure 1.1 were included to identify any ecological constraints that would be likely to apply to the scheme from within this zone. Adjacent habitats were also surveyed where appropriate to identify constraints falling outside of the proposed development site and to place the survey area in its ecological context.

Evaluation criteria

- 2.2.6 Important ecological features were evaluated to the extent possible under the survey methods used, and in relation to a geographical frame of reference, i.e. international/European value being most important, then national, regional, metropolitan/county/district/borough, and lastly local (based on CIEEM, 2018). Where a feature is of no more than site value, this is stated.
- 2.2.7 Value judgements are based on various characteristics that contribute to the importance of ecological features. These include site designations (such as Sites of Special Scientific Interest, or for undesignated features, the extent, naturalness, conservation status (local or national importance and so on), and quality of the ecological resource. Quality can refer to habitats (for instance if they are particularly diverse, are a good example of a specific habitat type, or provide for the requirements of important species or assemblages), other features (such as connectivity provided by wildlife corridors or mosaics of habitats) or the richness and abundance of species populations or assemblages.

2.3 Habitat Suitability Index

- 2.3.1 The Habitat Suitability Index (HSI; Oldham et al, 2000) is a tool used to assess ponds on the basis of their suitability to support breeding great crested newt *Triturus cristatus*. The HSI incorporates ten suitability indices which are considered to affect great crested newt distribution. These are:
- ▶ Location (in Britain);
 - ▶ Pond area;
 - ▶ Desiccation rate (years out of ten that pond dries);
 - ▶ Water quality (subjective assessment);
 - ▶ Percentage of pond shaded (% of pond margin shaded 1m from the bank);
 - ▶ Number of waterfowl;
 - ▶ Fish population (subjective assessment);
 - ▶ Number of ponds within 1km;
 - ▶ Terrestrial habitat quality; and
 - ▶ Percentage macrophyte cover.
- 2.3.2 The results of the HSI calculation can then be compared to categorised HSI scores used by the National Amphibian and Reptile Recording Scheme (Oldham et al, 2000) to identify the probability of a pond supporting great crested newts, as detailed in Table 2.1.

Table 2.1: Habitat quality of a pond for great crested newt in relation to HSI score

Habitat Quality	HSI Score
Poor	Below 0.5
Below Average	0.5 – 0.59
Average	0.6 – 0.69
Good	0.7 – 0.79
Exceptional	Above 0.8

- 2.3.3 The HSI gives an indication of whether a pond is suitable for breeding great crested newt, however, it should be noted that a low score does not preclude the possibility that great crested newt are using the pond. A survey of ponds carried out to test the HSI (ARG UK, 2010) found that 20% of ponds which were scored as 'below average' still contained great crested newts, although this increased to an occupation rate of 93% for those ponds scored as 'excellent'. Another important consideration when using the HSI is that pond scores can vary at different times of year, for example, if emergent vegetation is not present (and therefore under recorded) at the time of the HSI assessment.

2.4 Preliminary Roost Assessment

- 2.4.1 Trees within/adjacent to the survey area were subject to an external and where possible internal inspection for potential bat roost features (subject to safe access). All observable features potentially suitable for bats were noted and the overall suitability of the tree for roosting bats was classified with reference to Table 2.2. The objective was to establish whether each feature was of negligible, low, moderate or high roosting bat suitability, or a confirmed roost based on the presence of bats or their droppings.
- 2.4.2 Trees were assessed for Potential (bat) Roost Features (PRF) such as woodpecker holes, cavities, cracks or splits in major limbs (e.g. hazard beams, rot holes, frost cracks, knot holes, occlusions, flush cuts, tear-outs, cankers or butt-rots), loose platey bark, aerial deadwood and dense ivy or epicormic growth. The tree inspection was carried out from ground level.

Table 2.2: Potential suitability of structures/trees for roosting bats (after Collins, 2016)

Suitability	Roosting habitats
<u>Negligible</u>	Negligible habitat features on site likely to be used by roosting bats
<u>Low</u>	A tree of sufficient size and age to contain PRFs but with none seen from the ground/using ladders or features seen with only very limited roosting potential
<u>Moderate</u>	A tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (for roost type only)
<u>High</u>	A tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat
<u>Confirmed roost</u>	Bats or unequivocal evidence of bats found, i.e. bat droppings

2.5 Limitations

- 2.5.1 Biological records gathered during the desk study can provide an indication of the likely presence of a species on or adjacent to a site, however, the absence of records for protected species does not equate to evidence of their absence from the locality. Data search accuracy is variable, and records are often georeferenced to the nearest 1km grid square.
- 2.5.2 Time of year when the survey was carried out and other variations will influence the results of the survey. Botanical species vary considerably in their flowering, seeding and fruiting periods, and surveys outside of these periods can confound accurate species identification. Where this is the case plants have been identified to lowest possible taxonomic group, normally genus. The possibility nonetheless exists for other species to be present on the site which were not recorded or otherwise indicated by the survey.
- 2.5.3 The survey reported herein was carried out in late summer, after the flowering period for many botanical species. However, diagnostic vegetative characteristics were still discernible, therefore the timing of the survey is not considered to be a significant limitation to meeting the report objectives.
- 2.5.4 There were no difficulties in gaining access to survey the site's habitats and assess protected species suitability. Adjacent habitats were surveyed where appropriate in order to identify constraints falling outside of the proposed development site and to place the survey area in its ecological context. The two ponds identified within 500m of the site (P2 and P3) were not surveyed due to access restrictions.
- 2.5.5 The details of this report will remain valid for a period of 18 months from the date of the survey (September 2021), after which the validity of this assessment should be reviewed to determine whether further updates are necessary (CIEEM, 2019). Note that the recommendations within this report should be reviewed (and reassessed if necessary) should there be any changes to the site boundary or development proposals upon which this report was based.
- 2.5.6 See Appendix V for general Legal and Technical Limitations which apply to this document.

2.6 Personnel

- 2.6.1 The site survey was carried out by Jeff Turton BSc (Hons) MCIEEM, an Ecologist with five years' professional consultancy experience in ecological field survey for a wide range of sites and development projects. Jeff holds Natural England Class Licences to survey for bats (WML-CL17) and great crested newt (WML-CL08). Jeff was assisted on site by Dan Maude BSc (Hons) MRes GradCIEEM, an Assistant Ecologist with one years' professional consultancy experience. The report was extensively reviewed by Nick Pincombe BA (Hons) MSc CEnv MIEMA MCIEEM, Director of Urban Edge Environmental Consulting, who has fifteen years' experience in leading survey and impact assessment teams for a wide range of ecology and environmental planning projects. Nick holds Natural England Class Licences to survey for bats (WML-CL18) and great crested newt (WML-CL08).

3 Results

3.1 Desk Study

Statutory and non-statutory site designations

- 3.1.1 There are no internationally important wildlife sites within the 5km desk study search area and no nationally important wildlife sites within 2km. No non-statutory sites of local importance are located within 1km of the site.

Priority habitats

- 3.1.2 Priority habitats include those listed on local Biodiversity Action Plans and Habitats of Principal Importance (HPI) listed under section 41 of the Natural Environment and Rural Communities Act 2006 (NERC). SxBRC and a search of the MAGIC database returned the following data on priority and other habitats within the desk study search area: Deciduous Woodland and Traditional Orchard. Areas of open water are included, which are assumed to qualify as Ponds, Eutrophic Standing Waters or Rivers HPI. None of these are shown as present within the survey area; see Figure 3.1.

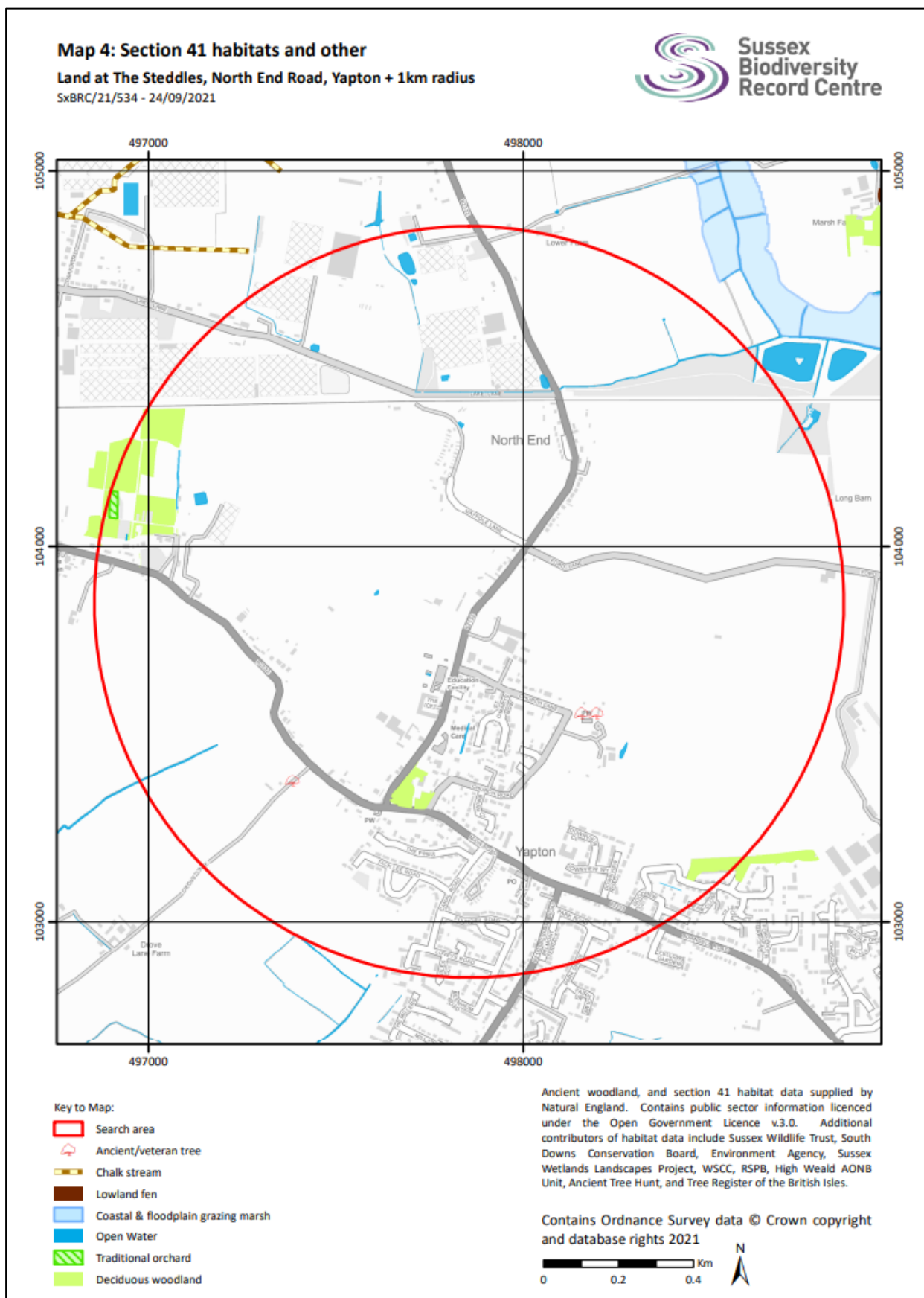


Figure 3.1: Priority habitats within the desk study search area

Records of protected, rare and notable species

- 3.1.3 Biological records were obtained from SxBRC for the desk study search area and are summarised in Table 3.1.

Table 3.1: Records of protected, rare & notable species within the desk study search area

Group	Species	Designation
Amphibians	Great crested newt	Habs.Dir.2&4, CHS Sch.2, WCA Sch.5 full, NERC s41
	Common toad <i>Bufo bufo</i>	WCA Sch.5 part, NERC s41
	Smooth newt <i>Lissotriton vulgaris</i> , Common frog <i>Rana temporaria</i>	WCA Sch.5 part
Birds (note: species may appear more than once)	Kingfisher <i>Alcedo atthis</i> , Great bittern <i>Botaurus stellaris</i> , Bewick's swan <i>Cygnus bewickii</i> , Whooper swan <i>Cygnus Cygnus</i> , Little egret <i>Egretta garzetta</i> , Merlin <i>Falco columbarius</i> , Red kite <i>Milvus milvus</i>	Birds Dir.1
	Kingfisher, Scaup <i>Aythya marila</i> , Great bittern, Cetti's warbler <i>Cettia cetti</i> , Quail <i>Coturnix coturnix</i> , Bewick's swan, Whooper swan, Merlin, Hobby <i>Falco subbuteo</i> , Red kite, Barn owl <i>Tyto alba</i>	WCA Sch.1
	Skylark <i>Alauda arvensis</i> , Scaup, Great bittern, Cuckoo <i>Cuculus canorus</i> , Hawfinch <i>Coccothraustes coccothraustes</i> , Yellowhammer <i>Emberiza citrinella</i> , Reed bunting <i>Emberiza schoeniclus</i> , Corn bunting <i>Emberiza calandra</i> , Dunnock <i>Prunella modularis</i> , Herring gull <i>Larus argentatus</i> , Linnet <i>Linaria cannabina</i> , Curlew <i>Numenius arquata</i> , House sparrow <i>Passer domesticus</i> , Tree sparrow <i>Passer montanus</i> , Grey partridge <i>Perdix perdix</i> , Bullfinch <i>Pyrrhula pyrrhula</i> , Turtle dove <i>Streptopelia turtur</i> , Starling <i>Sturnus vulgaris</i> , Song thrush <i>Turdus philomelos</i> , Ring ouzel <i>Turdus torquatus</i> , Lapwing <i>Vanellus vanellus</i>	NERC s41
	Skylark, Pochard <i>Aythya farina</i> , Scaup, Cuckoo, Hawfinch, Corn bunting, Yellowhammer, Merlin, Herring gull, Linnet, Curlew, House sparrow, Tree sparrow, Grey partridge, Whinchat <i>Saxicola rubetra</i> , Turtle dove, Starling, Ring ouzel, Song thrush, Lapwing	RL
	Kingfisher, Teal <i>Anas crecca</i> , Mallard <i>Anas platyrhynchos</i> , Swift <i>Apus apus</i> , Great bittern, Stock dove <i>Columba oenas</i> , Quail, Bewick's swan, Whooper swan, Mute swan <i>Cygnus olor</i> , House martin <i>Delichon urbicum</i> , Reed bunting, Kestrel <i>Falco tinnunculus</i> , Snipe <i>Gallinago gallinago</i> , Common gull <i>Larus canus</i> , Redstart <i>Phoenicurus phoenicurus</i> , Dunnock, Willow	AL

Group	Species	Designation
	warbler <i>Phylloscopus trochilus</i> , Bullfinch, Shelduck <i>Tadorna tadorna</i> ,	
Invertebrates	Stag beetle <i>Lucanus cervus</i>	Habs.Dir.2, WCA Sch.5 part, NERC s41
	Knot grass <i>Acronitica rumicis</i> , Beaded chestnut <i>Agrochola lychnidis</i> , Green-brindled crescent <i>Allophytes oxyacanthae</i> , Large nutmeg <i>Apamea anceps</i> , Dusky brocade <i>Apamea remissa</i> , Galium carpet <i>Epirrhoe galiata</i> , Rosy minor <i>Litoligia literosa</i> , Dot moth <i>Melanchra persicariae</i> , Large wainscot <i>Rhizedra lutos</i> , Buff ermine <i>Spilosoma lutea</i> , Blood-vein <i>Timandra comae</i> , Oak hook-tip <i>Watsonalla binaria</i>	NERC s41
Mammals (terrestrial)	Barbastelle <i>Barbastella barbastellus</i> ,	Habs.Dir.2&4, CHS Sch.2, WCA Sch.5 full, NERC s41
	Noctule <i>Nyctalus noctula</i> , Soprano pipistrelle <i>Pipistrellus pygmaeus</i> , Brown long-eared <i>Plecotus auritus</i>	Habs.Dir.4, CHS Sch.2, WCA Sch.5 full, NERC s41
	Serotine <i>Eptesicus serotinus</i> , Daubenton's bat <i>Myotis daubentonii</i> , Brandt's bat/Whiskered <i>Myotis brandtii</i> / <i>mystacinus</i> , Natterer's bat <i>Myotis nattereri</i> , Nathusius' <i>Pipistrellus nathusii</i> , Common pipistrelle	Habs.Dir.4, CHS Sch.2, WCA Sch.5 full
	European water vole <i>Arvicola amphibius</i>	WCA Sch.5 full, NERC s41
	Hedgehog, Brown hare <i>Lepus europaeus</i> , Harvest Mouse <i>Micromys minutus</i>	NERC s41
Plants	Pennyroyal <i>Mentha pulegium</i>	WCA Sch.8, NERC s41
	Bluebell <i>Hyacinthoides non-scripta</i>	WCA Sch.8
Reptiles (terrestrial)	Slow worm <i>Anguis fragilis</i> , Grass snake <i>Natrix helvetica</i> Common lizard <i>Zootoca vivipara</i>	WCA Sch.5 part, NERC s41

Birds.Dir.1	Wild Birds Directive 2009/147/EC Annex 1
Habs.Dir.2/4	Habitats Directive 92/43/EEC Annex 2 or 4
CHS Sch.X	Conservation of Habitats & Species Regulations 2017 Schedules 2 (EPS animals) or 5 (EPS plants)
WCA s1/Sch.X	Wildlife and Countryside Act 1981 Section 1 / Schedules 1, 5 (fully or partially protected), 6 or 8
PBA	Protection of Badgers Act 1992
NERC s41	Natural Environment & Rural Communities Act 2006 Section 41 Species of Principal Importance
RL/AL	Red/Amber Listed (IUCN or Birds of Conservation Concern 4 (Eaton et al., 2015))

3.2 Phase 1 Habitats

3.2.1 The following habitats were identified within or adjacent to the survey area and are shown on the Phase 1 Habitat plan at Appendix I. The habitats are described below broadly in the order of their extent.

- ▶ Amenity grassland
- ▶ Bare ground
- ▶ Buildings & Hardstanding
- ▶ Dense scrub
- ▶ Standing water
- ▶ Hedgerows
- ▶ Scattered trees

Amenity grassland

3.2.2 The majority of the site comprised of amenity grassland, which was intensively managed, i.e., regularly mown, with a short sward height. There were three areas of amenity grassland on site, the largest of which formed the rear garden. The smaller patches were located either side of the entrance gate. Meadow-grasses *Poa* sp. were found abundantly, with yarrow *Achillea millefolium*, daisy *Bellis perennis*, and white clover *Trifolium repens* occurring frequently. Creeping buttercup *Ranunculus repens*, dandelion *Taraxacum* sp., bristly oxtongue *Helminthotheca echioides*, thistles *Cirsium* sp., and common mouse-ear *Cerastium fontanum* were occasional throughout. Three vegetables plots (c3x2m) with timber borders and a structure used for growing climbing vegetables were present in the northern extent of the amenity grassland Target note 1 (TN1).

Bare ground with ephemeral/short perennial mosaic

3.2.3 A gravel driveway covered a large area of the site, with patches of encroaching ephemeral/short perennial vegetation. The encroaching species included frequent perennial rye-grass *Lolium perenne*, with the occasional incidence of dandelion *Taraxacum* sp., dock *Rumex* sp., ragwort *Senecio jacobaea*, bristly oxtongue, ribwort plantain *Plantago lanceolata*, spurge *Euphorbia* sp., and chives *Allium schoenoprasum*. TN2 denotes a large, isolated heather *Calluna* sp. shrub located on the edge of the driveway.

Buildings & Hardstanding

3.2.4 Three buildings were present on site. B1 was a two-storey residential dwelling constructed of brick and flint. It included a complex, clay tiled roof structure, with dormer windows. The south-western aspect comprised of a single storey extension of the same construction, albeit with slate roof tiles.

3.2.5 B2 was an open-fronted structure of relatively new construction in the south of site, which comprised of a car port and storage. The barn was of timber construction with slate roof tiles.

3.2.6 B3 was a small timber garden shed located in the north-western extent of the garden.

- 3.2.7 Two paved areas were located on site, adjacent to the eastern and western aspects of B1.

Dense scrub

- 3.2.8 A patch of dense scrub connected with hedgerows H3 and H5 in the western corner of site. The area resembled an overgrown section of garden that has merged with the canopies of surrounding trees. All species within this habitat occurred occasionally including: bramble *Rubus fruticosus*, elder *Sambucus nigra*, holly *Ilex aquifolium*, evergreen oak *Quercus ilex*, hazel *Corylus avellana*, Smoke-tree *Continus coggia*, Lilac *Syringa vulgaris*, Rosemary *Salvia rosmarinus*, Yew *Taxus baccata* and Japanese maple *Acer palmatum*.

Standing water

- 3.2.9 A garden pond, approximately 3-4m in diameter, was located in the eastern part of the site. The pond was lined, surrounded with concrete paving slabs and was inundated with algae. There was a small patch of emergent vegetation at the centre, comprised of waterlily *Lilium* sp. and water iris *Iris* sp.. P1 does not qualify as HPI, due its size and poor condition (Maddock, 2008).

Hedgerows

- 3.2.10 A total of seven hedgerows were recorded on site, mainly at the site boundaries, but also separating within the rear garden. Hedgerows H1-H6 comprised of species poor hedge and H7 was native species-rich hedge and trees.
- ▶ **H1:** South-eastern boundary hedgerow situated either side of the entrance gate, c.30m long, 4m tall, with a 3m entrance gap in the middle. The hedgerow is intact and planted with species including apple *Malus domestica*, cherry laurel *Prunus laurocerasus*, leyland cypress *Cupressus × leylandii*, evergreen oak, viburnum *Viburnum* sp., and Oregon grape *Mahonia* sp. all of which were occasional. The hedgerow also contained an understorey of common ivy *Hedera helix*, and common nettle *Urtica dioica* which were also occasional throughout.
 - ▶ **H2:** South-western intact boundary hedge c.30m long, 4m tall, and 1m wide. This hedgerow was dominated by leyland cypress and elder, with an understorey of common ivy. At the base of the hedge was a pile of discarded logs (TN3).
 - ▶ **H3:** L-shaped hedgerow, the majority of which was a continuation of H2 with similar structural characteristics, but distinct species. The hedge consists of occasional field maple *Acer campestre*, dogwood *Cornus* sp., hazel and hawthorn *Crataegus monogyna*.
 - ▶ **H4:** Low hedge bordering the garden patio c.15m long, 1.5m high, and 1.5m wide, dominated by Wilson's honeysuckle *Lonicera nitida*.
 - ▶ **H5:** Borders the entire north-western edge of the site with the southern end merged with/containing the canopies of scattered trees. The hedgerow contained abundant cherry laurel, with willow *Salix* sp., butterfly-bush *Buddleia davidii*, box *Buxus sempervirens*, cherry *Prunus* sp., and bramble, all occasional.
 - ▶ **H6:** Surrounds a small area set aside for vegetable planting (TN3) in the northern end of the back garden. The hedge is dominated by yew and formed a c.6x10m perimeter, that was 1.5m high and 1m wide.

- ▶ **H7:** Tree dominated hedgerow along the north-eastern c.60m long, 2m wide, with variable heights c.4-6m. The hedgerow was species-rich with cherry *Prunus* sp., hazel, field maple, hawthorn, elder, wild privet *Ligustrum vulgare*, spotted laurel *Aucuba japonica*, bramble, leyland cypress, and dogrose *Rosa canina*, all occasional.

3.2.11 Only H7 qualified as Hedgerows HPI, as the remaining hedgerows (H1-H7) all comprised of less than 80% cover of at least one woody UK native species (Maddock, 2008).

Scattered trees

3.2.12 Scattered trees were present throughout the site with species including apple *Malus* sp., cherry *Prunus* sp., evergreen oak, pear *Pyrus* sp., bay *Laurus nobilis*, viburnum *Viburnum* sp., spotted laurel *Aucuba japonica* and silver birch *Betula pendula*. The canopies of two mature evergreen oak trees, located adjacent to the north-eastern site boundary, were overhanging into the site.



Amenity grassland



Bare ground with ephemeral/short perennial mosaic



B1 – main dwelling



Building B2



Building B3



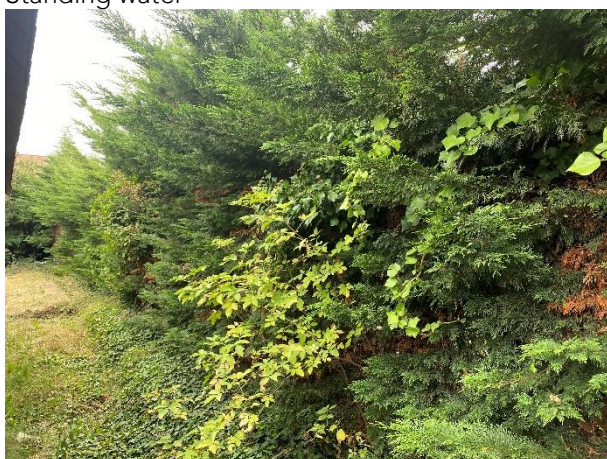
Dense scrub



Standing water



Hedgerow 1 (H1) – Northeast of entrance



Hedgerow 2 (H2)



Scattered trees



Overhanging Holm Oak



TN1 – vegetable plots



TN2 – heather shrub



TN3 – discarded logs

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4 Evaluation

4.1 Introduction

- 4.1.1 This section evaluates the survey area in terms of the habitats and species present or potentially present on site or its immediate vicinity, in the context of relevant legislation and planning policy. See Appendix IV for a review of the legislation and planning context.

4.2 Designated Sites

- 4.2.1 No statutory or non-statutory designated sites were present within the desk study search zone. Off-site priority habitats, including deciduous woodland and traditional orchard, were present within the search area but are not likely to be affected by the proposed development, considering the size and scale of the proposal and its distance from these habitats.

4.3 Habitats

Evaluation

- 4.3.1 Table 4.1 presents a preliminary evaluation of the habitats recorded within or adjacent to the survey area, with reference to the criteria defined at section 2.2.6. It is important to note that these preliminary evaluations may be updated following completion of more detailed botanical or protected species surveys.

Table 4.1: Preliminary evaluation of habitats within the survey area

Habitat	Evaluation	Rationale
Hedgerow H7	Site	Whilst this habitat qualifies as an HPI, it is not considered to be a high-quality example and is set within a landscape with an established hedgerow network.
All other habitats	Negligible	These habitats are common and widespread or poor-quality examples, none of which are HPI habitats.

Priority habitats

Hedgerows

- 4.3.2 Hedgerow H7 comprised native species-rich hedge and trees and hedgerows H1-H6 were species-poor hedge. Priority hedgerow habitats are defined “as any boundary line of trees or shrubs over 20m long and less than 5m wide, and where any gaps between the trees or shrub species are less than 20m wide..., consisting predominantly (i.e. 80% cover or more) of at least one woody UK native species” (any bank, wall, ditch or tree within 2m of the centre of the hedgerow is considered to be part of the hedgerow habitat, as is the herbaceous vegetation

within 2m of the centre of the hedgerow) (Maddock, 2008). Only hedgerow H7 falls into this classification.

- 4.3.3 Hedgerow priority habitats are of high intrinsic ecological value and provide habitats suitable for a range of protected species, including amphibians and reptiles (shelter and dispersal), nesting birds, invertebrates, foraging/commuting bats, and hazel dormouse.
- 4.3.4 It is currently anticipated that H1, H2 and H3 will be removed and replaced with new boundary native hedge planting as indicated on the proposed site plan 0003 revision P05 (Figure 1.2), together with allowing for the new site accesses. H4 and H6 will be removed as they lie within the developable area. However, the majority of boundary hedgerows consisting of H5 and H7 will be retained and protected during construction.

Other habitats

- 4.3.5 The proposed development would result in permanent losses of up to c.0.4ha of amenity grassland, bare ground with ephemeral/short perennial vegetation mosaic, dense scrub, standing water and scattered trees, depending on the extent and layout of development proposals. These areas are of low intrinsic ecological value and of negligible importance.

4.4 Species

Amphibians (excluding great crested newt)

- 4.4.1 Dominant habitats within the survey area such as grassland and hedgerow are potentially suitable terrestrial habitats for common and widespread amphibian species such as common frog, common toad, and smooth newt which have been recorded in the desk-study search zone. However, the grassland is largely sub-optimal due to its uniform structure and short sward height and habitats of better suitability are widely available in the surrounding area. Common amphibians are not considered to present a constraint to the development proposals.

Great crested newt

- 4.4.2 SxBRC returned three records of great crested newt from within the desk-study search zone; two records from 2002 and one from 2017. The closest which was accurately positioned (6-digit grid reference) was located c.525m south of the survey area.
- 4.4.3 The survey area contains predominantly sub-optimal terrestrial habitat for great crested newt, comprised mainly of regularly mown amenity grassland with a short sward height and little structural variation, as well as large areas of bare ground, and buildings. Grasslands of this nature are occasionally used by foraging or dispersing great crested newt but contain few shelter habitats and are unlikely to support high numbers. However, if this habitat is left unmanaged it could quickly become suitable. The boundary hedgerows, scrub, and the discarded log pile (TN2) could provide suitable shelter and dispersal habitat.

- 4.4.4 The on-site pond (P1) achieved an HSI value of 0.59 (full results are shown in Table 4.2), making it of below average suitability for breeding great crested newt. Ponds P2 and P3 could not be accessed to complete an HSI assessment.

Table 4.2: HSI results for pond P1

Variable	Field score	SI value
	Pond 1	
Location	A	1
Pond area (m2)	9	0.1
Desiccation rate	Never dries	0.9
Water quality	Poor	0.33
% shaded 1m from bank	5	1
Fowl	Absent	1
Fish	Absent	1
Pond density (per km ²)	9	0.95
Terrestrial habitat	Poor	0.33
Macrophyte cover %	25	0.55
HSI value	0.59	
Suitability	Below average	

- 4.4.5 Ponds P1 and P2 were located 425m and 476m north of the site, beyond large arable fields and residential properties. Research undertaken by Natural England (Cresswell & Whitworth, 2004) suggests great crested newt will rarely move further than 200-250m from a breeding pond, with much reduced distances recorded where adjacent habitats are of good quality. Jehle (2000) also determined a terrestrial zone of 63m, within which 95% of summer great crested newt refuges were located. In addition, following the breeding season, Jehle and Arntzen (2000) recorded 64% of newts within 20m of the pond edge.
- 4.4.6 In conclusion, terrestrial habitat suitable for great crested newt is limited within the survey area, with the majority of grassland habitat being sub-optimal due to its short sward height, uniform structure and intensive cutting. Combined with the below average suitability of P1 and limited connectivity with potentially suitable breeding ponds (P2 and P3), the scope for potential impacts to great crested newt is negligible. Accordingly, great crested newt is not considered to present a constraint to the development proposals and no further surveys for this species are required.

Birds (nesting)

- 4.4.7 SxBRC returned 58 notable bird species from within the desk-study search zone during a date range of 1983 to 2019. The survey area's boundary hedgerows, trees, and scrub are suitable for nesting birds such as wren, dunnoek (an Amber-listed Bird of Conservation Concern (BoCC4); Eaton *et al.*, 2015), robin *Erithacus rubecula* and chaffinch *Fringilla coelebs*, while the buildings provide some limited suitability for species such as house sparrow (BoCC4 Red-listed), and swallow *Hirundo rustica*. The amenity grassland is unlikely to support ground-nesting species

such as skylark *Alauda arvensis* (BoCC4 Red-listed) under its currently intensive management regime due to the short sward height and poor structural form. Precautionary measures for nesting birds are recommended at section 5.3.

Invertebrates

- 4.4.8 SxBRC returned 12 species of protected invertebrate from within the desk-study search zone, during a date range of 1990 to 2017, principally of Lepidoptera (moths and butterflies) but also including stag beetle.
- 4.4.9 The discarded log pile could provide potential habitat for saproxylic species, if left to decay. However, the habitats on site are largely unsuitable for invertebrates and are unlikely to support a diverse or abundant invertebrate fauna in general. On balance, invertebrates are not considered to present a constraint to the development proposals and no further surveys for this group are required. However, it is recommended that the log piles are retained on site and positioned beneath one of the retained boundary hedgerows.

Mammals (terrestrial)

Badger

- 4.4.10 SxBRC does not supply badger records for animal welfare reasons.
- 4.4.11 The survey area provides suitable foraging habitat for badger, but limited sett creation potential. A search for badger setts and signs of their presence was undertaken within a 30m radius of the site boundary. There was no observable evidence of badger activity within or around the survey area, such as badger paths, footprints, latrines, dung pits, or badger hairs caught at fence lines. Badger is not considered to present a constraint to the development proposals and no further surveys for this species are required. General ecological protection measures for badgers and other mammals are advised in section 5.4.

Bats

- 4.4.12 SxBRC returned 71 records of ten species of bat from within 2km of the survey area, during a date range of 1984 to 2019, including barbastelle, serotine, Daubenton's bat, whiskered, Natterer's bat, noctule, common pipistrelle, soprano pipistrelle and brown long-eared. the majority of these records were of bats in flight, but also included five roost sites. The closest was located c.1km south-west of the survey area in 2016, and comprised of an unspecified soprano pipistrelle roost.
- 4.4.13 Bat presence/likely absence surveys were carried out in 2021, which confirmed the presence of two summer day roosts for common pipistrelle within B2. Details of mitigation and compensatory methods are included within the bat survey technical note and should be read alongside this assessment (UEEC, 2021).
- 4.4.14 None of the trees within the survey area displayed potential roost features during a ground-level assessment, and PRFs are considered unlikely to be present higher up due to the relatively young age and good condition of the trees. Bats roosting in trees are not considered to present a constraint the development proposals and no further surveys are required.

- 4.4.15 The intensively managed amenity grassland habitat which dominates the survey area provides a small area of low suitability foraging habitat for bats. The boundary hedgerows may serve as a navigation route or foraging feature for bats, but it is anticipated that these will mostly be retained and protected during the works. Given the scale of development proposed, the small area of sub-optimal habitat effected and the proposed development's position away from potential commuting features, significant impacts to foraging/commuting bats are unlikely. Further bat activity surveys are not required. General ecological protection measures for foraging and commuting bats are advised in section 5.4

Hazel dormouse

- 4.4.16 SxBRC returned no records of hazel dormouse *Muscardinus avellanarius* within the desk study search area.
- 4.4.17 The boundary hedgerows of the survey area provide potential habitat for dormouse. However, these hedgerows are largely sub-optimal due to their limited connectivity to areas of mature woodland, regular management, and low number of suitable native species. As such, they are unlikely to provide sufficient year-round food availability. In any case, the majority of the boundary hedgerow is anticipated to be retained under proposals for the site. Hazel dormouse is not considered to present a constraint to the development proposals and no further surveys for this species are required.

Water vole and otter

- 4.4.18 SxBRC returned no records of water vole *Arvicola amphibius* from within the desk study search area, during a date range of 1998 to 2016. SxBRC does not supply records of otter *Lutra lutra*.
- 4.4.19 There are no riparian habitats running through or adjacent to the site, nor in the wider landscape, making it unlikely that either species would be present. Neither species is considered to present a constraint to development proposals and further surveys are not required.

Plants, native

- 4.4.20 SxBRC returned records of two protected botanical species from within the desk-study search zone during a date range of 1986 to 2018; pennyroyal and bluebell.
- 4.4.21 No rare or protected species of flora were recorded within the survey area and, based on the dominant habitat types present (amenity grassland, sparsely vegetated ground and buildings) and past and current management regimes, it is considered unlikely that these are present. Botanical species are not considered to present a constraint to the development proposals and no further surveys for this group are required.

Plants – invasive non-native species and injurious weeds

- 4.4.22 SxBRC returned records of 17 invasive non-native plant species within the desk-study search area during a date range of 1990 to 2018.

- 4.4.23 No invasive plant species (i.e. species listed on Schedule 9 of the Wildlife and Countryside Act (WCA)) were located during this survey. However, both cherry laurel and evergreen oak were recorded on site and are listed on the Sussex Invasive Non-Native Species (INNS) report. As such, control measures are advised to prevent this species spreading into the wild; see section 5.4.
- 4.4.24 No significant stands of injurious weed species were noted (ragwort *Senecio jacobea*, spear thistle *Cirsium vulgare*, creeping thistle *Cirsium arvense*, curled dock *Rumex crispus*, and broad-leaved dock *Rumex obtusifolius*). Injurious weeds are not considered to present a constraint to the development proposals and no further action for this group is required.

Reptiles (terrestrial)

- 4.4.25 SxBRC returned seven records of terrestrial reptile species from within the desk-study search area, during a date range of 1996 to 2018. Three of the four widespread species have been recorded in the vicinity; slow worm, grass snake, and common lizard. The closest record to the site was a slow worm located c.500m north in 2010.
- 4.4.26 The survey area contains predominantly sub-optimal habitat for reptiles, comprised mainly of buildings, sparsely vegetated ground and mown amenity grassland, with a short sward height and little structural variation. Grasslands of this nature contain few shelter habitats and are unlikely to support high numbers. The boundary hedgerows, scrub, and the discarded log pile (TN2) could provide suitable shelter and dispersal habitat, though these are isolated within an area limited in foraging and basking opportunities. Reptiles are not considered to present a constraint to development proposals and no further surveys for this group are required.

Other protected, rare or notable species

- 4.4.27 SxBRC returned 15 records of hedgehog *Erinaceus europaeus* from within the desk-study search zone during a date range of 1998 to 2017. The closest to the site was located c.50m south-west in 2001. The survey area contains habitats suitable for this species, including grassland, hedgerow, and scrub. Hedgehog is listed as a species of principal importance under NERC and is undergoing a significant population decline. Measures should be taken to continue accommodating this species on the site post-development (see section 5.4).

5 Recommendations

5.1 Introduction

- 5.1.1 With regard to the objectives of this PEA, recommendations are made below for further botanical and/or protected species survey where necessary. Preliminary recommendations are also made for the protection of important ecological features, and/or to avoid or mitigate ecological impacts, and to enhance the ecology of the site post-construction. It is intended that these recommendations should be considered during future changes to the design of development proposals so that protection of important ecological features is secured and opportunities for ecological enhancement are realised.

5.2 Botanical or Protected Species Surveys

- 5.2.1 Recommended surveys relating to roosting bats have been completed and are detailed within the bat survey technical note (UEEC, 2021). As such, there is no requirement to undertake further botanical or protected species surveys prior to submitting a planning application.

5.3 Precautionary Measures

- 5.3.1 The following species/groups (Table 5.1) require specific precautionary measures to be adhered to prior to and during construction to ensure that an offence under the relevant legislation is avoided.

Table 5.1: Recommended precautionary measures

#	Recommended precautionary measures
R1	Removal of nesting bird habitats (including vegetation and buildings) will be undertaken outside of the bird nesting season, which runs from 1 March to 30 September. It will therefore be carried out between October and February. Any construction works undertaken within the bird breeding season where suitable bird breeding habitat exists will require a site check for nesting birds by a suitably qualified ecologist. This will take place no more than two days prior to works commencing. This is to ensure that no disturbance to active bird nests occurs. If a nest is found it must be cordoned off and works adjacent to the nest must be delayed until such time that the chicks have fledged from the nest. This will be supervised by a suitably qualified ecologist.

5.4 Ecological Protection Measures

- 5.4.1 The following protection measures (Table 5.2) will be carried out as part of the proposed scheme.

Table 5.2: Recommended ecological protection measures

#	Recommended ecological protection measures
R2	The hedgerow priority habitat within the survey area (H7) is of intrinsic ecological value and provides habitat suitable for a range of protected species, including amphibians, nesting birds, invertebrates, bats and reptiles. This feature will be retained and protected during construction, and will also provide a focus for ecological enhancement measures.
R3	The log pile (TN3) will be retained and repositioned outside of the developable area. Deadwood habitats provide an important source of food, shelter and hibernation habitat for a variety of bats, birds, invertebrates, plants and fungi.
R4	British Standard BS 5837:2012 and/or National Joint Utilities Group Guidelines (NJUG, 1995) will be followed at all times during construction when working in close proximity to hedgerows, trees or shrubs which are to be retained. According to NJUG Guidelines the root protection zone or precautionary area is 4x the circumference of the trunk (circumference is measured around the trunk at a height of 1.5m above ground level). The distance is measured from the centre of the trunk to the nearest part of any excavation or other work. If a separate tree survey is carried out for the proposed development, works will be undertaken in accordance with the recommendations therein.
R5	The use of external lighting will be avoided or reduced to the minimum required for its intended purpose, during both construction and operation. This will be of benefit to nocturnal species e.g. bats. Where external lighting is to be provided, it will be low-level, directional lighting with minimal spill and glare, and consideration will be given to reduced hours of operation and/or a movement responsive system of control. Narrow-spectrum bulbs and light sources that emit minimal UV light will be used, avoiding white and blue wavelengths of the spectrum. Glass lantern covers will be used instead of plastic to filter UV light. Lighting will not be directed towards the retained hedgerows, trees or any newly created bat roosting features (see R14).
R6	Cherry laurel and evergreen oak are present on site and are listed within the Sussex INNS report. A method statement should be prepared to ensure adequate control measures are adopted during construction to prevent these species spreading from the site.
R7	To enable continued dispersal of hedgehogs (which require large territory sizes) and other small mammals across the site and within the local area following development, small access gaps to measure c.13x13cm are recommended to be provisioned at the base of all new fence boundaries. These will allow easy passage for small mammals to continue foraging in the area while still being small enough to contain pets.
R8	All excavations left overnight will either be covered over, or provided with a ramp to enable easy escape of badgers, hedgehogs, small mammals, amphibians and other fauna, and inspected each morning prior to recommencement. Open pipework greater than 150mm outside diameter will be blanked off at the end of each working day.

5.5 Recommendations for Ecological Enhancement

- 5.5.1 The following ecological enhancements (Table 5.3) should be considered for the site to contribute towards net gains for biodiversity in line with the requirements of local and national policy and guidance.

Table 5.3: Preliminary recommendations for ecological enhancement

#	Preliminary recommendations for ecological enhancement
R9	Buffers of less intensively managed vegetation (e.g. coarse grasses and wildflowers, including the use of tussock-forming grass species such as cock's foot <i>Dactylis glomerata</i> , Yorkshire-fog <i>Holcus lanatus</i> , tufted hair-grass <i>Deschampsia cespitosa</i> and false oat-grass <i>Arrhenatherum elatius</i>) will be created within soft landscaped areas within the development, towards the site boundaries and alongside hedgerows. This will help to maintain/enhance ecological connectivity through the site for reptiles, amphibians and small mammals, and provide forage for invertebrates.
R10	Hedgerow creation and/or enhancement as part of the landscaping plan for the site will use a range of native shrub species. Fruit, seed, nut and nectar-bearing species will be used preferentially when selecting species for landscape planting, so that food sources are available throughout the year (e.g. hazel, hawthorn, blackthorn <i>Prunus spinosa</i> , rowan <i>Sorbus aucuparia</i> and honeysuckle <i>Lonicera periclymenum</i>). If an evergreen hedge is required for landscape screening, suitable native species include holly and yew.
R11	The site's landscaping plans will utilise plant species which encourage bats. The table at Appendix III lists species of plants that can provide benefit for bats either by providing a food source for insects on which bats feed, or providing additional roosting opportunities (Gunnell et al., 2012). The plant species are predominantly native to Britain, but not all species will be suitable in all situations. The aim is to encourage a diverse range of invertebrate food sources and increased bat roost potential.
R12	Habitat piles will be created at the edges of the site close to boundary hedgerows. These will provide additional hibernation and shelter resources for amphibians, invertebrates, reptiles, and a range of other wildlife, and egg-laying substrate for grass snakes. Hibernacula can be created by partially burying logs and stones in sheltered areas away from flood risk, and covering over with earth or turf. Breeding habitats can be created by collecting grass clippings and other prunings arising from landscape management of the site, and composting them in a secluded corner of the site. Deadwood piles can be created using arisings from site clearance to provide shelter and breeding opportunities for invertebrates, particularly saproxylic species which are dependent on deadwood.
R13	The value of the site for birds will be enhanced by installing a range of artificial nest boxes. These will be placed on retained mature trees within the development or at the site boundaries, or incorporated within building facades. For instance: ▪ New buildings: nest boxes can be installed under the eaves for birds that utilise buildings for nesting, e.g. house martin, house sparrow, swallow and swift. These species are of principal importance, of conservation concern and/or are notable in Sussex. ▪ Trees: nest boxes with entrance holes suitable for tit species, woodpeckers and nuthatches, and open-fronted boxes suitable for spotted flycatcher <i>Muscicapa striata</i> or song thrush and treecreeper <i>Certhia familiaris</i> boxes.
R14	The value of the site for bats will be enhanced by installing a range of artificial roost boxes. These will be placed on retained mature trees within the development or at the site boundaries, or incorporated within building facades. Boxes suitable for a range of species should be used, for instance: ▪ New buildings: integral bat tubes can be installed within buildings which face vegetated areas. Bat tubes can be incorporated into the design of the building so that only the

#	Preliminary recommendations for ecological enhancement
	access holes are visible from the exterior of the building. The Schwegler 1FR or 2FR Bat Tube, or other manufacturer's equivalent, is designed to meet the characteristic requirements of the types of bats that inhabit buildings such as pipistrelles <i>Pipistrellus spp.</i> or serotines <i>Eptesicus serotinus</i>. It is designed to be installed on the external walls of buildings, either flush or beneath a rendered surface. ▪ Pipistrelles: bat boxes suitable to install on mature trees either within or at the edges of the development include the Schwegler 1FF Flat Bat Box, or other manufacturer's equivalent. ▪ Noctules <i>Nyctalus spp.</i> and brown long eared bats <i>Plecotus auritus</i>: bat boxes suitable to install on mature trees either within or at the edges of the development include the Schwegler 2F General Purpose Bat Box or the 2FN Woodland Bat Box, or other manufacturer's equivalent. ▪ Bat boxes should ideally be located south-facing (between south-east and south-west) and above 4m from ground level. They should be installed facing vegetation features such as mature hedgerows or trees, but with a clear line of flight for bats exiting the roost, and away from sources of artificial light.

6 Summary and Conclusions

6.1 Introduction

- 6.1.1 A PEA was undertaken for the site of a proposed residential development at The Steddles, North End Road, Yapton (Grid Reference: SU 97839 03831). The report was prepared to record the ecological baseline and identify key ecological features within and around the proposal site.

6.2 Results

- 6.2.1 There are no statutory or non-statutory important wildlife sites within the desk study search area. There are records of a range of protected or notable species in the locality, including amphibians, birds, invertebrates, terrestrial mammals, flowering plants, and terrestrial reptiles, together with at least two priority habitats: Deciduous Woodland, Traditional Orchard and open water.
- 6.2.2 The survey area is located to the north of the village of Yapton in the Arun District of West Sussex. The site comprises c.0.4ha of residential land, currently dominated by amenity grassland, with a areas of hardstanding, bare ground, ephemeral/short perennial vegetation, dense scrub and three buildings. Hedgerows, scattered trees and a small pond are also present. The wider landscape is characterised by a patchwork of arable land and pasture with a network of drainage ditches and hedgerows, as well as the villages of Yapton and Barnham. Two ponds lie within 500m of the survey area.

6.3 Evaluation

- 6.3.1 Table 6.1 presents a summary of ecological constraints and opportunities identified within the survey area.

Table 6.1: Summary of ecological constraints and opportunities

Feature	Detail
Constraints:	
Designated sites	There are no statutory or non-statutory designated sites within the desk study search area.
Priority habitats	Hedgerow H7 is classified as Hedgerows HPI. It is currently anticipated that H7 will be retained and protected during construction.
Other habitats	The proposed development would result in permanent losses of up to c.0.4ha of amenity grassland, bare ground with ephemeral/short perennial vegetation mosaic, dense scrub, standing water and scattered trees across the site. These areas are of low intrinsic ecological value and of negligible importance.
Birds (nesting)	Permanent loss of nesting habitats (hedgerows, scrub, buildings).

Feature	Detail
Bats (roosting)	Two summer day roosts for common pipistrelle were recorded within B2. Details of mitigation and compensatory methods are reported separately.
Invasive non-native species	Two species listed on the Sussex Invasive Non-Native Species report are present, cherry laurel and evergreen oak.
Opportunities:	
Priority habitats	The Hedgerows HPI within the survey area is of high intrinsic value and can provide a focus for ecological enhancement measures.
Habitat creation / enhancement	Habitat creation and enhancement opportunities include buffer planting, hedgerow creation, habitat piles and bird/bat boxes.

6.4 Recommendations

- 6.4.1 No further botanical or protected species surveys are required. Recommendations are made for the protection of important ecological features to avoid or mitigate ecological impacts, and to enhance the site for wildlife following construction; these are summarised in Table 6.2. It is intended that these preliminary recommendations should be considered during future changes to the design of development proposals so that protection of important ecological features is secured and opportunities for ecological enhancement are realised.

Table 6.2: Summary of recommendations

#	Summary of recommendations
Precautionary measures	
R1	Removal of nesting bird habitats (including vegetation and buildings) will be undertaken outside of the bird nesting season, which runs from 1 March to 30 September. It will therefore be carried out between October and February.
Ecological protection measures	
R2	Hedgerow H7 will be retained and protected during construction, and provide a focus for ecological enhancement measures.
R3	The log pile (TN3) will be retained and repositioned outside of the developable area.
R4	Standard site procedures to prevent impacts on the retained hedgerows, trees or shrubs should be adhered to during construction.
R5	The use of external lighting will be avoided or minimised to prevent impacts to nocturnal species. Lighting should not be directed towards hedgerows, trees or any newly created bat roosting features.
R6	A method statement will be prepared to ensure adequate control measures are adopted during to prevent the spread of invasive cherry laurel and evergreen oak during construction.
R7	Small access gaps will be provisioned at the base of new fence boundaries to enable continued dispersal of small mammals across the site.
R8	At the end of each working day excavations will be covered over and open pipework capped to prevent entrapment of mammals, amphibians and other fauna.

# Summary of recommendations	
<i>Ecological enhancement</i>	
R9	Buffers of less intensively managed vegetation will be created within soft landscaped areas within the development, towards the site boundaries and alongside hedgerows.
R10	Hedgerow creation and/or restoration will use a range of native fruit, seed, nut and nectar-bearing shrub species.
R11	The site's landscaping plans will utilise plant species which encourage bats by providing additional food sources or roosting opportunities.
R12	Habitat piles for amphibians, invertebrates and reptiles will be created within or close to boundary hedgerows.
R13	The value of the site for birds will be enhanced by installing a range of artificial nest boxes onto new buildings and retained trees.
R14	The value of the site for bats will be enhanced by installing a range of artificial roost boxes onto new buildings and retained trees.

6.5 Conclusions

- 6.5.1 The majority of land proposed for development is of low ecological value. Constraints to development were identified including priority hedgerow habitat and the potential presence of nesting birds, roosting bats, and non-native plants. However, proportionate and effective mitigation is available to protect against the risk of impacts. No further surveys are required prior to submitting a planning application.
- 6.5.2 Bat presence/likely absence surveys were carried out in 2021, which confirmed the presence of two summer day roosts for common pipistrelle within B2. Details of mitigation and compensatory methods are included within the bat survey technical note and should be read alongside this assessment (UEEC, 2021).

References and Bibliography

Amphibian and Reptile Groups of the UK (ARG UK; 2010): *Advice Note 5: Great Crested Newt Habitat Suitability Index*. Adapted from Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000). Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). *Herpetological Journal* **10**(4), 143-155.

British Standards Institution (BSI; 2012): *BS5837:2012 Trees in relation to Design, Demolition and Construction - Recommendations*. BSI Standards Limited, London.

British Standards Institution (BSI; 2013): *BS42020:2013 Biodiversity – Code of practice for planning and development*. BSI Standards Limited, London.

Chartered Institute of Ecology and Environmental Management (CIEEM, 2017a): *Guidelines for Ecological Report Writing*. 2nd Edition, CIEEM, Winchester.

CIEEM (2017b): *Guidelines for Preliminary Ecological Appraisal*. 2nd Edition, CIEEM, Winchester.

CIEEM (2018): *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine*. CIEEM, Winchester. Version 1.1, updated September 2019.

CIEEM (2019): *Advice Note on the Lifespan of Ecological Reports & Surveys*. Available online at: <https://cieem.net/resource/advice-note-on-the-lifespan-of-ecological-reports-and-surveys/>

Collins, J. (ed.) (2016): *Bat Surveys for Professional Ecologists: Good Practice Guidelines*. 3rd Edition, Bat Conservation Trust, London.

Cresswell W. & Whitworth R. (2004): *An assessment of the efficiency of capture techniques and the value of different habitats for the great crested newt Triturus cristatus*. English Nature Research Report No. 576. English Nature, Peterborough.

Eaton MA, Aebischer NJ, Brown AF, Hearn RD, Lock L, Musgrove AJ, Noble DG, Stroud DA and Gregory RD (2015): Birds of Conservation Concern 4 ("BoCC4"): the population status of birds in the United Kingdom, Channel Islands and Isle of Man. *British Birds* **108**, 708–746.

Gent, A.H. and Gibson, S.D., eds. (2003): *Herpetofauna Workers' Manual*. Joint Nature Conservation Committee, Peterborough.

Gunnel K., Grant, G. and Williams, C. (2012): *Landscape and Urban Design for Bats and Biodiversity*. Bat Conservation Trust.

Jehle R. (2000): The terrestrial summer habitat of radio-tracked great crested newts (*Triturus cristatus*) and marbled newts (*T. marmoratus*). *Herpetological Journal* **10**(4), 137-142.

Jehle R. & Arntzen J.W (2000): Post-breeding migrations of newts with contrasting ecological requirements. *Journal of Zoology* **251**, 297-306.

Joint Nature Conservation Committee (2010): *Handbook for Phase 1 Habitat Survey. A Technique for Environmental Audit*, Joint Nature Conservation Committee, Peterborough.

Maddock A. (ed.) (2008): *UK Biodiversity Action Plan: Priority Habitat Descriptions*. UK Biodiversity Reporting and Information Group. Updated December 2011.

Ministry for Housing, Communities & Local Government (MHCLG; 2019): *National Planning Policy Framework*.

Multi-agency Geographic Information for the Countryside (MAGIC) (www.magic.gov.uk)

National Joint Utilities Group (April 1995): *Guidelines for the Planning, Installation and Maintenance of Utility Services in Proximity to Trees*.

Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000): Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). *Herpetological Journal* **10**(4), 143-155.

Ecosa (2019): *The Steddles, North End Road, Yapton, West Sussex – Preliminary Ecological Appraisal*.

UEEC (2020): *The Steddles, North End Road, Yapton, West Sussex – Bat Survey*.

UEEC (2021): *The Steddles, North End Road, Yapton, West Sussex – Bat Roost Presence / Likely Absence Surveys: Update*.

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Appendix I: Phase 1 Habitat Plan

The Steddles North End Road Yapton, West Sussex

-  Survey area
-  Hardstanding
-  Dense scrub
-  Standing water
-  Amenity grassland
-  Building
-  Bare ground/ephemeral short perennial
-  Native species-rich hedge and trees
-  Species-poor hedge
-  Scattered tree
-  Target note
-  Pond numbers



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Scale: 1:600 Created by: AD
Date: Oct 2021 Reviewed by: NP
Drawing number:
UE0382ECO-Phase1_211027

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Appendix II: Pond Plan

The Steddles North End Road Yapton, West Sussex

- Survey area
- ▲ Pond numbers
- 100m buffer
- 250m buffer
- 500m buffer



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Ordnance Survey 0100031673

Scale: 1:6,000 Created by: AD
Date: Oct 2021 Reviewed by: NP
Drawing number:
UE0382ECO-Ponds211027



Appendix III: Plant Species which encourage Bats

Please see following pages which are drawn from Gunnell *et al.* (2012).

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Plant Species	Common name	Native	Type	Benefit	Soil	Light	Extensive green roofs	Living walls	Rain Gardens	Hedges/trees	Beds/borders
<i>Acer campestre</i>	Field maple	N	T/S	C	Any	Sun / shade				Y	
<i>Acer platanoides</i>	Norway maple		T	S	Well drained / alkaline	Sun / shade				Y	
<i>Acer saccharum</i>	Sugar maple		T	S	Any	Sun / shade				Y	
<i>Achillea millefolium</i>	Yarrow	N	HP	C,F	Well drained	Sun	Y				
<i>Ajuga reptans</i>	Bugle	N	HP	C,F	Any	Sun / shade	Y				
<i>Anthyllis vulneraria</i>	Kidney vetch	N	HP	F	Well drained	Sun	Y				
<i>Aubrieta deltoidea</i>	Aubrieta		H	F	Well drained	Sun / shade		Y			
<i>Betula pendula</i>	Silver birch	N	T	C	Sandy / Acid	Sun				Y	
<i>Cardamine pratensis</i>	Cuckoo-flower	N	HP	F	Moist	Sun / shade					Y
<i>Carpinus betulus</i>	Hornbeam	N	T	C	Clay	Sun				Y	
<i>Centaurea nigra</i>	Common knapweed	N	HP	C,F	Dry, not acid	Sun	Y				Y
<i>Centranthus ruber</i>	Red valerian		HP	F	Well drained / alkaline	Sun	Y				Y
<i>Clematis vitalba</i>	Old man's beard	N	C	F	Well drained / alkaline	Sun				Y	
<i>Corylus avellana</i>	Hazel	N	S	C	Any dry	Sun / shade		Y		Y	
<i>Crataegus monogyna</i>	Hawthorn	N	S	S,C	Any	Sun / shade				Y	
<i>Daucus carota</i>	Wild carrot	N	Bi	S,C,F	Any	Sun	Y				Y
<i>Dianthus spp.</i>	Pinks	N	A-Bi	F	Well drained	Sun	Y	Y			Y
<i>Digitalis purpurea</i>	Foxglove	N	Bi	C	Well drained	Shade / partial shade				Y	Y
<i>Erica cineria</i>	Bell heather	N	S	F	Sandy	Full sun					Y
<i>Erysimum cheiri</i>	Wallflower		Bi-P	F	Well drained	Sun		Y			
<i>Eupatorium cannabinum</i>	Hemp agrinomy	N	H	F	Moist	Sun / shade					Y
<i>Fagus sylvatica</i>	Beech	N	T	C,R	Well drained / alkaline	Sun / shade				Y	
<i>Foeniculum vulgare</i>	Fennel		H	F	Well drained	Sun					Y
<i>Fraxinus excelsior</i>	Common ash	N	T	C,R	Any	Sun / shade				Y	
<i>Hebe spp.</i>	Hebe species		S	F	Well drained	Sun / shade				Y	Y
<i>Hedera helix</i>	Ivy	N	C	F,C	Any	Sun / shade		Y		Y	Y
<i>Hesperis matronalis</i>	Sweet rocket		H	F	Well drained / dry	Sun / shade					Y
<i>Hyacinoides non-scripta</i>	Bluebell	N	B	F	Loam	Shade / partial shade		Y		Y	Y
<i>Ilex aquifolium</i>	Holly	N	T	C	Any	Sun / shade				Y	
<i>Jasminum officinale</i>	Common jasmine		C	F	Well drained	Sun		Y			Y
<i>Lavandula spp.</i>	Lavander species		S	F	Well drained / sandy	Sun		Y			Y
<i>Linaria vulgaris</i>	Toadflax	N	HP	C	Well drained / alkaline	Sun	Y				Y
<i>Lonicera periclymenum</i>	Honeysuckle	N	C	F	Well drained	Sun		Y		Y	
<i>Lotus corniculatus</i>	Bird's foot trefoil	N	HP	F	Well drained / dry	Sun	Y				Y
<i>Lunaria annua</i>	Honesty		Bi	F	Any	Sun / partial shade	Y				
<i>Malus spp.</i>	Apple		T	C	Any	Sun				Y	
<i>Matthiola longipetala</i>	Night-scented stock		A	F	Well drained/ moist	Sun			Y		
<i>Myosotis spp.</i>	forget-me-not	N	A	F	Any	Sun	Y	Y			
<i>Nicotiana glauca</i>	Ornamental tobacco		A	F	Well drained/ moist	Sun / partial shade			Y		
<i>Oenothera spp.</i>	Evening primrose species		Bi	F	Well drained/ dry	Sun	Y				
<i>Origanum vulgare</i>	Marjoram	N	HP	F	Well drained/ dry	Sun	Y	Y			
<i>Populus alba</i>	White poplar	N	T	C	Clay loam	Sun				Y	
<i>Primula veris</i>	Cowslip	N	HP	F	Well drained/moist	Sun / partial shade	Y				
<i>Primula vulgaris</i>	Primrose	N	HP	F	Moist	Part shade	Y	Y		Y	
<i>Prunus avium</i>	Wild cherry	N	T	C	Any	Sun				Y	

Plant Species	Common name	Native	Type	Benefit	Soil	Light	Extensive green roofs	Living walls	Rain Gardens	Hedges/trees	Beds/borders
<i>Prunus domestica</i>	Plum		T	C	Well drained/ moist	Sun				Y	
<i>Prunus spinosa</i>	Blackthorn	N	S	C	Any	Sun / partial shade				Y	
<i>Quercus petraea</i>	Sessile oak	N	T	C,R	Sandy loam	Sun / shade				Y	
<i>Quercus robur</i>	Common oak	N	T	C,R	Clay loam	Sun / shade				Y	
<i>Rosa canina</i>	Dog rose	N	S	C	Any	Sun			Y	Y	
<i>Salix spp.</i>	Willow species	N	S	S,C	Moist	Sun / shade			Y	Y	
<i>Sambucus nigra</i>	Elder	N	T	C	Clay loam	Sun				Y	
<i>Saponaria officinalis</i>	Soapwort	N	HP	F	Any	Sun					
<i>Saxifraga oppositifolia</i>	Saxifrage	N	HP	C	Well drained	Sun	Y	Y			
<i>Scabiosa columbaria</i>	Small scabious	N	HP	F	Well drained/ alkaline	Sun	Y				
<i>Sedum spectabile</i>	Ice plant		HP	F	Well drained/ dry	Sun	Y				
<i>Silene dioecia</i>	Red campion	N	HP	F	Any	Shade / partial shade		Y	Y	Y	
<i>Sorbus aucuparia</i>	Rowan	N	T	C	Well drained	Sun				Y	
<i>Stachys lanata</i>	Lamb's ears		HP	F	Well drained/dry	Sun	Y				
<i>Symphotrichum spp.</i>	Michaelmas daisies		HP	F	Any	Sun					
<i>Tegetes patula</i>	French marigold		A	F	Well drained/moist	Sun					
<i>Thymus serpyllum</i>	Creeping thyme	N	HP/S	F	Well drained/dry	Sun	Y	Y			
<i>Tilia x europaea</i>	Common lime		Type	C	Any	Sun / shade				Y	
<i>Trifolium spp.</i>	Clover species	N	HP	F	Any	Sun	Y				
<i>Valeriana spp.</i>	Valerian species	N	HP	F	Moist	Sun / partial shade			Y		
<i>Verbascum spp.</i>	Mulleins	N	Bi,HP	C	Well drained	Sun	Y				
<i>Verbena bonariensis</i>	Verbena		HP	F	Well drained/moist	Sun					
<i>Viburnum lantana</i>	Wayfaring tree	N	S	C	Any	Sun / shade				Y	
<i>Viburnum opulus</i>	Guelder rose	N	S	C	Moist	Sun / shade			Y	Y	
<i>Viola tricolor</i>	Pansy	N	A	F	Well drained/moist		Y	Y			

The table above is derived from the BCT publication Landscape and Urban Design for Bats and Biodiversity (Gunnell et al., 2012) and lists suggested plant species that can provide benefit for bats either by providing a food source for insects or roost potential. The plants listed are predominately native to Britain. The small group of non-native plants is included for their documented value for wildlife. This list has been checked against Natural England's list of invasive non-native plants.

HP: Herbaceous perennial	T: Tree	A: Annual	Benefit:				
Bi: Biennial	S: Shrub	B: Bulb	C: Moth caterpillar food plant	F: Flowers attract adult moths			
BiP: Biennial perennial	H: Herb	C: Creeper/climber	S: Sap sucking insects (e.g. whiteflies)	R: Good roost potential			

Appendix IV: Legislation and Planning Context

Legislation

General

The main legislative instruments for ecological protection in England and Wales are the Wildlife and Countryside Act 1981 (WCA; as amended), Countryside and Rights of Way Act 2000 (CROW; as amended), Natural Environment and Rural Communities Act 2006 (NERC) and the Conservation of Habitats and Species Regulations 2017 (the Habitats Regulations; as amended). The Environment Bill (reintroduced to parliament in 2020) is expected to make significant changes to the legislative provisions when enacted.

WCA 1981 consolidated and amended pre-existing national wildlife legislation in order to implement the Bern Convention and the European Union Wild Birds Directive (Council Directive 2009/147/EC). It complements the Habitats Regulations, offering protection to a wider range of species than the latter. The Act also provided for the designation and protection of nationally important conservation sites of value for their floral, faunal or geological features, termed Sites of Special Scientific Interest (SSSI). Schedules of the act list protected species of flora and fauna, as well as invasive species, and detail the possible offences that apply to these species.

The CROW Act 2000 amended and strengthened existing wildlife legislation detailed in the WCA. It placed a duty on government departments & the National Assembly for Wales to have regard for biodiversity, provided increased powers for the protection and maintenance of SSSI, and created a right of access to parts of the countryside. The Act contained lists of habitats and species (Section 74) for which conservation measures should be promoted, in accordance with the recommendations of the Convention on Biological Diversity (Rio Earth Summit) 1992.

The NERC Act 2006 consolidated and replaced aspects of earlier legislation. Section 40 of the Act places a duty upon all local authorities and public bodies in England and Wales to have regard to the purpose of conserving biodiversity in exercising all of their functions, including by restoring or enhancing habitats and species populations. Sections 41 (England) and 42 (Wales) list habitats and species of principal importance to the conservation of biodiversity (otherwise known as priority habitats/species as listed in the now superseded UK Biodiversity Action Plan). These lists supersede Section 74 of the CROW Act 2000. These species and habitats are a material consideration in the planning process.

The Habitats Regulations 2017 are the principal means by the European Union Habitats Directive (Council Directive 92/43/EEC) was transposed into English and Welsh law, and place a duty upon the relevant authority of government to identify sites which are of importance to the habitats and species listed in Annexes I and II of the Habitats Directive. Those sites which meet the criteria in Europe are designated as Sites of Community Importance by the European Commission, and subsequently identified as Special Areas of Conservation (SAC) by the European Union member states. Since the UK's departure from the European Union the European Commission no longer has a role in designating SACs in the UK. The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 establish a single stage designation process, where the appropriate authority is the decision maker. The selection and designation of SACs is based on the criteria set out in Annex III of the Habitats Directive insofar as it applies to the UK, and having regard to the advice of the appropriate nature conservation body.

The 2019 Amendment Regulations have created a new national site network on land and at sea, including both the inshore and offshore marine areas in the UK. The national site network includes existing SACs, existing Special Protection Areas (SPA) originally designated as a result of Council Directive 2009/147/EC on the Conservation of Wild Birds, and any new SACs and SPAs designated under the 2019 Regulations. SACs and SPAs in the UK therefore no longer form part of the EU's Natura 2000 ecological network.

The Habitats Regulations also provide for the protection of individual species of fauna and flora of European conservation concern listed in Schedules 2 and 5 respectively (European Protected Species (EPS)). Schedule 2 includes species such as otter and great crested newt for which the UK population represents a significant proportion of the total European population. It is an offence to deliberately kill, injure, disturb or trade in these species. Schedule 5 plant species are protected from unlawful destruction, uprooting or trade under the regulations. Under the Habitats Regulations disturbance includes any activity which is likely to: impair the ability of a EPS to survive, breed, reproduce, or rear/nurture its young; impair the ability of a EPS to migrate or hibernate; or significantly affect the local distribution or abundance of the species.

When enacted, the Environment Bill is expected, among other things, to: establish an Office for Environmental Protection; require all new development requiring planning permission to achieve a net gain for biodiversity (expected to be at least 10%); amend the NERC Act duty to conserve biodiversity by explicitly adding a duty to enhance; and require local authorities to produce local nature recovery strategies.

Badgers (*Meles meles*)

Badgers are listed under Schedule 6 of the Wildlife and Countryside Act which grants them partial protection. This protection is extended by the Protection of Badgers Act 1992 (Badger Act) which makes it an offence to take, injure or kill a badger, interfere with a sett, sell or possess a live badger, or mark or ring a badger without a licence. Under the Act disturbance is illegal without a licence. Natural England has published guidelines to be adopted when determining whether an activity is 'disturbing' i.e. a licence is required when, for example, using heavy machinery (generally tracked vehicles) within 30m of any entrance to an active sett. Licences are not normally issued during the badger breeding season (December – June inclusive).

Bats (*Chiroptera*)

Bats and their roosts are fully protected by protected by the WCA and the Habitats Regulations, and seven species of bats are species of principal importance. The legislation makes it an offence, *inter alia*, to:

- ▶ Intentionally kill, injure or take a bat.
- ▶ Possess or control a live or dead bat, any part of a bat, or anything derived from a bat.
- ▶ Intentionally or recklessly damage, destroy or obstruct access to any structure or place that a bat uses for shelter or protection. This is taken to mean all bat roosts whether bats are present or not.
- ▶ Intentionally or recklessly disturb a bat while it is occupying a structure or place that it uses for shelter or protection.
- ▶ Make a false statement in order to obtain a licence for bat work.

Birds

Birds are protected by the Wildlife and Countryside Act, 1981 (as amended). This legislation makes it an offence to intentionally kill, injure or take away any wild bird. It is also an offence to take, damage or destroy the nest of any wild bird while it is in use or being built or to take or destroy the egg of any wild bird. In addition, certain species are listed

on Schedule 1 of the WCA (such as kingfisher *Alcedo atthis*). This makes it an additional offence to intentionally or recklessly disturb the adults while they are in and around their nest or intentionally or recklessly disturb their dependent young. Such species are considered to be in greater need of legal protection or of high nature conservation priority.

Birds of Conservation Concern ("BoCC4) are included on Red and Amber lists (Eaton et al., 2015). Birds on the Red list are those of highest conservation priority due significant and sustained population decreases and/or range contractions (e.g. house sparrow *Passer domesticus* and starling *Sturnus vulgaris*). Birds on the Amber list are the next most critical group and include species whose population/range have shown moderate declines, or which have recovered to some extent from historical decline, such as dunnock *Prunella modularis*.

Dormouse (*Muscardinus avellanarius*)

Dormouse is fully protected by the WCA and the Habitats Regulations. The legislation makes it an offence, *inter alia*:

- ▶ Intentionally kill, injure or take a dormouse.
- ▶ Possess or control a live or dead dormouse, any part of, or anything derived from a dormouse.
- ▶ Intentionally or recklessly damage, destroy or obstruct access to any structure or place that a dormouse uses for shelter or protection.
- ▶ Intentionally or recklessly disturb a dormouse while it is occupying a structure or place that it uses for shelter or protection.

Great crested newt (*Triturus cristatus*; GCN) (and natterjack toad *Bufo calamita*)

GCN is fully protected by the WCA and the Habitats Regulations. The legislation makes it an offence, *inter alia*, to:

- ▶ Intentionally kill, injure or take a GCN (including its eggs).
- ▶ Possess or control a live or dead GCN, any part of, or anything derived from a GCN.
- ▶ Intentionally or recklessly damage, destroy or obstruct access to any structure or place that a GCN uses for shelter or protection.
- ▶ Intentionally or recklessly disturb a GCN while it is occupying a structure or place that it uses for shelter or protection.

Otter (*Lutra lutra*)

Otter is fully protected by the WCA and the Habitats Regulations. The legislation makes it an offence, *inter alia*, to:

- ▶ Intentionally kill, injure or take an otter.
- ▶ Possess or control a live or dead otter, any part of, or anything derived from an otter.
- ▶ Intentionally or recklessly damage, destroy or obstruct access to any structure or place that an otter uses for shelter or protection.
- ▶ Intentionally or recklessly disturb an otter while it is occupying a structure or place that it uses for shelter or protection.

Reptiles

The four common species (slow-worm *Anguis fragilis*, common lizard *Zootoca vivipara*, adder *Vipera berus* and grass snake *Natrix helvetica*) are partially protected under the WCA. They are protected, *inter alia*, against intentional killing and injuring. The handling and translocation of these reptiles does not require a licence.

Smooth snake *Coronella austriaca* and sand lizard *Lacerta agilis* are fully protected by the WCA and the Habitats Regulations. The legislation makes it an offence, *inter alia*, to:

- ▶ Intentionally kill, injure or take a smooth snake or sand lizard.
- ▶ Possess or control a live or dead smooth snake or sand lizard, any part of, or anything derived from a smooth snake or sand lizard.
- ▶ Intentionally or recklessly damage, destroy or obstruct access to any structure or place that a smooth snake or sand lizard uses for shelter or protection.
- ▶ Intentionally or recklessly disturb a smooth snake or sand lizard while it is occupying a structure or place that it uses for shelter or protection.

Water vole (*Arvicola amphibious*)

Water vole is fully protected by the WCA. The legislation makes it an offence, *inter alia*, to:

- ▶ Intentionally kill, injure or take a water vole.
- ▶ Possess or control a live or dead water vole, any part of, or anything derived from a water vole.
- ▶ Intentionally or recklessly damage, destroy or obstruct access to any structure or place that a water vole uses for shelter or protection.
- ▶ Intentionally or recklessly disturb a water vole while it is occupying a structure or place that it uses for shelter or protection.

Weeds Act 1959 / Ragwort Control Act 2003

This legislation provides for orders to be made for control where notifiable weed species such as ragwort are said to be a problem. The act does not make it illegal to have ragwort (or other weed species) on your land, make it illegal to allow ragwort to spread, or force landowners automatically to control it. However, if DEFRA is satisfied that there are injurious weeds to which this Act applies growing upon any land it may serve upon the occupier of the land a notice in writing requiring them, within the time specified in the notice, to take such action as may be necessary to prevent the weeds from spreading.

Planning context

National Planning Policy Framework (Section 15: Conserving and enhancing the natural environment)

The National Planning Policy Framework (NPPF), published in July 2021, outlines the Government's commitment to the conservation of wildlife and natural features. It is concerned with:

- ▶ Protecting and enhancing valued landscapes, sites of biodiversity or geological conservation value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);

- ▶ Recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;
- ▶ Maintaining the character of the undeveloped coast, while improving public access to it where appropriate;
- ▶ Minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current & future pressures;
- ▶ Preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and
- ▶ Remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.

The NPPF requires that local plans should “distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value...; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries”.

To protect and enhance biodiversity and geodiversity, the NPPF states that planning policies should:

- ▶ Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity, wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and
- ▶ Promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.

When determining planning applications, local planning authorities should aim to protect and enhance biodiversity by applying the following principles:

- ▶ if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
- ▶ development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;
- ▶ development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and
- ▶ development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design,

especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.

The following wildlife sites should be given the same protection as habitats sites:

- ▶ potential Special Protection Areas and possible Special Areas of Conservation;
- ▶ listed or proposed Ramsar sites; and
- ▶ sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.

The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site. The policies within the NPPF (and additional guidance contained within Circular 06/2005) are a material planning consideration.

UK/Local Biodiversity Action Plan Designations and Birds of Conservation Concern and Red Data Book Listings

Note that BAP designations and status as RSPB Birds of Conservation Concern or Red Data Book species does not offer any further legal protection, but planning authorities are required to prevent these species from being adversely affected by development in accordance with National Planning Policy and the CROW and NERC Acts. The United Kingdom Biodiversity Action Plan (UKBAP), first published in 1994 and updated in 2007, was a government initiative designed to implement the requirements of the Convention of Biological Diversity to conserve and enhance species and habitats. The UKBAP contained a list of priority habitats and species of conservation concern in the UK, and outlined biodiversity initiatives designed to enhance their conservation status.

However, as a result of devolution, and new country-level and international drivers and requirements, much of the work previously carried out by the UK BAP is now focussed at a country-level rather than a UK-level, and the UK BAP was succeeded by the 'UK Post-2010 Biodiversity Framework' in July 2012. The UK lists of priority habitats and species nonetheless remain an important reference source and were used to draw up statutory lists of priority habitats and species in England, Northern Ireland, Scotland and Wales. The priority habitats and species correlate with those listed on Section 41 and 42 of the NERC Act.

The UKBAP required that conservation of biodiversity be addressed at a County level through the production of Local BAPs. These are targeted towards species of conservation concern characteristic of each area. In addition, a number of local authorities and large organisations have produced their own BAPs. Where they exist, Local BAP targets with regard to species and habitats are a material consideration in the planning process.

Local Planning Policy

The Arun District Council Local Plan 2011 to 2031 (adopted in 2018) states the following with respect to biodiversity:

Policy ENV DM1

Designated Sites of biodiversity or geological importance

a. Proposed development likely to have an adverse effect on land with the designated features of any Site of Biodiversity or Geological Importance as listed in Tables 17.1 - 17.7 or any subsequently designated sites (either individually or in combination with other developments), will not normally be permitted. Consideration will be given to the exact designated features present on the site, their scarcity/rarity and recognition of the protection offered by their

existing status. Development on wildlife sites with the highest value will only be permitted exceptionally where the following can be demonstrated:

- i. There is no alternative solution (which shall be adequately demonstrated by the developer).
- ii. There are reasons of public health or public safety or Adoption Arun Local Plan 2011-2031 (July 2018) Arun District Council 209 17 Natural Environment
- iii. There are benefits of primary importance to the environment or
- iv. There are imperative reasons of overriding public interest.

Notwithstanding the above however, the presumption in favour of sustainable development does not apply where development requiring appropriate assessment under the Birds or Habitats Directives is being considered, planned or determined.

b. In determining any planning application affecting Sites of Biodiversity or Geological Importance the Council will ensure that the intrinsic natural features of particular interest are safeguarded or enhanced having regard to;

- i. The European, National or Local status and designation of the site;
- ii. The nature and quality of the site's features, including its rarity value;
- iii. The extent of any adverse impacts on the notified features of interest;
- iv. The need for compensatory measures in order to re-create remaining features of habitats on or off the site.

c. Where appropriate the Council will ensure the effective management of designated sites through the imposition of planning conditions or Section 106 agreements as appropriate

Policy ENV DM3

Biodiversity Opportunity Areas

Development shall:

- a. Retain and sympathetically incorporate locally valued and important habitats, including wildlife corridors and stepping stones
- b. Be designed in order to minimise disturbance to habitats

Development proposals that do not reasonably address opportunities for enhancing these through their design, layout and landscaping or access/management shall not be permitted. Where a development scheme would result in a habitat loss, mitigation measures will be proposed as part of the proposed scheme and such measures agreed with the Local Planning Authority prior to the determination of any planning application. Within Biodiversity Opportunity Areas (BOAs) identified on the Policies Maps or where likely to have an impact on species or habitats within the BOAs, any application for planning permission shall include a properly conducted survey of the presence of that species and habitat and impact(s) that development may have on the BOA.

Policy ENV DM5

Development and biodiversity

Development schemes shall, in the first instance, seek to achieve a net gain in biodiversity and protect existing habitats on site. They shall also however incorporate elements of biodiversity including green walls, roofs, bat and bird boxes as well as landscape features minimising adverse impacts on existing habitats (whether designated or not). Development schemes shall also be appropriately designed to facilitate the emergence of new habitats through the creation of links between habitat areas and open spaces. Together, these provide a network of green spaces which serve to reconnect isolated sites and facilitate species movement.

Where there is evidence of a protected species on a proposed development site, planning applications shall include a detailed survey of the subject species, with details of measures to be incorporated into the development scheme to avoid loss of the species. This involves consideration of any impacts that will affect the species directly or indirectly, whether within the application site or in an area outside of the site, which may be indirectly affected by the proposals. All surveys shall be carried out at an appropriate time of year and shall be undertaken by a qualified and, where appropriate, suitably licensed person.

All developments shall have regard to Natural England's standing advice for protected species.

Appendix V: Legal and Technical Limitations

- This report has been prepared by Urban Edge Environmental Consulting Ltd (UEEC Ltd) with all reasonable skill, care and diligence within the terms of the contract made with the Client to undertake this work, and taking into account the information made available by the Client. No other warranty, expressed or implied, is made as to the professional advice included in this report or any other services provided by us.
- UEEC Ltd disclaims any responsibility to the Client and others in respect of any matters outside the scope of this contract. This report is confidential to the Client and is not to be disclosed to third parties. If disclosed to third parties, UEEC Ltd accepts no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any third party relies upon the contents of this report at their own risk and the report is not to be relied upon by any party, other than the Client without the prior and express written agreement of UEEC Ltd.
- The advice provided in this report does not constitute legal advice. As such, the services of lawyers may also be considered to be warranted.
- Unless otherwise stated in this report, the assessments made assume that the sites and facilities that have been considered in this report will continue to be used for their current planned purpose without significant change.
- All work carried out in preparing this report has utilised and is based upon UEEC Ltd's current professional knowledge and understanding of current relevant UK standards and codes, technology and legislation. Changes in this legislation and guidance may occur at any time in the future and may cause any conclusions to become inappropriate or incorrect. UEEC Ltd does not accept responsibility for advising the Client or other interested parties of the facts or implications of any such changes;
- Where this report presents or relies upon the findings of ecological field surveys (including habitat, botanical or protected/notable species surveys), its conclusions should not be relied upon for longer than a maximum period of two years from the date of the original field surveys. Ecological change (e.g. colonisation of a site by a protected species) can occur rapidly and this limitation is not intended to imply that a likely absence of, for instance, a protected species will persist for any period of time;
- This report has been prepared using factual information contained in maps and documents prepared by others. No responsibility can be accepted by UEEC Ltd for the accuracy of such information;
- Every effort has been made to accurately represent the location of mapped features, however, the precise locations of features should not be relied upon;
- Populations of animals and plants are often transient in nature and a single survey visit can only provide a general indication of species present on site. Time of year when the survey was carried out, weather conditions and other variables will influence the results of an ecological survey (e.g. it is possible that some flowering plant species which flower at other times of the year were not observed). Every effort has been made to accurately note indicators of presence of protected, rare and notable species within and adjacent to the site but the possibility nonetheless exists for other species to be present which were not recorded or otherwise indicated by the survey;
- Any works undertaken as a consequence of the recommendations provided within this report should be subjected to the necessary health & safety checks and full risk assessments.

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