



**Land west of Roundstone Lane,
Angmering, West Sussex**

March 2021

Land west of Roundstone Lane, Angmering, West Sussex

Preliminary Ecological Appraisal

Client:	Sigma Homes	
Report No.:	UE0410_RoundstoneLn_PEA_4_210322	
Author: Jeff Turton BSc(Hons) GradCIEEM	Proofed: Dr Richard Bickers BSc(Hons) PhD MCIEEM	Approved: Nick Pincombe BA(Hons) MSc CEnv MIEMA MCIEEM
Revision No.:	Status/Comment:	Date:
0	First issue to client	23 December 2020
1	Minor corrections	23 December 2020
2	Revised layout	24 February 2021
3	Badger survey update	18 March 2021
4	Minor amendments	22 March 2021
Urban Edge Environmental Consulting Ltd is a Registered Practice of the Chartered Institute of Ecology and Environmental Management. The information, advice and opinions provided in this report are true and were prepared and provided in accordance with CIEEM's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.		



Contents

0	Executive Summary	i
1	Introduction	1
1.1	The Proposals	1
1.2	Objectives and Approach of the Study	1
2	Survey Methodology	5
2.1	Personnel	5
2.2	Desk Study	5
2.3	Site Surveys	5
2.4	Evaluation	8
2.5	Limitations	9
3	Results	10
3.1	Desk Study	10
3.2	Phase 1 Habitat Survey	13
3.3	Preliminary Roost Assessment: Buildings	19
3.4	Preliminary Roost Assessment: Trees	22
3.5	Habitat Suitability Index	26
4	Evaluation	27
4.1	Introduction	27
4.2	Designated Sites	27
4.3	Habitats	27
4.4	Species	29
5	Recommendations	33
5.1	Introduction	33
5.2	Protected Species Surveys	33
5.3	Precautionary Measures	34
5.4	Ecological Protection Measures	35
5.5	Recommendations for Biodiversity Net Gain	36



6	Conclusions	38
6.1	Summary	38
	References and Bibliography	39
	Appendix I: Phase 1 Habitats Map	A
	Appendix II: Pond Map	C
	Appendix III: Preliminary Roost Appraisal Results	E
	Appendix IV: Habitat Suitability Index Results	K
	Appendix V: Plant Species which encourage Bats	M
	Appendix VI: Legislation and Planning Context	Q
	Legislation	Q
	Planning context	T
	Appendix VII: Legal and Technical Limitations	W

List of Tables and Figures

<i>Table 0.1: Summary of recommendations</i>	<i>ii</i>
<i>Table 3.1: Records of protected, rare & notable species within the desk study search area</i>	<i>12</i>
<i>Table 3.2: Descriptions of the buildings on site</i>	<i>14</i>
<i>Table 3.3: Ground level roost assessment</i>	<i>22</i>
<i>Table 4.1: Preliminary evaluation of habitats within the survey area</i>	<i>27</i>
<i>Table 5.1: Recommendations for further ecological surveys</i>	<i>34</i>
<i>Table 5.2: Recommended precautionary measures</i>	<i>34</i>
<i>Table 5.3: Recommended ecological protection measures</i>	<i>35</i>
<i>Table 5.4: Preliminary recommendations for biodiversity net gain</i>	<i>36</i>
<i>Figure 1.1: Survey area</i>	<i>2</i>
<i>Figure 1.2: Proposed site layout</i>	<i>3</i>
<i>Figure 3.1: Priority habitats within the desk study search area</i>	<i>11</i>

Abbreviations

BRTI	Bat Roost Trigger Index
CHS	Conservation of Habitats and Species Regulations 2017 (as amended)
EPS	European Protected Species
GCN	Great crested newt
HSI	Habitat Suitability Index
LGS	Local Geological Site
LNR	Local Nature Reserve
LWS	Local Wildlife Site
NERC	Natural Environment and Rural Communities Act 2006
NNR	National Nature Reserve
NPPF	National Planning Policy Framework
PEA	Preliminary Ecological Assessment
PRF	Potential (bat) Roost Feature
SAC	Special Area for Conservation
SNCI	Site of Nature Conservation Interest
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
SxBRC	Sussex Biological Records Centre
TN	Target Note
WCA	Wildlife & Countryside Act 1981 (as amended)

0 Executive Summary

- 0.1.1 Planning consent is being sought for a residential development at land west of Roundstone Lane, Angmering, West Sussex. Urban Edge Environmental Consulting undertook a desk study, extended Phase 1 habitat survey, preliminary roost assessment (PRA), habitat suitability index (HSI), and subsequent assessment to identify the key ecological features within and around the proposal site, and to inform the design process for the proposal.
- 0.1.2 The site lies in the southern extent of the village of Angmering in the Arun district of West Sussex and comprises c.1.37ha of previously developed land predominantly formed of hardstanding, bare ground and buildings. The wider landscape is characterised by suburban development, arable and pasture farmland, amenity grassland, hedgerows and lines of trees. No statutory or non-statutory designated sites are within the desk study search areas, but the site falls inside the impact risk zone for Climping Beach SSSI. Within 1km of the site there are two types of priority habitat but no ancient woodland. One pond is within 500m of the site, but it is not a priority habitat. There are records of a range of protected or notable species in the locality but none originate from the site.
- 0.1.3 The extended Phase 1 habitat survey found the site to contain: bare ground, hard standing, ephemeral/short perennial vegetation, mixed plantation woodland, buildings, dense scrub, amenity grassland, introduced shrubs, scattered trees and species-poor defunct hedgerows. A suspected badger sett was discovered at the west of the site and is currently being monitored with camera traps. Disused birds nests were found within trees. There are multiple piles of rubble and litter that could be used as refuge habitat by amphibians and reptiles. The PRA found that building B1 and trees G2, G3 and T4 had low suitability to support roosting bats but the other buildings were negligible. The HSI found P1 to be of average suitability for breeding great crested newts.
- 0.1.4 The proposals do not present a risk of effects on Climping Beach SSSI. The scale and scope of the proposals are not likely to have any effect on the priority habitats within 1km. The hedgerows at the boundaries of the site are considered to be priority habitat but all other habitats are of importance at the site level only. The site offers some suitability for protected species, including great crested newt, nesting birds, badger, roosting bats and reptiles. A summary of recommendations, including further protected species surveys, is provided overleaf in Table 0.1.
- 0.1.5 It is concluded that the majority of land proposed for development is of low ecological value. Constraints to development were identified including priority habitats and the potential presence of great crested newt, nesting birds, badger, roosting bats and reptiles. Precautionary and ecological protection measures are recommended on an interim basis to enable offences under the relevant legislation to be avoided, along with recommendations for biodiversity net gain.

Table 0.1: Summary of recommendations

#	Summary of recommendations
Botanical / protected species surveys	
R1	Presence / absence surveys for great crested newt in pond P1, using eDNA sampling techniques from mid-April to end June, or conventional techniques from mid-March to mid-June.
R2	Monitoring for badger activity at potential sett TN8 using infrared camera traps, coupled with repeat searches for badger field signs across the site, preferably during spring. The survey is underway; after 2wks of monitoring no badgers have been recorded. The camera trap remains on site and monitoring continues.
R3	Presence/absence survey for roosting bats in building B1, undertaken between May and August.
Precautionary measures	
R4	Removal of nesting bird habitats (including vegetation and buildings) will be undertaken outside of the bird nesting season, which runs from 1 March to 31 August. It will therefore be carried out between September and February, but should be planned and implemented in accordance with the findings of the further ecological surveys recommended above.
R5	Works to fell low suitability trees at G2, G3 and T4 will be undertaken during March-April or September-October to avoid critical maternity and hibernation periods, and in accordance with a Non-Licensed Method Statement to reduce the risk of killing/injury to roosting bats.
R6	Vegetation clearance works will be undertaken during the reptile active season (broadly March/April to September/October) and in accordance with a Precautionary Working Method Statement to reduce the risk of killing/injury to reptiles. Such work will not be completed until the results of the GCN survey are known.
Ecological protection measures	
R7	The hedgerow priority habitats within the site will be retained and protected.
R8	Standard site procedures to prevent impacts on trees will be adhered to during construction.
R9	The use of external lighting will be avoided or minimised to prevent impacts to nocturnal species. Lighting will not be directed towards the boundary hedgerows.
R10	Small access gaps will be provisioned at the base of new fence boundaries to enable dispersal of small mammals across the site.
R11	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.
R12	Where fox dens or rabbit warrens are to be damaged or destroyed as part of the proposed works, this will be undertaken by a registered pest control company.
Biodiversity net gain	
R13	Buffers of less intensively managed vegetation will be created within soft landscaped areas to maintain/enhance ecological connectivity.
R14	Hedgerow creation and/or restoration will use a range of native fruit, seed, nut and nectar-bearing shrub species.
R15	The site's landscaping plans will utilise plant species which encourage bats by providing additional food sources or roosting opportunities.
R16	The value of the site for birds will be enhanced by installing a range of artificial nest boxes onto new buildings and retained trees.
R17	The value of the site for bats will be enhanced by installing a range of artificial roost boxes onto new buildings and retained trees.

1 Introduction

1.1 The Proposals

- 1.1.1 This report presents a Preliminary Ecological Appraisal for the site of a proposed residential development on land west of to Roundstone Lane, Angmering, West Sussex (Grid Reference: 507298, 103447). The site location is shown on Figure 1.1.
- 1.1.2 It is understood that planning consent is being sought for demolition of existing buildings and construction of 40 dwellings together with parking, access, landscaping, and associated facilities. Figure 1.2 illustrates the proposed site layout.

1.2 Objectives and Approach of the Study

- 1.2.1 This study aims to establish the ecological baseline by identifying the key ecological features within and around the proposal site, and to inform the design process for the proposal. Specifically, the objectives of the Preliminary Ecological Appraisal 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 ecology of the site post-construction, with the aim of achieving an overall net gain for biodiversity.
- 1.2.2 The ecological baseline has been achieved through a desk study, an extended Phase 1 habitat survey, a preliminary roost assessment (PRA), and a Habitat Suitability Index (HSI). There followed an appraisal of the potential effects of the development proposals with respect to the nature conservation value of the site.

Roundstone Lane, Angmering, West Sussex

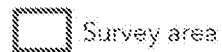
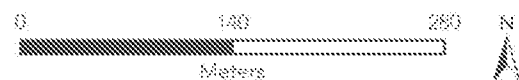


Figure 1.1: Survey area

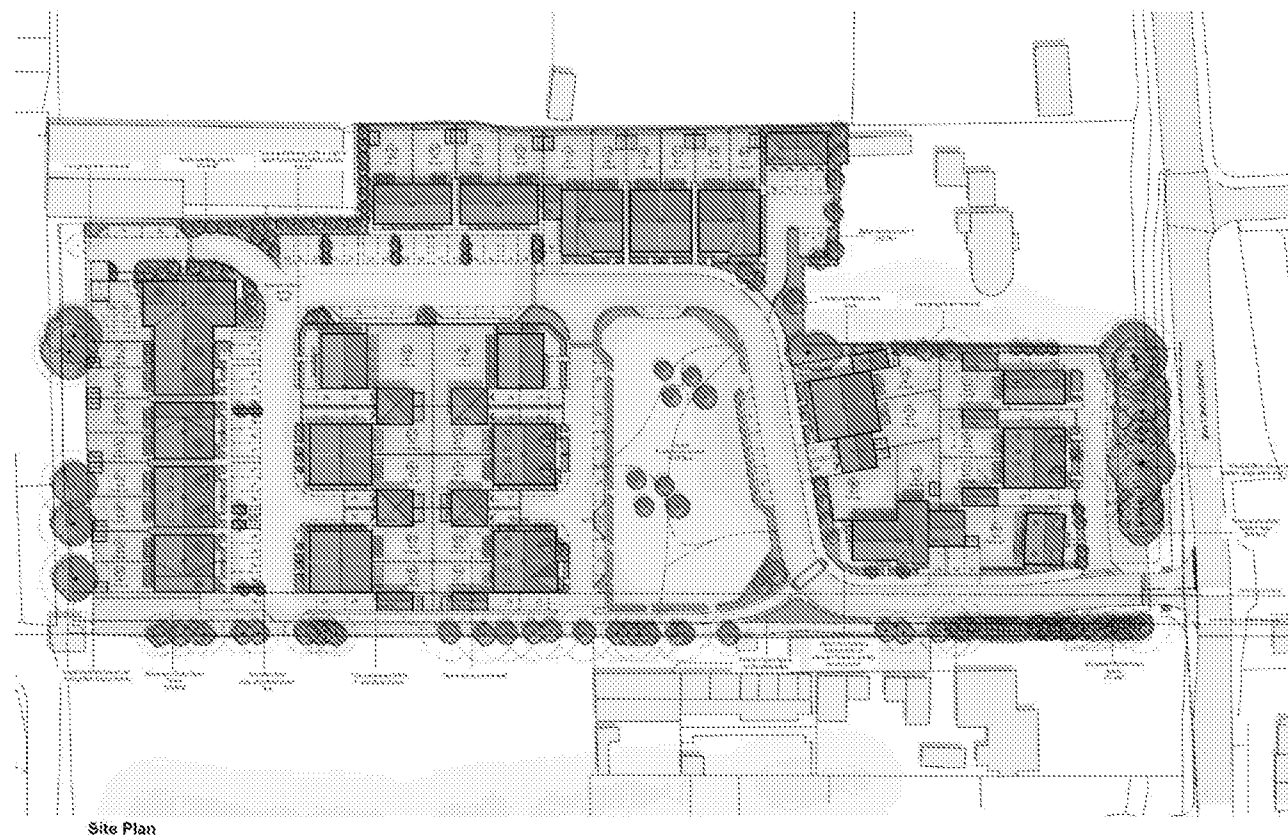


© Crown copyright and database rights 2009
Ordnance Survey 0100031673

Scale: 1:5,000 Created by: AD
Date: Nov 2020 Reviewed by: NP
Drawing number:
UE04105CO-SW201103

URBAN EDGE Tel: 01273 686 766
ENVIRONMENTAL Email: hello@ueec.co.uk
CONSULTING Web: www.ueec.co.uk





COM 2015 Health & Safety Information
This educational presentation is for informational purposes only. It does not constitute an offer of insurance or any other financial product. Please consult your agent for more information.

[illegible]

1	10-02-21	10000-10000000	100
2	10-02-21	2000000-10000000	400
3	10-02-21	3000000-10000000	100
4	10-02-21	4000000-10000000	200
Total			800



ECE Architecture

Sigma Homes

The Former Shrubland Nursery,
Roundstone Lane, Angmering

Site Layout

.....
1-500 88 AC



Case	Source	Date
JT	AK	06.01.23

000000	00000000	000000
000000	FL-101	000000

508 JOURNAL OF MANAGEMENT INQUIRY / December 2004

PRELIMINARY

~~~~~

*site layout*



*This page is intentionally blank.*

## 2 Survey Methodology

### 2.1 Personnel

- 2.1.1 The desk study, site surveys and assessment were undertaken by Jeff Turton BSc (Hons) GradCIEEM, an experienced ecologist with five years' professional experience of undertaking surveys and assessments of these types. 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.

### 2.2 Desk Study

- 2.2.1 In addition to understanding the context of the site within the local landscape, the desk study established the presence of:
- ❖ Internationally protected sites within 10km,
  - ❖ Site of Special Scientific Interest (SSSI) impact risk zones,
  - ❖ Statutory and non-statutory designated sites of nature conservation interest, records of protected/notable species, and priority habitats within the site and a 1km search area around it (2km for records of bats),
  - ❖ Priority habitats within 1km of the site, and
  - ❖ Ponds within 500m.
- 2.2.2 Priority habitats include those listed on local Biodiversity Action Plans and habitats of principal importance listed under section 41 of the Natural Environment and Rural Communities Act 2006.
- 2.2.3 Information was collected from the following sources:
- ❖ The 'MAGIC' (Multi-agency Geographic Information for the Countryside) website: [www.magic.gov.uk](http://www.magic.gov.uk); and
  - ❖ Sussex Biological Records Centre (SxBRC).

### 2.3 Site Surveys

- 2.3.1 The Preliminary Ecological Appraisal (compliant to British Standard BS42020:2013) is based on surveys of the site undertaken on 2 October 2020.

#### ***Extended Phase 1 Habitat Survey***

- 2.3.2 Every parcel of land within the site was classified, recorded and mapped in accordance with 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. Plant species within each habitat parcel were given a DAFOR score which describes their relative abundance within the habitat. The DAFOR scale denotes species which are Dominant, Abundant, Frequent, Occasional or Rare within a given habitat patch. Target notes were used where necessary to provide supplementary information on features which may be of significance to the proposals, or were too small to map, or to provide additional details, for example relating to species composition and structure.

- 2.3.3 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 protected species/group is not specifically evaluated, this indicates that no habitat of potential value for the species was identified during the survey.

#### **Preliminary Roost Assessment**

- 2.3.4 Buildings and 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 structure/tree for roosting bats was classified with reference to Box 1 (Collins (ed.), 2016). 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.
- 2.3.5 External building inspections from ground-level focused on access points and potential roosting features (PRF) such as lifted lead flashing, broken, lifted or missing roof or ridge tiles, cracks in the render or gaps between exterior cladding and weatherboards, soffits or fascias. The internal inspection included a search for live animals and other signs that give an indication of past or present occupancy. In the case of bats, typical indicators include droppings (which are characteristic and are often indicative of species), signs of fur oil staining, urine splashing, characteristic odours, and accumulations of discarded prey remains. It also assessed the overall suitability of the structure for roosting bats focusing particularly on the interior roof spaces, if present (subject to safe access).
- 2.3.6 A return visit to site was made on 23 February 2021 to assess trees proposed for removal in further detail. Trees were assessed for PRFs 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 and utilised the same equipment as used in the buildings inspection.
- 2.3.7 The PRA was undertaken with the aid of the following equipment: telescopic ladders to gain safe access; Wildlife Acoustics EchoMeter Touch full spectrum bat detector to record and identify the calls of any bats present; high-powered searchlight fitted with a red filter to search dark areas for signs of bats; telescopic mirror and/or 9mm digital endoscope camera to inspect hidden cavities;

Hawke Sport Optics 10x42 close-focusing binoculars to view areas inaccessible on foot; and digital camera with flash to record any evidence of bats or features suitable for use by bats.

| <b>Box 1: Potential suitability of structures/trees for roosting bats (after Collins, 2016)</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Suitability</b>                                                                              | <b>Roosting habitats</b>                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <u>Negligible</u>                                                                               | Negligible habitat features on site likely to be used by roosting bats                                                                                                                                                                                                                                                                                                                                                                                              |
| <u>Low</u>                                                                                      | A structure with one or more potential roost features (PRF) that could be used by individual bats opportunistically, but do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats<br>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 structure or 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 structure or 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                                                                                                                                                                                                                                                                                                                                                                                                      |

2.3.8 The PRA for buildings was informed by the Bat Roost Trigger Index (BRTI) tool developed by Swift Ecology and reported in the Chartered Institute of Ecology and Environmental Management's In Practice <sup>1</sup>. The BRTI is a systematic approach to PRA but is a working prototype and we are participating in its further testing and critical appraisal. The tool is designed to increase the robustness of PRA by giving each feature a set of defined outcomes which can be numerically calculated, reducing the potential for surveyor bias and subjectivity. Each feature is given a trigger index value relating to its potential suitability as part of a bat roost. These values are then averaged to derive a final trigger index value, which helps to ascertain the structure's suitability as a summer bat roost in relation to Box.1. We have created an additional table which includes contextual information to inform the application of professional judgement in the suitability assessment.

### **Habitat Suitability Index**

2.3.9 Accessible ponds within a 500m search radius around the site were assessed for their suitability to support breeding great crested newts (GCN) using field observations supported by a Habitat Suitability Index (HSI; Oldham *et al.* 2000).

2.3.10 The HSI is a tool used to assess ponds on the basis of their suitability to support breeding GCN. The HSI incorporates ten suitability indices which are considered to affect GCN distribution. These are:

<sup>1</sup> Underhill-Day N (2017): The Bat Roost Trigger Index – A New Systematic Approach to Facilitate Preliminary Bat Roost Assessments. In Practice **96**, pp.37-42.

- ✧ 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.

2.3.11 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 shown in Box 2.

| <b>Box 2: HSI scores and categories (after Oldham <i>et al</i>, 2000)</b> |                  |
|---------------------------------------------------------------------------|------------------|
| <b>Habitat Quality</b>                                                    | <b>HSI Score</b> |
| <b>Poor</b>                                                               | Below 0.5        |
| <b>Below Average</b>                                                      | 0.5 – 0.59       |
| <b>Average</b>                                                            | 0.6 – 0.69       |
| <b>Good</b>                                                               | 0.7 – 0.79       |
| <b>Exceptional</b>                                                        | Above 0.8        |

2.3.12 The HSI gives an indication of whether a pond is suitable for breeding great crested newts, however, it should be noted that a low score does not preclude the possibility that GCN are using the pond. 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. HSI results for all accessible waterbodies potentially suitable for GCN within 500m of the site are shown In Appendix IV.

## 2.4 Evaluation

2.4.1 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.

2.4.2 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.

## **2.5 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. The accuracy of data provided by record centres is variable and some records are georeferenced to a 1km grid square.
- 2.5.2 The time of year the Phase 1 survey was carried out will influence the results. Botanical species vary considerably in their flowering, seeding and fruiting periods, and identification outside of these periods can make accurate species identification complicated or impossible. Where this is the case plants have been identified to the lowest possible taxonomic group, normally genus. Additionally, the possibility exists for other species to be present on the site which were not recorded or are only present at other times of the year. Ornamental species are not included in botanical listings.
- 2.5.3 The Phase 1 survey reported herein was carried out in late summer/early autumn, which is beyond the flowering period for some botanical species. However, the timing of the survey is not considered to be a significant limitation to meeting the objectives of the survey.
- 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 and where access allowed in order to identify constraints falling outside of the proposed development site and to place the survey area in its ecological context. However, the adjacent residential garden at the north-east of the site and the surrounding business grounds could not be surveyed botanically or for signs of species such as badger due to access restrictions.
- 2.5.5 The PRA was undertaken at a time of year when trees were in full foliage and roosting features that may be used by bats could have been obscured. This is especially true within the mixed plantation woodland. The pond search was undertaken through review of colour OS maps. It is possible that not all ponds are detected within 500m of the site through this method as small garden ponds are often not mapped. The survey was undertaken following recent heavy rainfall which meant that pond P1 was unusually flooded during the HSI and the surveyor could not carry out close inspection of its normal extent.
- 2.5.6 See Appendix VII for general Legal and Technical Limitations which apply to this document.

## 3 Results

### 3.1 Desk Study

#### ***Site and local landscape context***

- 3.1.1 The site lies in the southern extent of the village of Angmering in the Arun district of West Sussex. The site comprises c.1.37ha of previously developed land predominantly comprising hardstanding, bare ground and buildings. The site is bounded to the east by Roundstone Lane and a residential house with a large garden, and to the south, west and north by industrial estates and derelict land.
- 3.1.2 The wider landscape is characterised by sprawling suburban development, a patchwork of arable and pasture farmland, large areas of amenity grassland, some hedgerows and lines of mature trees.

#### ***Designated sites***

- 3.1.3 There are no internationally designated sites within 10km of the site.
- 3.1.4 There are no national statutory protected sites within 1km of the site. However, the site is within the furthest extent of the Climping Beach SSSI impact risk zone. Climping Beach SSSI is located at a minimum distance of c.4.9km south-west from the site.
- 3.1.5 There are no non-statutory sites of local importance within 1km of the site.

#### ***Priority habitats and ancient woodland***

- 3.1.6 There is one area of deciduous woodland and one traditional orchard within 1km of the site, neither of which are present within or are directly adjacent to the site; see Figure 3.1. There is no ancient woodland within 1km of the site.

#### ***Pond search***

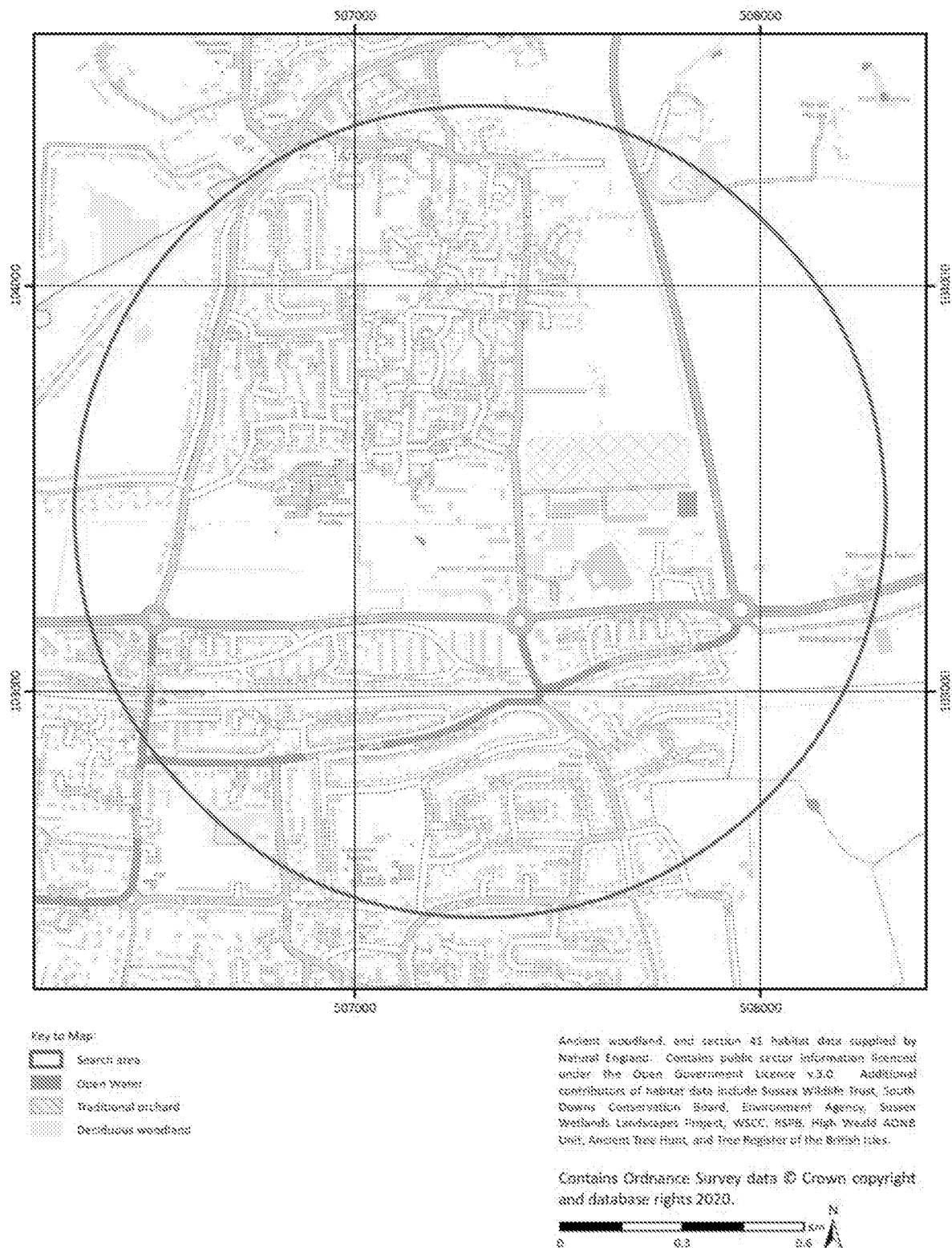
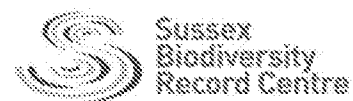
- 3.1.7 Analysis of OS MasterMap found two ponds (P1 and P2) within 500m of the site. P1 is a landscaped pond and is located c.45m south-west of the site within an area of public open space (POS). P2 is not a pond but a concrete bowl within a skate park and has been mistakenly mapped as a pond on OS mapping.

#### ***Records of protected, rare and notable species***

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

**Map 4: Section 41 habitats and other****Land off Roundstone Lane, Angmering + 1km radius**

SxERC/20/482 - 05/10/2020

**Figure 3.1: Priority habitats within the desk study search area**

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

| Group                                                     | Species                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Protection                           |
|-----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| <b>Amphibians</b>                                         | Common Frog <i>Rana temporaria</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | WCA Sch.5 part                       |
| <b>Birds</b><br>(note: species may appear more than once) | Kingfisher <i>Alcedo atthis</i> , Great Bittern <i>Botaurus stellaris</i> , Little Egret <i>Egretta garzetta</i> , Red Kite <i>Milvus milvus</i> , Slavonian Grebe <i>Podiceps auritus</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Birds Dir.1                          |
|                                                           | Kingfisher <i>Alcedo atthis</i> , Great Bittern <i>Botaurus stellaris</i> , Hobby <i>Falco subbuteo</i> , Common Scoter <i>Melanitta nigra</i> , Red Kite <i>Milvus milvus</i> , Firecrest <i>Regulus ignicapillus</i> , Barn Owl <i>Tyto alba</i> , Hoopoe <i>Upupa epops</i> , Slavonian Grebe <i>Podiceps auritus</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | WCA Sch.1                            |
|                                                           | Skylark <i>Alauda arvensis</i> , Great Bittern <i>Botaurus stellaris</i> , Cuckoo <i>Cuculus canorus</i> , Hawfinch <i>Coccothraustes coccothraustes</i> , Yellowhammer <i>Emberiza citrinella</i> , Reed Bunting <i>Emberiza schoeniclus</i> , Dunnock <i>Prunella modularis</i> , Herring Gull <i>Larus argentatus</i> , Linnet <i>Linaria cannabina</i> , Grasshopper Warbler <i>Locustella naevia</i> , Common Scoter <i>Melanitta nigra</i> , Curlew <i>Numenius arquata</i> , House Sparrow <i>Passer domesticus</i> , Marsh Tit <i>Poecile palustris</i> , Bullfinch <i>Pyrrhula pyrrhula</i> , European 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 <i>Alauda arvensis</i> , Cuckoo <i>Cuculus canorus</i> , Hawfinch <i>Coccothraustes coccothraustes</i> , Yellowhammer <i>Emberiza citrinella</i> , Herring Gull <i>Larus argentatus</i> , Linnet <i>Linaria cannabina</i> , Grasshopper Warbler <i>Locustella naevia</i> , Common Scoter <i>Melanitta nigra</i> , Curlew <i>Numenius arquata</i> , House Sparrow <i>Passer domesticus</i> , Marsh Tit <i>Poecile palustris</i> , Whinchat <i>Saxicola rubetra</i> , Turtle Dove <i>Streptopelia turtur</i> , Starling <i>Sturnus vulgaris</i> , Ring Ouzel <i>Turdus torquatus</i> , Song Thrush <i>Turdus philomelos</i> , Lapwing <i>Vanellus vanellus</i>                                                                                                                                     | RL                                   |
|                                                           | Kingfisher <i>Alcedo atthis</i> , Mallard <i>Anas platyrhynchos</i> , Swift <i>Apus apus</i> , Great Bittern <i>Botaurus stellaris</i> , Curlew sandpiper <i>Calidris ferruginea</i> , Stock Dove <i>Columba oenas</i> , Mute Swan <i>Cygnus olor</i> , House Martin <i>Delichon urbicum</i> , Reed Bunting <i>Emberiza schoeniclus</i> , Kestrel <i>Falco tinnunculus</i> , Common Gull <i>Larus canus</i> , Lesser Black-backed Gull <i>Larus fuscus</i> , Redstart <i>Phoenicurus phoenicurus</i> , Dunnock <i>Prunella modularis</i> , Willow Warbler <i>Phylloscopus trochilus</i> , Bullfinch <i>Pyrrhula pyrrhula</i> , Tawny Owl <i>Strix aluco</i>                                                                                                                                              | AL                                   |
| <b>Invertebrates</b>                                      | Stag Beetle <i>Lucanus cervus</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Habs.Dir.2, WCA Sch.5 part, NERC s41 |
|                                                           | Adonis Blue <i>Polyommatus bellargus</i> , White-letter Hairstreak <i>satyrium w-album</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | WCA Sch.5 part                       |
|                                                           | Knot Grass <i>Acronitica rumicis</i> , Mottled Rustic <i>Caradrina Morpheus</i> , Small Heath <i>Coenonympha pamphilus</i> , Small Square-spot <i>Diarsia rubi</i> , Small Emerald <i>Hemistola chrysoprasaria</i> , Rustic <i>Hoplodrina blanda</i> , Grizzled Skipper <i>Pyrgus malvae</i> , White-letter Hairstreak <i>Satyrium w-</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                | NERC s41                             |

| Group                             | Species                                                                                                                                                            | Protection                                           |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|
|                                   | <i>album</i> , White Ermine <i>Spilosoma lubricipeda</i> , Buff Ermine <i>Spilosoma lutea</i> , Blood-Vein <i>Timandra comae</i> , Cinnabar <i>Tyria jacobaeae</i> |                                                      |
| <b>Mammals<br/>(terrestrial)</b>  | Western Barbastelle <i>Barbastella barbastellus</i>                                                                                                                | Habs.Dir.2&4, CHS Sch.2,<br>WCA Sch.5 full, NERC s41 |
|                                   | Noctule <i>Nyctalus noctula</i> , Soprano Pipistrelle <i>Pipistrellus pygmaeus</i> ,<br>Brown Long-eared Bat <i>Plecotus auritus</i>                               | Habs.Dir.4, CHS Sch.2,<br>WCA Sch.5 full, NERC s41   |
|                                   | Serotine <i>Eptesicus serotinus</i> , Natterer's Bat <i>Myotis nattereri</i> , Common<br>Pipistrelle <i>Pipistrellus pipistrellus</i>                              | Habs.Dir.4, CHS Sch.2,<br>WCA Sch.5 full             |
|                                   | European Water Vole <i>Arvicola amphibius</i>                                                                                                                      | WCA Sch.5 full, NERC s41                             |
|                                   | West European Hedgehog <i>Erinaceus europaeus</i>                                                                                                                  | NERC s41                                             |
| <b>Plants</b>                     | Bluebell <i>Hyacinthoides non-scripta</i>                                                                                                                          | WCA Sch.8                                            |
| <b>Reptiles<br/>(terrestrial)</b> | Slow Worm <i>Anguis fragilis</i> , Grass Snake <i>Natrix natrix</i> , Common Lizard                                                                                | WCA Sch.5 part, NERC                                 |
|                                   | <i>Zootoca vivipara</i>                                                                                                                                            | 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))                     |
| NR           | Nationally Rare                                                                                     |
|              | NS      Nationally Scarce                                                                           |

### 3.2 Phase 1 Habitat Survey

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

- ✧ Bare ground
- ✧ Hard standing
- ✧ Ephemeral/short perennial
- ✧ Mixed plantation woodland
- ✧ Buildings
- ✧ Dense scrub
- ✧ Amenity grassland
- ✧ Introduced shrub
- ✧ Scattered trees
- ✧ Species poor defunct hedge

### **Bare ground**

- 3.2.2 The majority of the site consisted of bare ground where the earth has been tilled. The bare ground in the central areas of the site appears to have been sprayed with herbicide as all vegetation was brown and shrivelled and the ground looked stained. The patch of bare ground to the east of B4 had two small vegetable plots in it. There were many piles of rubble towards the western end of the site (Photo 1 below; TN1, 4 and 5 on the Phase 1 Habitats Plan, Appendix I).

### **Hard standing**

- 3.2.3 Hard standing exists on site to a similar quantity to bare ground, forming access roads and parking areas.

### **Ephemeral/short perennial**

- 3.2.4 There are earth banks at the western extent of the site which have been colonised by plant life forming ephemeral/short perennial habitat (Photo 2; TN3). Water pools in some areas and there is some evidence of rabbits. Dandelion *Taraxacum sp.*, bristly ox-tongue *Helminthotheca echinoides* and broad-leaved dock *Rumex obtusifolius* were found frequently, while sun spurge *Euphorbia helioscopia* and annual mercury *Mercurialis annua* were occasional.
- 3.2.5 Evidence of badgers were found within this habitat, including three holes at least one of which was of sufficient size for badger, fresh spoil and badger hair (Photos 3 and 4; TN8).

### **Mixed plantation woodland**

- 3.2.6 The trees are c.15m tall and planted in lines (Photo 5). The primary species is beech *Fagus sylvatica* which was abundant, but there are frequent coniferous trees too, likely Leyland cypress hybrids *leylandii*. Species in the understorey include frequent elder *Sambucus nigra*, and more rarely hawthorn *Crataegus monogyna* and sycamore *Acer pseudoplatanus*. The ground is carpeted with ivy *Hedera helix*, which is dominant. There is a lot of litter and some piles of discarded wood which could act as refugia for small mammals (Photo 6). Some old birds nests were noted in the trees. No evidence of mammals was found here.

### **Buildings**

- 3.2.7 Five buildings were present and are described in Table 3.2.

**Table 3.2: Descriptions of the buildings on site**

| Ref | Description                                                                                                                                                                                                                         |
|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| B1  | A flat-roofed building of concrete cinderblock build. It is used frequently and stores farming machinery and fruit produce. There is a mammal burrow at the southern aspect which could go beneath the foundations of the building. |
| B2  | A ramshackle building built primarily of corrugated sheet metal. Used for storage.                                                                                                                                                  |
| B3  | A dilapidated open-sided barn constructed of corrugated sheet metal and timber. Used for storage.                                                                                                                                   |

| Ref                  | Description                                                                                                       |
|----------------------|-------------------------------------------------------------------------------------------------------------------|
| B4                   | A large greenhouse. At the time of the survey there were crops being grown within.                                |
| B5                   | An antiques and car restoration workshop. It is of modern build and clad with metal and timber.                   |
| Unlabelled buildings | The unlabelled buildings shown on the Phase 1 Habitats Map at Appendix I are shipping containers and portacabins. |

### **Dense scrub**

- 3.2.8 Dense and dominated by bramble *Rubus fruticosus* (Photo 7), with common nettle *Urtica dioica* growing abundantly at the edges. Scattered elder grows frequently amongst the thick brambles. The ground is carpeted with abundant ivy. Bristly ox tongue and pendulous sedge *Carex pendula* grow occasionally at the edges. There is some evidence of mammals such as rabbit or badger along the access road and there is lots of litter.

### **Amenity grassland**

- 3.2.9 The amenity grassland on site is kept short and well maintained and there are scattered fruit trees growing amongst it which are tended to by tenants (Photo 8; TN2). The dominant grass species here is perennial rye-grass *Lolium perenne*, while dandelion, ribwort plantain *Plantago lanceolata* and daisy *Bellis perennis* are occasional.

### **Introduced shrub**

#### **IS1**

- 3.2.10 There is an area of planted shrubs adjacent to an orchard (IS1 at Appendix I). It looked fairly recently planted at the time of the survey and there is minimal ground flora atop bare ground. Planted species include box *Buxus sempervirens* which is abundant, and privet *Ligustrum sp.* and laurel *Prunus sp.* which are frequent.

#### **IS2**

- 3.2.11 Directly adjacent to the east of B4 lies another area of introduced shrubs. These are planted within a de-glazed greenhouse. Many species were unknown but box, cypress, hazel *Corylus avellana*, and fig *Ficus* were all occasional.

### **Scattered trees**

- 3.2.12 Most of the scattered trees on site are associated with the orchard growing over the amenity grassland (TN2). These are primarily apple trees *Malus x domestica*. However, hawthorn and fig trees were found in low numbers in other areas of the site, such as within the ephemeral/short perennial vegetation and within an area of bare ground.
- 3.2.13 The line of mature trees at the eastern boundary of the site is described within the hedgerows category (Hedgerow 4) for evaluation purposes.

### **Species poor defunct hedge**

#### **Hedgerow 1 (H1)**

- 3.2.14 Located on the northern boundary of the site and c.55m long and c.2-4m tall along its length. It is c.0.5-1m wide within the canopy (Photo 9). Some evidence of recent management as it is mostly of a uniform height. Privet is the most abundant hedge-forming species. Elder is frequent, bramble and dog rose *Rosa canina* are occasional while hawthorn occurs rarely. Ivy and cleavers *Galium aparine* are the most frequently found species at the field-layer. Common mugwort *Artemisia vulgaris* and dandelion are occasional. Broad leaved dock and garlic mustard *Alliaria petiolata* are found rarely.

#### **Hedgerow 2 (H2)**

- 3.2.15 Found along almost the entire southern boundary. It is c.155m long, c.5m tall and c.1m wide (Photo 10). The most abundant hedge-forming species is beech but laurel and butterfly-bush *Buddleja sp.* are found frequently also. Cypress, bay *Laurus sp.*, and eucalyptus *Eucalyptus sp.* are occasional. Silver birch *Betula pendula*, sycamore, elder, field maple *Acer campestre* and Norway maple *Acer platanoides* are found rarely. The ground flora is minimal but ivy is abundant.

#### **Hedgerow 3 (H3)**

- 3.2.16 This hedgerow has many small gaps and it is dominated by hawthorn (Photo 11). It could also be considered a line of trees but given the dominance of a traditionally used hedge-forming species, it is thought to be an out-grown hedge. It is c.40m long, c.5m tall and 2-3m wide in the canopy. Butterfly-bush is occasional and elder is rare. The ground is carpeted with ivy.

#### **Hedgerow 4 (H4)**

- 3.2.17 The Phase 1 Habitats Map in Appendix I shows H4 as a line of scattered mature trees at the eastern border of the site and north of the access from Roundstone Lane. It has been included within the hedgerows for evaluation purposes (Photo 12). These trees are c.15m tall, are situated in a line of c.30m long and consist of beech, which is abundant, and cypress, which is occasional. There are some old birds nests among the branches and there is an understorey of bramble which is frequent and blackthorn *Prunus spinosa* which is rare. There are street lights directly below the canopies of these trees.

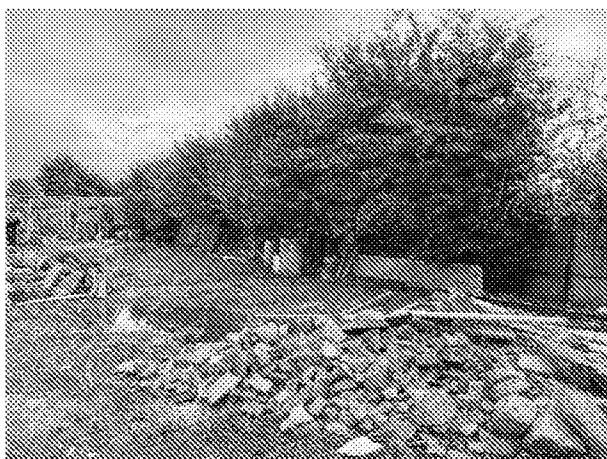


Photo 1: Example pile of rubble (Tn1, 4 and 5)



Photo 2: Ephemeral / short perennial (TN3)



Photo 3: Badger sett entrance tunnel (TN8)



Photo 4: Badger hair retrieved from entrance tunnel.



Photo 5: Linear tree formation in mixed plantation woodland



Photo 6: Litter within woodland providing potential refugia



Photo 7: Dense scrub



Photo 8: Amenity grassland and orchard (TN2)

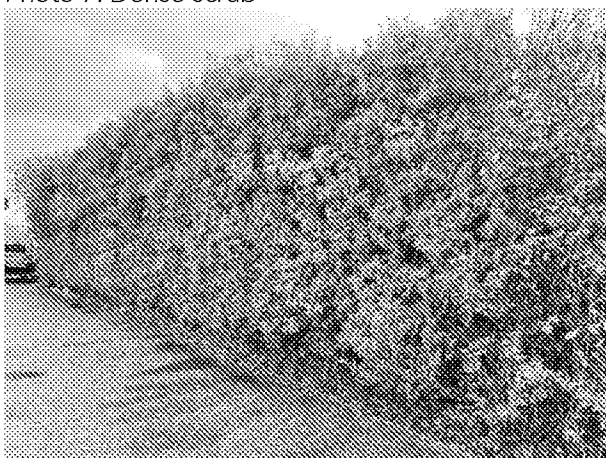


Photo 9: Hedgerow 1 (H1)



Photo 10: Hedgerow 2 (H2)



Photo 11: Hedgerow 3 (H3)



Photo 12: Hedgerow 4 (H4)

### **3.3 Preliminary Roost Assessment: Buildings**

#### ***Quality of landscape for bats***

- 3.3.1 The site is located within an area of low to moderate quality habitat for foraging bats positioned in a peri-urban context close to public open space, linear habitats such as hedgerows and tree lines providing connectivity to intensive arable farmland and Ham Manor Golf Club. Nearby sports pitches, industrial estates, housing estates and main roads are likely to produce high levels of artificial lighting in the immediate area around the site.

#### ***Building Inspections***

##### ***Building 1 (B1)***

- 3.3.2 The external walls are plastered with concrete which has weathered over time and has now broken off and lifted in places, providing cracks and crevices (Photo 13). The roof is flat but there is lifted weatherboarding at the eaves and there are some minor gaps around the front door leading into the interior. The door and window frames are rotten but do not provide cracks/crevices likely to be of use to bats. No bats or evidence of bats were noted on the exterior.
- 3.3.3 The inside is used frequently and stores farm machinery and small amounts of produce. The ceiling is constructed of plasterboard laid over supporting beams. The plasterboard has gotten damp over time and has sagged in places, exposing the timber beams and providing dark cavities (Photo 14). There are no windows so the interior can be quite dark, although there are fluorescent lights inside which are used frequently. No bats or evidence of bats were noted on the interior.
- 3.3.4 The BRTI gave B1 a score of 0.54 which indicates low potential for roosting bats. The full results are given in Appendix III.

##### ***Building 2 (B2)***

- 3.3.5 The building is crudely constructed of corrugated metal sheeting and timber panels (Photo 15). There are no features on the outside of the building that are likely to support roosting bats but there are some large gaps leading into the interior. No bats or evidence of bats were found on the exterior.
- 3.3.6 A lot of light gets into the interior of the building through the numerous large gaps. There are some rough timber beams on the inside but no features likely to support roosting bats (Photo 16). It is fairly draughty and exposed. No bats or evidence of bats were found on the interior.
- 3.3.7 The BRTI gave B2 a score of 0.46 which indicates negligible potential for roosting bats. The full results are given in Appendix III.

##### ***Building 3 (B3)***

- 3.3.8 B3 is an open-sided barn which has fallen into disrepair. It is very open and exposed and offers no potential roosting features for bats either externally or internally. No bats or evidence of bats

were found. A BRTI assessment was not considered necessary as the building is clearly of negligible potential for roosting bats.

***Building 4 (B4)***

- 3.3.9 B4 is a large greenhouse and is not suitable for use by roosting bats. A BRTI assessment was not considered necessary as the building is clearly of negligible potential for roosting bats.

***Building 5 (B5)***

- 3.3.10 B5 is of fairly modern construction and has a flat felt roof on the main body of the building. There is a corrugated metal garage jutting out of the building to the east, and this has a pitched corrugated metal roof (Photo 17). No external PRFs were noted and no bats or evidence of bats were seen.
- 3.3.11 All rooms in the interior are in frequent use as workshops and they do not provide any features that could be used by roosting bats (Photo 18). No roof voids or other cavities were found. No bats or evidence of bats were seen.
- 3.3.12 The BRTI gave B5 a score of 0.41 which indicates negligible potential for roosting bats. The full results are given in Appendix III.

***Unlabelled buildings***

- 3.3.13 The unlabelled buildings on site are shipping containers and portacabins. They do not offer roosting features suitable for bats and are negligible.



Photo 13: Building B1 exterior

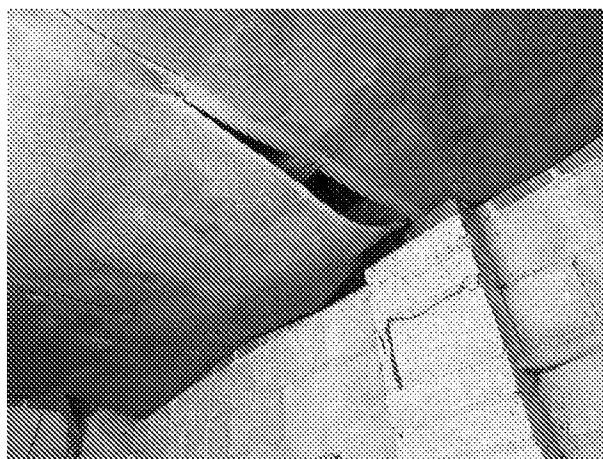


Photo 14: Building B1 interior



Photo 15: Building B2 exterior

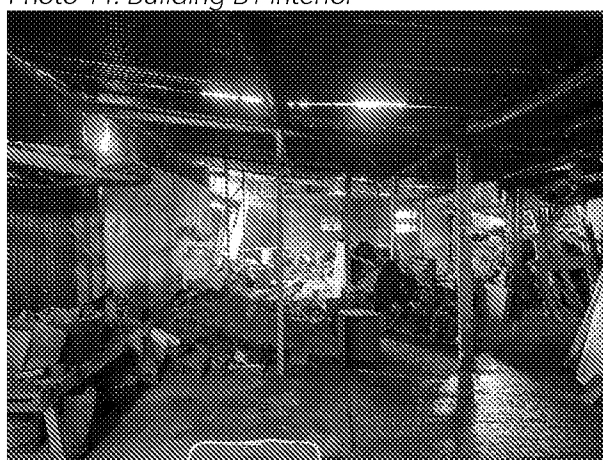


Photo 16: Building B2 interior



Photo 17: Building B5 exterior



Photo 18: Building B5 interior

### 3.4 Preliminary Roost Assessment: Trees

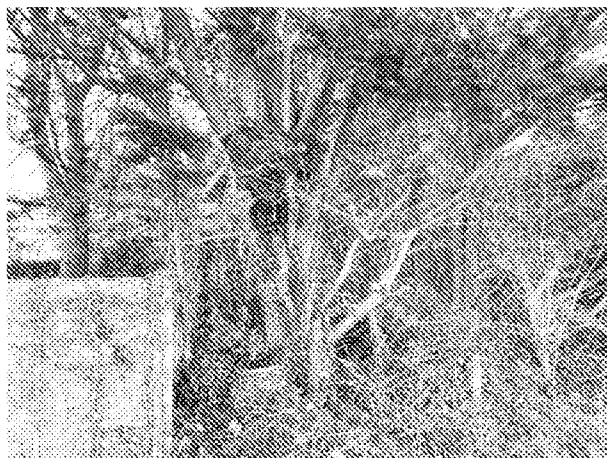
- 3.4.1 There are several large trees within the area of mixed plantation woodland as well as several semi-mature or young trees elsewhere on site. Those proposed for removal as part of the scheme was subject to a ground-level roost assessment to identify features potentially suitable for roosting bats; see.

**Table 3.3: Ground level roost assessment**

| Tree no. | Tree species             | PRFs                                                                               | Field notes transcript                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Suitability                                 |
|----------|--------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| T1       | Leyland cypress          | Superficial cracks at branch ends                                                  | Some 'split ends' to branches that have had arb work done to them in the past (at the lower reaches and pointing over the access road) but all are exposed and facing upwards. Some branch cross-over points but nothing a bat would realistically get in to and use as a roost. There is one healed-over split in a branch c.8m up on the west aspect but doesn't look as though it provides any cracks or crevices. No features on east aspect. To be felled under proposals.                       | Negligible                                  |
| G2       | Group of Leyland cypress | Clasped branches potentially creating crevices<br>Lifted bark on standing deadwood | Lots of points where branches clasp together but nothing a bat would realistically use, given sappy tree species and potential for cracks/crevices to move in the breeze. Nesting pigeon seen in one in the middle of the wood. There is a standing dead broadleaf tree (unknown species) of semi-mature age at TN1 (see field notes map) that is covered in lifted bark. Only minor and superficial features that would only suit a transitional/day roosting bat. All to be felled under proposals. | Low (dead tree only), all others negligible |
| G3       | Line of beech trees      | Thick mature ivy growth                                                            | One rot hole c.4m up on east side of fourth tree along from the road. However, it points directly up (like a cup) and likely fills with rainwater or has been formed through water collection. Whole line of trees is peppered with disused bird nests and squirrel dreys. Most trees are covered with mature ivy, thicker in some areas than in others. The ivy may have covered PRFs on the main stems but also forms a PRF in itself. All to be felled under proposals.                            | Low                                         |

| Tree no. | Tree species                                            | PRFs                                                                                                                                                                                                                                                                                                                        | Field notes transcript                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Suitability |
|----------|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| T4       | Cedar                                                   | <p>Some mature ivy growing up the main stem</p> <p>Tear out wound c.3m up on south with minor cracks/crevices</p> <p>Tear out wound c.6m up facing south-east. Possible superficial cracks, crevices but none seen.</p> <p>Tear out wound c.7m up, pointing north. Splintered wood causing superficial cracks/crevices.</p> | <p>There is some mature ivy growing up the main stem. Three large limbs have torn off and have fallen to the ground, leaving tear-out wounds.</p> <p>The lowest is c.3m up on the south side. There are some minor and exposed crevices.</p> <p>The middle is c.6m up and pointing south-east. The tear-out wound is fairly smooth and no PRFs could be seen from the ground.</p> <p>The highest is c.7m up, pointing north. The timber has splintered here leaving some cracks and crevices but likely shallow and exposed. The upper reaches of the tree could not be easily seen due to dense branches and evergreen leaves.</p> <p>To be felled under proposals.</p> | Low         |
| G5       | Beech, Monterey cypress, Leyland cypress and Scots pine | None                                                                                                                                                                                                                                                                                                                        | <p>Line of trees at eastern boundary of the site by the entrance. Trees are currently to be kept under the scheme, but a crown lift has been recommended to 5.5m over Roundstone Lane to ensure branches are pruned away from adjacent street lighting. Crown raise over the application site to c.5m also.</p> <p>No PRFs seen in the area in which crown lifting works are proposed. No significant PRFs seen on other parts of the trees here. Some birds nests seen but none active.</p>                                                                                                                                                                             | Negligible  |
| G6       | Beech                                                   | None                                                                                                                                                                                                                                                                                                                        | <p>Beech hedge located on the southern boundary of the site. To be retained but management has been recommended in the form of trimming back the north side of the hedge to maintain the established cyclical pruning.</p> <p>Some old birds nests noted. Some rot holes on the main stems of beeches but no crevices formed, just surface damage.</p>                                                                                                                                                                                                                                                                                                                   | Negligible  |
| T7       | Apple                                                   | None                                                                                                                                                                                                                                                                                                                        | Small fruit tree with no features and of negligible potential. To be felled.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Negligible  |
| T8       | Apple                                                   | None                                                                                                                                                                                                                                                                                                                        | Small fruit tree with no features and of negligible potential. To be felled.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Negligible  |

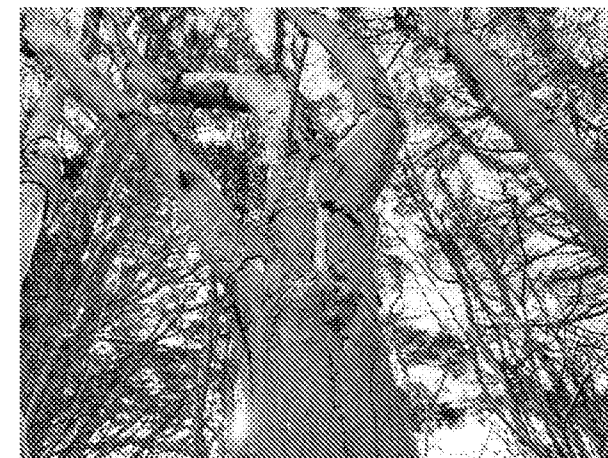
| Tree no. | Tree species    | PRFs | Field notes transcript                                                                                                                                                                                                      | Suitability |
|----------|-----------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| T9       | Apple           | None | Small fruit tree with no features and of negligible potential. To be felled.                                                                                                                                                | Negligible  |
| T10      | Plum            | None | Small fruit tree with no features and of negligible potential. To be felled.                                                                                                                                                | Negligible  |
| G11      | Leyland cypress | None | Group of three mature trees which have been reduced historically to maintain statutory clearance distance between trees and overhead powerlines. Very dense canopies. Good for birds but negligible for bats. To be felled. | Negligible  |
| G12      | Hawthorn        | None | Line of hawthorn trees at the western boundary of the site. No management recommended. Currently being kept under scheme. No PRFs noted but some disused birds nests found.                                                 | Negligible  |



Lower reaches of T1 where arb works have taken place



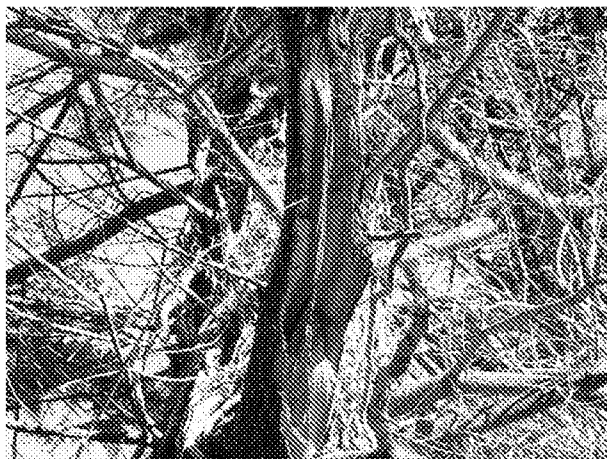
Nesting Pigeon at TN1 in G2



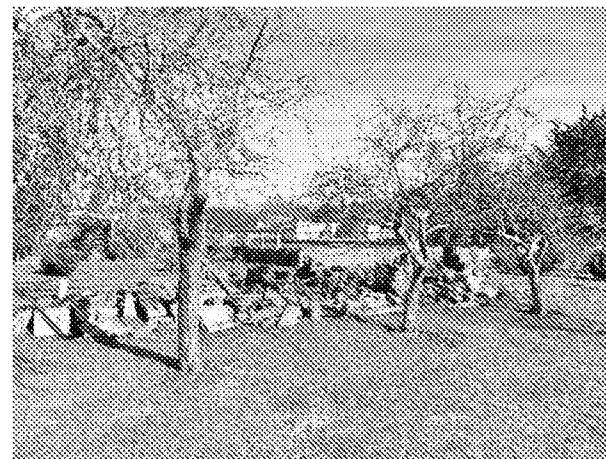
Lifted bark on dead tree in G2



Beeches at G3 covered in mature ivy



Lowest tear out wound on T4 cedar. Cracks/crevices seen and mature ivy behind.



T7, T8 and T9 fruit trees within orchard.

### 3.5 Habitat Suitability Index

- 3.5.1 P1 is located c.45m south-west of the site within an area of POS and is a constructed wildlife pond (Photo 19), likely part of SuDS drainage for the nearby new residential developments. It is c.525m<sup>2</sup>, has a varied emergent and submerged plant assemblage including shrubby trees (Photo 20). There are large rocks nearby at the outflow of a storm drain (Photo 21). The pond was very flooded at the time of the survey due to Storm Alex, making it appear larger here than it usually is (Photo 22).
- 3.5.2 The HSI gave P1 a score of 0.65 which indicates average suitability for GCN. The full results are listed at Appendix IV.



Photo 19: Pond P1



Photo 20: Emergent and submerged vegetation



Photo 21: Large rocks and storm drain



Photo 22: Flooding due to Storm Alex

## 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 VI for a review of the legislation and planning context.

### 4.2 Designated Sites

- 4.2.1 The site falls just within the impact risk zone for Climping Beach SSSI. Within this zone it is required that Natural England be consulted in regard to the likely effects on the SSSI from proposals related to aviation and certain agricultural developments. Therefore, this is not necessary in relation to the proposals at the site. The site is not within 10km of any internationally designated site or within 2km of any national statutory or non-statutory site and therefore the proposals are not likely to have an impact on any designated site.

### 4.3 Habitats

#### **Evaluation**

- 4.3.1 Table 4.1 presents a preliminary evaluation of the habitats recorded within and adjacent to the site with reference to the criteria defined at section 2.4.1, minus bare ground and hard standing which are of no importance. It should be noted 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                                                                                                                                                                                                                       |
|---------------------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ephemeral/short perennial | Site       | A common and widespread habitat not containing any notable species.                                                                                                                                                             |
| Mixed plantation woodland | Site       | A locally uncommon habitat due to widespread development, however it is not of particular interest and is in poor condition due to the poorly developed shrub and field layers, littering and planting of unfavourable species. |
| Buildings                 | Site       | There are many buildings in the immediate landscape around the site and the buildings on site offer only limited features that could be used by wildlife.                                                                       |
| Dense scrub               | Site       | A common and widespread habitat but it may be used by many native species. It is in poor condition due to littering.                                                                                                            |
| Amenity grassland         | Site       | A common and widespread habitat not containing any notable species.                                                                                                                                                             |

| Habitat                    | Evaluation | Rationale                                                                                                                             |
|----------------------------|------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Introduced shrub           | Site       | Introduced and newly planted shrubs of little to no value to wildlife in its current state.                                           |
| Scattered trees            | Site       | A common and widespread habitat not containing any notable species or features.                                                       |
| Species poor defunct hedge | Local      | Priority habitat which provides many functions and resources to local wildlife, including connectivity between adjacent land parcels. |

### **Priority habitats**

- 4.3.2 There are two types of priority habitat within 1km of the site: deciduous woodland and traditional orchard. It is not considered likely that these habitats could be adversely affected by the development because of the size and scope of the proposals which will be contained within the red line boundary shown in Appendix I.
- 4.3.3 The pond found within 500m of the site (P1) does not qualify as priority habitat, primarily due to being a relatively newly constructed pond of a small size which is isolated amongst amenity grassland. P2 was discounted as it is not a pond but is instead an element of a local skate park and has been wrongly mapped on OS.
- 4.3.4 The Phase 1 habitat survey found that the hedgerows at the boundaries of the site should be classified as priority habitat, as is discussed below, but no other habitats on site meet the criteria to be considered as priority habitat under the definitions given in the UK Biodiversity Action Plan (Maddock, 2008).
- 4.3.5 Hedgerow 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 *Muscardinus avellanarius*. All the hedgerows on site (H1-H3) were classified as species-poor. Priority habitat hedgerows 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). All of the hedgerows on site are assessed as priority habitats but none can be defined as 'important' or 'species rich' under the Hedgerow Regulations 1997. It is currently understood that the hedgerows will be retained and protected during construction.

### **Other habitats**

- 4.3.6 The proposed development would result in permanent losses across the site of up to c.1.37ha of ephemeral/short perennial, mixed plantation woodland, scrub, amenity grassland, scattered trees introduced shrub and buildings, depending on the extent and layout of development proposals. These areas are of relatively low ecological value and of importance at the site level

only but provide habitats suitable for a range of protected species (e.g. great crested newt, nesting birds, badger, roosting bats and reptiles).

#### **4.4 Species**

##### ***Great crested newt***

- 4.4.1 SxBRC returned no records of great crested newt (GCN) *Triturus cristatus* from within 1km of the site.
- 4.4.2 The site contains predominantly sub-optimal terrestrial habitat for GCN. The hedgerows at the boundaries of the site may be used for dispersal from surrounding areas, while the mixed plantation woodland and dense scrub could provide shelter and foraging habitat. The amenity grassland is managed to a short sward height and there is little structural variation. Grassland of this nature is occasionally used by foraging or dispersing GCN but it contains few shelter habitats and is unlikely to support high numbers. If the amenity grassland is left unmanaged it could quickly become suitable for great crested newts. Rubble piles (TN1, 4 and 5) and building foundations may provide shelter and hibernation habitats.
- 4.4.3 Research undertaken by Natural England (Cresswell & Whitworth, 2004) suggests GCN 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 GCN refuges were located. In addition, following the breeding season, Jehle and Arntzen (2000) recorded 64% of newts within 20m of the pond edge.
- 4.4.4 P1 is located c.45m south-west of the site, well within the migratory range of GCN, and was assessed as being of average suitability for breeding GCN. The presence of a pond this close to the site suggests that, if it is used for breeding, GCN could be present within the survey area during its terrestrial phase.
- 4.4.5 In conclusion GCN may be present within the small patches of suitable terrestrial habitat present within the site and may use the nearby pond for breeding. Construction works would likely involve site clearance, creation of access tracks and materials storage compounds, vehicle movements and groundworks, which together could result in destruction of GCN habitats or present a risk of killing, injury or disturbance for GCN if present during the works. Further surveys for great crested newt in the nearby suitable ponds are recommended at section 5.2.

##### ***Nesting birds***

- 4.4.6 SxBRC returned 278 records of 47 notable bird species from within 1km of the site during a date range of 1985 to 2018. The survey area's boundary hedgerows, plantation woodland, trees and scrub are suitable for nesting birds such as wren *Troglodytes troglodytes*, dunnock *Prunella modularis*, robin *Erithacus rubecula* and chaffinch *Fringilla coelebs*, while the buildings provide some limited suitability for species such as house sparrow *Passer domesticus* and swallow *Hirundo rustica*. The other habitats on site are unlikely to attract nesting birds, such as ground nesting birds. Precautionary measures for nesting birds are recommended at section 5.3.

### **Invertebrates**

- 4.4.7 SxBRC returned 49 records of 23 species of protected invertebrate from within 1km of the site, during a date range of 1998 to 2017, principally of Lepidoptera (moths and butterflies) but also including stag beetle *Lucanus cervus* (NERC s41 species of principal importance).
- 4.4.8 The buildings, bare ground and hard standing which dominate the survey area are largely unsuitable for rare or notable invertebrates and are unlikely to support a diverse or abundant invertebrate fauna in general. The smaller patches of mixed plantation woodland and scrub provide some limited opportunities for a range of common and widespread invertebrates. Woodland is not common in the immediate wider landscape but the mixed plantation woodland on site is not of good quality for invertebrates, with non-native tree species, minimal deadwood and little ground flora. The woodland habitat loss within the site resulting from redevelopment proposals is not considered likely to significantly affect invertebrate communities due to the poor quality of the habitat. The scrub on site may be more supportive for a wider range of invertebrates but given that the dominant species is bramble this habitat type is common and widespread. Invertebrates are not considered to present a constraint to the development proposals and no further surveys for this group are required.

### **Mammals**

#### **Badger**

- 4.4.9 SxBRC does not supply badger *Meles meles* records for animal welfare reasons. One badger hole (TN8) was noted in the banks between the ephemeral/short perennial vegetation and bare ground. Recently turned soil and badger hair were found at the entrance. No further evidence of badger activity was observed within or around the survey area, such as badger paths, footprints, latrines, dung pits, badger hairs caught at fence lines or evidence of foraging (snuffle holes). Further surveys for badgers are recommended at section 5.2, and ecological protection measures for badgers and other mammals are advised in section 5.4. A second site walkover to search for signs of badger was undertaken on 23 February 2021; no new evidence was found but a camera trap was installed to monitor the hole at TN8. Interim data were collected on 10 March 2021; no badgers had been recorded but the camera has been left in place and will continue monitoring for at least another two weeks.

#### **Bats**

- 4.4.10 SxBRC returned 44 records of at least seven species of bat from within 2km of the site, during a date range of 1992 to 2018, including western barbastelle *Barbastella barbastellus*, serotine *Eptesicus serotinus*, Natterer's *Myotis nattereri*, noctule *Nyctalus noctula*, common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, and brown long-eared *Plecotus auritus* bats. These records include 19 roost sites, the closest to the survey area being a brown long-eared roost located c.0.8km north in 2006. Barbastelle is a particularly rare species and is an unusual record given the generally poor quality of the wider landscape around the site for bats. However, the grid reference associated to the record was only given to four digits, so the proximity of the record to the site could be much further afield.

- 4.4.11 The BRTI concluded that building B1 is of low suitability for roosting bats. Our professional judgement is in line with this outcome and its possible use by roosting bats cannot be ruled out. Demolition of this building could result in destruction of a bat roost or risk the killing, injury or disturbance of bats present during the works. Further surveys for bats roosting in buildings are recommended at section 5.2.
- 4.4.12 The rest of the buildings on site were unsuitable for roosting bats due to their form, condition and general absence of exploitable features, based on external and where possible internal inspections. No further survey for buildings B2, B3, B4 or B5 are required.
- 4.4.13 Three trees/groups were of low suitability for roosting bats and contained potential roost features; G2, G3 and T4. Felling or arboricultural works to these trees, if required to facilitate the proposals, could result in destruction of a bat roost or present a risk of killing, injury or disturbance if bats are present during the works. Low suitability trees are not required to undergo further surveys, instead tree works should be undertaken in accordance with a Non-Licensed Method Statement to reduce the risk of killing/injury to bats, as recommended at section 5.3.
- 4.4.14 The boundary hedgerows may serve as a navigation route or foraging feature for bats, but it is anticipated that these will be retained and protected during the works. Given the urban setting of the site and the likely high level of artificial lighting in the area, significant impacts to foraging/commuting bats are unlikely. Further bat activity surveys are not required.

#### ***Hazel dormouse***

- 4.4.15 SxBRC returned no records of hazel dormouse *Muscardinus avellanarius* within the desk study search area. The hedgerow boundaries and scrub on the site provide potential habitat for dormouse, however, they are considered to be largely sub-optimal as they have limited connectivity to areas of mature woodland or hedgerow in the wider landscape, are gappy, species-poor and unlikely to provide sufficient year-round food availability. In any case, the hedgerows are to be retained under proposals for the site. Hazel dormouse is not considered to present a constraint to the proposals and no further surveys for this species are required.

#### ***Rabbit***

- 4.4.16 SxBRC returned three records of rabbit *Oryctolagus cuniculus* from within 1km of the site. Additionally, numerous signs of rabbit, such as droppings (TN6) were found around the site but primarily in the ephemeral/short perennial and bare ground earth banks. The mammals hole found at the southern aspect of B1 is likely to be of rabbits and it may extend below building B1. Rabbits and other mammals are protected from crushing and asphyxiation under the Protection of Wild Mammals Act 1996. Ecological protection measures for rabbits and other mammals are advised in section 5.4.

#### ***Water Vole***

- 4.4.17 SxBRC returned seven records of water vole from within 1km of the site, from 2009 and 2014. The closest record was made c.0.9km north-west of the site, is from 2014, and is associated with Black Ditch, a tributary of the River Arun. There are no habitats on site that are suitable for water vole and no further survey for this species is necessary.

### **Plants, native**

- 4.4.18 SxBRC returned records of bluebell, a protected botanical species, from within 1km of the site. No rare or protected species of flora were recorded within the survey area and, based on the habitat types present 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**

- 4.4.19 No invasive plant species (i.e. species listed on Schedule 9 of the Wildlife and Countryside Act) were located during this survey. 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*). Invasive plant species and injurious weeds are not considered to present a constraint to the development proposals and no further action for this group is required.

### **Reptiles (terrestrial)**

- 4.4.20 SxBRC returned four records of widespread terrestrial reptile species from within 1km of the site, during a date range of 1994 to 2017. The closest record to the site was a slow worm located c.110m south in 2017. The survey area contains predominantly sub-optimal habitat for reptiles, comprised mainly of buildings, hard-standing 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 hedgerows at the boundaries of the site may be used for dispersal from surrounding areas, while the mixed plantation woodland and dense scrub could provide shelter and foraging habitat. Rubble piles (TN1, 4 and 5) and building foundations may provide shelter and hibernation habitats.
- 4.4.21 In conclusion reptiles may be present within the small patches of suitable habitat present within the site. Construction works would likely involve site clearance, creation of access tracks and materials storage compounds, vehicle movements and groundworks, which together could present a risk of killing or injury for reptiles if present during the works. Considering the small area of potential habitats to be affected and sub-optimal nature of the majority of the site, further surveys are not considered necessary. Instead removal of potential reptile habitat should be undertaken in accordance with a Precautional Working Method Statement as recommended at section 5.3.

### **Other protected, rare or notable species**

- 4.4.22 SxBRC returned 49 records of hedgehog *Erinaceus europaeus* from within 1km of the site during a date range of 2000 to 2019. The closest to the site was located c.110m south in 2015. The survey area contains habitats suitable for this species, including grassland, hedgerow, mixed woodland and scrub. Hedgehog is listed as a species of principal importance under the NERC Act 2006 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 Preliminary Ecological Appraisal, recommendations are made below for further protected species surveys 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 with the aim of achieving an overall net gain for biodiversity. The recommendations should be included in the design and development proposals so that protection of important ecological features is secured and opportunities for ecological enhancement are realised. The recommendations should be reviewed following the completion of further ecological surveys.

### 5.2 Protected Species Surveys

#### *Great crested newt*

- 5.2.1 A great crested newt survey is recommended to establish whether the species is present in pond P1. If GCN are absent from this pond then it is likely they are also absent from the application site. Environmental DNA (eDNA) sampling should be sufficient in the first instance and has the advantage of being more time and cost-efficient where there is a high number of waterbodies or the likelihood of recording GCN is low. A single visit to the pond should be made by a suitably experienced and licensed ecologist between 15 April and 30 June. However, this method carries the risk that conventional survey techniques (which are more resource-intensive) will still be required if GCN is recorded, and for this reason it is recommended that eDNA surveys are completed by the end of April. Twenty water samples are collected from each waterbody during the visit using purpose-designed sterile sampling kits, preserved in ethanol and subsequently dispatched for laboratory analysis. The sampling and analysis should follow the latest protocols set out in Natural England's '*Technical advice note for field and laboratory sampling of great crested newt environmental DNA*' (Biggs et al., 2014).

#### *Badger*

- 5.2.2 It is recommended that the potential badger setts at TN8 are monitored with movement-triggered infrared camera traps over an extended period to establish whether they are actively used by badgers. Setts entrances should also be periodically checked for signs of recent activity, such as fresh excavations, footprints, badger hairs or bedding. Setts monitoring should continue for four weeks in the first instance, and be coupled with repeat searches for signs of badger activity (e.g. setts, latrines, dung pits, footprints, hairs, pathways, scratching posts or evidence of foraging) within 30 meters of the site boundary using standard methodologies (Harris et al., 1989), in addition to searches already carried out as part of the PEA. The surveys can be carried out at any time of year but are often more productive during spring and autumn when vegetation growth is low but badgers are still active.

- 5.2.3 The survey is underway; after 2wks of monitoring no badgers have been recorded. The camera trap remains on site and monitoring continues.

***Roosting bats***

- 5.2.4 The proposed development will require the demolition or alteration of building B1. These works could result in destruction of a bat roost or killing, injury or disturbance to roosting bats, and further survey is recommended to determine their presence or likely absence with these features. The survey would follow current guidelines (Collins, 2016) for features of low suitability, comprising one dusk emergence or one dawn re-entry survey. This can be carried out between May and August. Surveys begin at least a quarter of an hour before dusk and continue for up to 2 hours after sunset or begin 1.5 to 2 hours before dawn and continue until at least 15mins after sunrise.
- 5.2.5 Table 5.1 provides a summary of what species/groups require additional surveys prior to refining development designs and formulating a suitable avoidance and mitigation strategy (if required).

***Table 5.1: Recommendations for further ecological surveys***

| #         | Recommendations for further ecological survey                                                                                                                                                                                                                                                                              |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>R1</b> | Presence / absence surveys for great crested newt in pond P1, undertaken using eDNA sampling techniques from mid-April to end June, or using conventional techniques from mid-March to mid-June.                                                                                                                           |
| <b>R2</b> | Monitoring for badger activity at potential sett TN8 using infrared camera traps, coupled with repeat searches for badger field signs across the site, preferably during spring. The survey is underway; after 2wks of monitoring no badgers have been recorded. The camera trap remains on site and monitoring continues. |
| <b>R3</b> | Presence / absence survey for roosting bats within building B1, undertaken between May and August.                                                                                                                                                                                                                         |

### **5.3 Precautionary Measures**

- 5.3.1 The following species/groups (Table 5.2) require specific precautionary measures to be adhered to prior to and during construction to ensure that an offence under the relevant legislation is avoided. These measures may need to be added to or amended following completion of the protected species surveys described above.

***Table 5.2: Recommended precautionary measures***

| #         | Recommended precautionary measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>R4</b> | Suitable bird nesting habitat occurs throughout the site in scrub, hedgerows, mature trees, plantation woodland and buildings. Negative impacts on breeding birds will be avoided by undertaking clearance and demolition works which would result in removal of potential nesting habitats (including vegetation and buildings) outside of the bird breeding season, which runs from 1 March to 31 August. Removal of nesting bird habitats will therefore be carried out between September and February, but should be planned and implemented in accordance with the findings of the further ecological surveys recommended above. |

| #         | Recommended precautionary measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           | 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.                                                                                                                                                                                                                                                                     |
| <b>R5</b> | Works to fell or lop the low suitability trees at G2, G3 and T4 will be undertaken in accordance with a Non-Licensed Method Statement to reduce the risk of killing/injury to roosting bats. The Method Statement will specify reasonable avoidance measures including timing restrictions (works to be carried out during March-April or September-October to avoid critical maternity and hibernation periods), 'soft felling' techniques to enable bats to disperse, and will be carried out under the supervision of a suitably qualified ecologist.                                                                                                                                                                                                                                                                   |
| <b>R6</b> | Vegetation clearance works in the small areas of potential reptile habitat (woodland, scrub, hedgerow, rubble piles) will be undertaken in accordance with a Precautionary Working Method Statement to reduce the risk of killing/injury to reptiles. The Method Statement will specify reasonable avoidance measures including timing restrictions (works to be carried out during the reptile active season, broadly March/April to September/October), progressive reduction of vegetation height to displace any reptiles present, and will be carried out under the supervision of a suitably qualified ecologist. Once vegetation removal is complete, the site will be maintained in unsuitable condition to prevent recolonisation. Such work will not be completed until the results of the GCN survey are known. |

## 5.4 Ecological Protection Measures

- 5.4.1 The following protection measures (Table 5.3) will be carried out as part of the proposed scheme along with any specific measures that are recommended following the protected species surveys described above.

**Table 5.3: Recommended ecological protection measures**

| #         | Recommended ecological protection measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>R7</b> | The hedgerow priority habitats within the survey area are of intrinsic ecological value and provide habitats suitable for a range of protected species, including amphibians, nesting birds, invertebrates, bats and reptiles. These features will be retained and protected during construction and will also provide a focus for ecological enhancement measures.                                                                                                                                                                                                                                                                                                                         |
| <b>R8</b> | 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 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. |
| <b>R9</b> | 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

| #          | Recommended ecological protection measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            | 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. Use narrow-spectrum bulbs and light sources that emit minimal UV light, avoiding white and blue wavelengths of the spectrum. Use glass lantern covers instead of plastic to filter UV light. Lighting will not be directed towards the boundary hedgerows. |
| <b>R10</b> | 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.                                                                                    |
| <b>R11</b> | 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.                                                                                                                                                                           |
| <b>R12</b> | Where fox dens or rabbit warrens are to be damaged or destroyed as part of the proposed works, this will be undertaken in accordance with the Mammals Act 1996 by a registered pest control company.                                                                                                                                                                                                                                                                                                            |

## 5.5 Recommendations for Biodiversity Net Gain

- 5.5.1 The following ecological enhancements (Table 5.4) should be considered for the site to achieve an overall net gain for biodiversity in line with the requirements of national and local policy, including Arun Local Plan Policy ENV DM5 which states that ‘*Development schemes shall, in the first instance, seek to achieve a net gain in biodiversity and protect existing habitats on site.*’ These recommendations should be reviewed and specified further following the completion of recommended protected species surveys.

**Table 5.4: Preliminary recommendations for biodiversity net gain**

| #          | Preliminary recommendations for biodiversity net gain                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>R13</b> | 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 within the central area of public open space. This will help to maintain/enhance ecological connectivity through the site for reptiles, amphibians and small mammals, and provide forage for invertebrates.                                                                                |
| <b>R14</b> | Hedgerow creation and/or restoration 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 <i>Corylus avellana</i> , hawthorn <i>Crataegus monogyna</i> , 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 <i>Ilex aquifolium</i> , holm oak <i>Quercus ilex</i> although both can be rather slow growing, ivy <i>Hedera helix</i> |

| #          | <b>Preliminary recommendations for biodiversity net gain</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            | and privet <i>Ligustrum vulgare</i> . Beech <i>Fagus sylvatica</i> and hornbeam <i>Carpinus betulus</i> are also widely used as hedging plants and, although not evergreen, these will keep their brown leaves through winter if trimmed in late summer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>R15</b> | The site's landscaping plans will utilise plant species which encourage bats. The table at Appendix V 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 <i>et al.</i> , 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.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>R16</b> | <p>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:</p> <ul style="list-style-type: none"> <li>▪ New buildings: nest boxes can be installed under the eaves for birds that utilise buildings for nesting, e.g. house martin <i>Delichon urbica</i>, house sparrow <i>Passer domesticus</i>, swallow <i>Hirundo rustica</i> and swift <i>Apus apus</i>. These species are of principal importance, of conservation concern and/or are notable in Sussex.</li> <li>▪ 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 <i>Turdus philomelos</i>, and treecreeper <i>Certhia familiaris</i> boxes.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>R17</b> | <p>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 at the site boundaries or incorporated within building facades. Boxes suitable for a range of species should be used, for instance:</p> <ul style="list-style-type: none"> <li>▪ New buildings: integral bat tubes can be installed within buildings which face vegetated areas, particularly towards the north, south and west of the development. Bat tubes can be incorporated into the design of the building so that only the access holes are visible from the exterior of the building. The Schwegler 1FR or 2FR Bat Tube 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.</li> <li>▪ 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.</li> <li>▪ 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.</li> </ul> |

## 6 Conclusions

### 6.1 Summary

- 6.1.1 The majority of land proposed for development is of low ecological value. Constraints to development were identified including priority habitats and the potential presence of great crested newt, nesting birds, badger, roosting bats and reptiles. Precautionary and ecological protection measures are recommended on an interim basis to enable offences under the relevant legislation to be avoided, along with recommendations for biodiversity net gain.

## 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.

Arun District Council (2018). *Adoption Arun Local Plan 2011-2031*.

Biggs J, Ewald N, Valentini A, Gaboriaud C, Griffiths RA, Foster J, Wilkinson J, Arnett A, Williams P and Dunn F (2014): *Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (Triturus cristatus) environmental DNA*. Freshwater Habitats Trust, Oxford.

Botanical Society of the British Isles (2004): *UK Plant List*.

Bright P., Morris P. and Mitchell-Jones T. (2006): *The Dormouse Conservation Handbook; Second Edition*. English Nature, Peterborough.

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.

Chanin P. (2003): *Ecology of the European Otter*. Conserving Natura 2000 Rivers Ecology Series No. 10. English Nature, Peterborough.

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

CIEEM (2017b): *Guidelines for Preliminary Ecological Appraisal*. 2<sup>nd</sup> 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.

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

Dean M., Strachan R., Gow D. and Andrews R. (2016): *The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series)*. Eds. Fiona Matthews and Paul Chanin. The Mammal Society, London.

Defra (2007): *Hedgerow Survey Handbook*. Department for Environment, Food and Rural Affairs.

Dobson JR (2011): *A Methodology for Rapid Preliminary Assessment of Invertebrate Habitat Quality Potential in the course of Extended Phase 1 Habitat Survey*. Version 1.0. Unpublished Consultation Draft.

Drake, C.M., Lott, D.A., Alexander, K.N.A. & Webb, J. (2007): *Surveying terrestrial and freshwater invertebrates for conservation evaluation*. Natural England Research Report NERR005, Natural England, Sheffield.

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.

English Nature (2001): *Great Crested Newt Mitigation Guidelines*. English Nature, Peterborough.

Environment Agency (2007): *Pollution Prevention Guidelines 5 – Works and Maintenance in or Near Water*.

Froglife (1999): *Reptile Survey: An Introduction to planning, conducting and interpreting surveys for snake and lizard conservation*. Froglife Advice Sheet 10, Froglife, Halesworth.

Froglife (2001): *Surveying for Great Crested Newt Conservation*. Froglife Advice Sheet 11, Froglife, Halesworth.

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

Gilbert G., Gibbons D.W. and Evans J. (1998): *Bird Monitoring Methods*. RSPB, Sandy, Beds.

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

Gunnel K, Murphy B, Williams C (2013): *Designing for biodiversity: A technical guide for new and existing buildings*. RIBA Publishing and Bat Conservation Trust.

Harris S., Cresswell P. and Jefferies D. (1989): *Surveying Badgers*. Mammal Society, London.

Hill, D., Fasham, M., Tucker, G., Shrewry, M. and Shaw, P(eds) (2005): *Handbook of Biodiversity Methods: Survey, Evaluation and Monitoring* (4th edition). Cambridge University Press, Cambridge.

Institute of Lighting of Professionals (2018): *Guidance Note 08/18: Bats and artificial lighting in the UK*. Co-authored by the Bat Conservation Trust, September 2018.

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

Langton, T.E.S., Beckett, C.L., and Foster, J.P. (2001): *Great Crested Newt Conservation Handbook*, Froglife, Halesworth.

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](http://www.magic.gov.uk))

---



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

Natural England (2011): *Badgers and Development: A guide to best practice and licensing*. Interim Guidance.

NetRegs (2017): *Guidance for Pollution Prevention 5: Works and Maintenance in or Near Water*. NRW, NIEA and SEPA regulatory guidance, available online: <http://www.netregs.org.uk/environmental-topics/pollution-prevention-guidelines-ppgs-and-replacement-series/guidance-for-pollution-prevention-gpps-full-list/>

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.

Peay S. (2000): *Guidance on works affecting White-clawed Crayfish*. Report to English Nature.

Rodwell J.S. (2006): *National Vegetation Classification: Users' Handbook*. Joint Nature Conservation Committee, Peterborough.

Roper TJ (1992): Badger *Meles meles* setts—architecture, internal environment and function. *Mammal Review* **22** (1), 43–53.

Rose F., revised and updated by O'Reilly C. (2006): *The Wild Flower Key*. Penguin, London.

Snow D.W. & Perrins C.M. (1998): *Birds of the Western Palearctic: Concise Edition*. Oxford University Press.

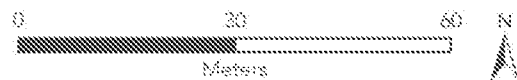
*This page is intentionally blank.*

## Appendix I: Phase 1 Habitats Map

Please see insert.

# Roundstone Lane, Angmering, West Sussex

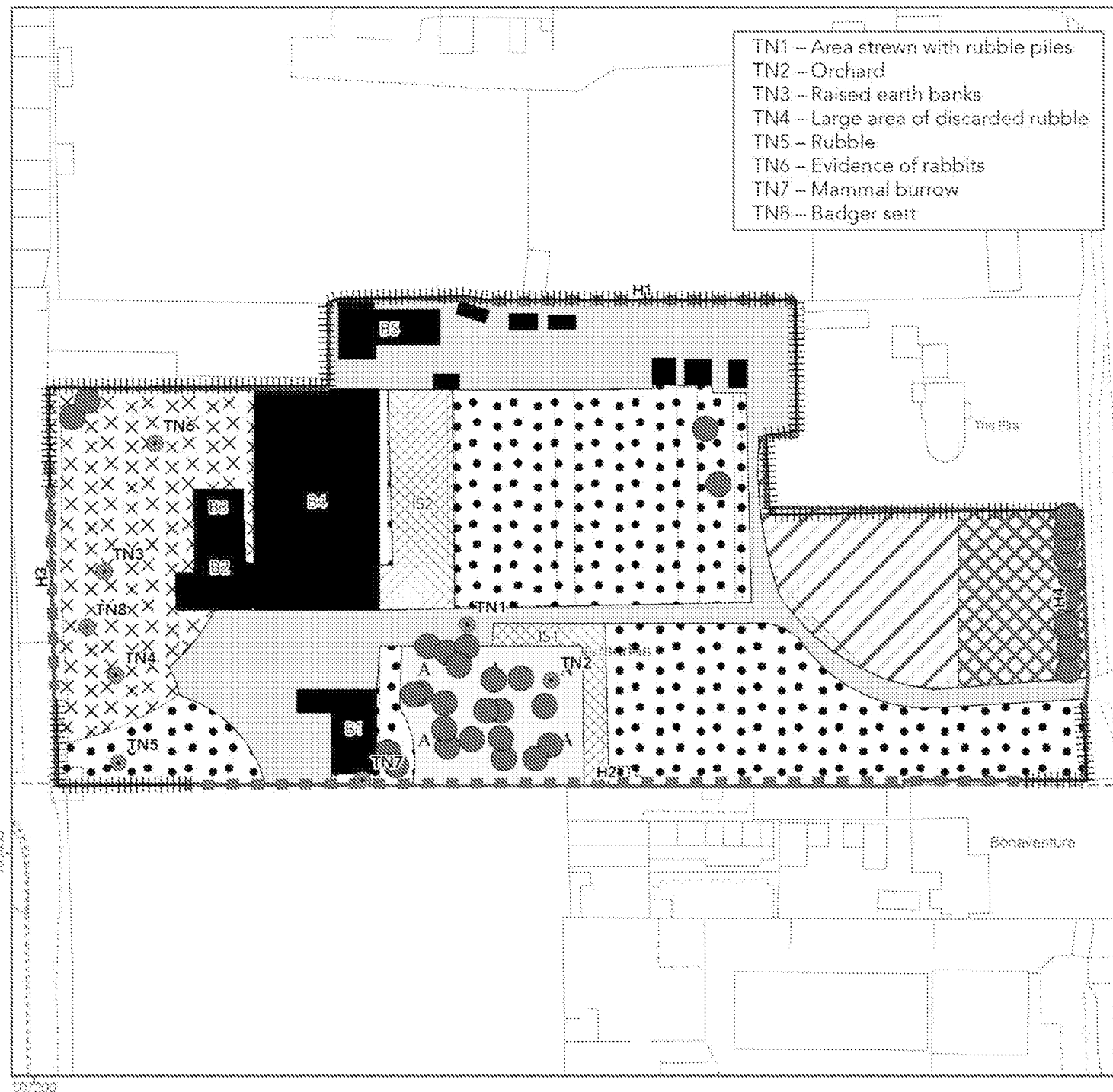
-  Survey area
-  Hard standing
-  Mixed plantation woodland
-  Dense scrub
-  Amenity grassland
-  Ephemeral/short perennial
-  Introduced shrub
-  Building
-  Bare ground
-  Tree
-  Species poor defunct hedge
-  Fence
-  Target note



© Crown copyright and database rights 2020  
Ordnance Survey 100031673

Scale: 1:1,050 Created by: AD  
Date: Nov 2020 Reviewed by: NP  
Drawing number:  
UR04105CD-Phase1\_301103

**URBAN EDGE** Tel: 01273 566 756  
**ENVIRONMENTAL** Email: hello@ueec.co.uk  
**CONSULTING** Web: www.ueec.co.uk

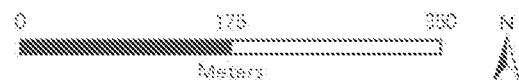


## Appendix II: Pond Map

Please see insert.

# Roundstone Lane, Angmering, West Sussex

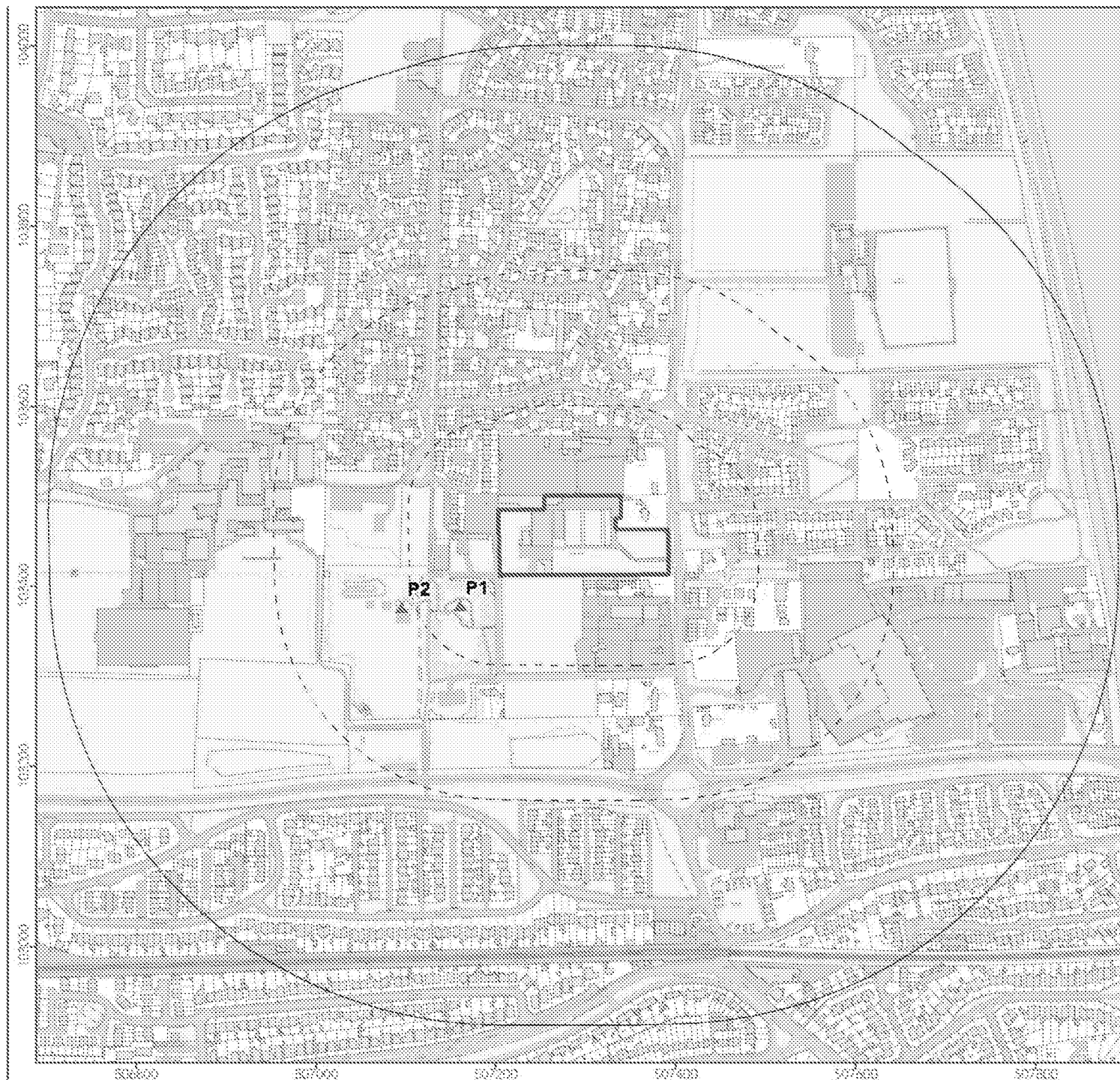
-  Survey area
-  Pond number
-  100m buffer
-  250m buffer
-  500m buffer



© Crown copyright and database rights 2020  
Ordnance Survey 0100031673

Scale: 1:6,300      Created by: AD  
Date: Nov 2020      Reviewed by: NP  
Drawing number:  
UR04105CD-P04201103

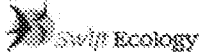
 **URBAN EDGE**      Tel: 01273 566 756  
**ENVIRONMENTAL**      Email: [hello@ueec.co.uk](mailto:hello@ueec.co.uk)  
**CONSULTING**      Web: [www.ueec.co.uk](http://www.ueec.co.uk)



## Appendix III: Preliminary Roost Appraisal Results

### Building B1

BAT ROOST TRIGGER INDEX (TI): RESULTS

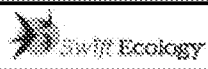


| Project:                                                          | Roundstone Lane, Angmering - B1          | Evidence:    | None |
|-------------------------------------------------------------------|------------------------------------------|--------------|------|
| Code:                                                             | UE0410                                   | Constraints: | None |
| Date:                                                             | 02/10/2020                               | Surveyor:    | IT   |
| TRIGGER INDEXES                                                   | CATEGORY                                 | TI VALUE     |      |
| A) Location, habitat and environmental context of structure       |                                          |              |      |
| T1: General location                                              | Suburban or intensive farmland           | 0.67         |      |
| T2: Foraging opportunities within 350 m                           | Moderate                                 | 0.67         |      |
| T3: Foraging opportunities within 5 km                            | Poor                                     | 0.33         |      |
| T4: Commuting opportunities                                       | Moderate                                 | 0.67         |      |
| T5: Cover in vicinity of structure                                | Poor                                     | 0.33         |      |
| T6: External lighting in vicinity of structure                    | None                                     | 1            |      |
| T7: Number and character of nearby buildings                      | None or all modern                       | 0.33         |      |
| T8: Structure/building exposure                                   | Low                                      | 1            |      |
| B) Exterior features and characteristics of structure or building |                                          |              |      |
| T9: Structure/building age                                        | Intermediate                             | 0.67         |      |
| T10: Size of Building                                             | Intermediate size                        | 0.67         |      |
| T11: Main wall construction material                              | Mixture of materials                     | 0.67         |      |
| T12: Condition of wall/roof pointing/render                       | Some gaps, cracks or crevices noted      | 0.67         |      |
| T13: Condition of lintel/door frame features                      | Some gaps, cracks or crevices noted      | 0.67         |      |
| T14: Condition of eaves/soffits/bargeboards                       | Some gaps or cracks noted                | 0.67         |      |
| T15: Condition of weatherboarding/cladding                        | No boarding present                      | 0.2          |      |
| T16: Condition of lead flashing                                   | Some lifting of flashing                 | 0.67         |      |
| T17: Roofing material                                             | Corrugated metal/asbestos/similar        | 0.33         |      |
| T18: Bat access potential                                         | Several small gaps noted                 | 0.67         |      |
| C) Interior features and characteristics of structure or building |                                          |              |      |
| T19: Character of roof void/roof space                            | No void or very limited roof space       | 0.2          |      |
| T20: Character and condition of roof supports                     | Some gaps or cracks noted                | 0.67         |      |
| T21: Presence and extent of cobwebbing                            | Very few cobwebs                         | 1            |      |
| T22: Presence and condition of roof lining                        | Unlined or cavity filled with insulation | 0.2          |      |
| T23: Light levels in roof void/space                              | Intermediate                             | 0.67         |      |
| T24: Protection from weather/wind                                 | Well protected                           | 1            |      |
| T25: Temperature regime                                           | Intermediate                             | 0.67         |      |
| T26: Level of (human, animal) disturbance                         | High                                     | 0.33         |      |
| T27: Flight Space                                                 | Good                                     | 1            |      |
| T28: Flying Access (Horseshoe bats)                               | None                                     | 0.33         |      |
| TRIGGER INDEX SCORE =                                             |                                          | 0.54         |      |
| BAT ROOST SUITABILITY =                                           |                                          | LOW          |      |

| INDICES                                                  | CATEGORY      | SUITABILITY | NOTES                                 |
|----------------------------------------------------------|---------------|-------------|---------------------------------------|
| <b>D) CONTEXTUAL INFORMATION - GENERAL</b>               |               |             |                                       |
| T29: Current usage                                       | Used often    | Low         |                                       |
| T30: Roof type                                           | Flat          | Low         |                                       |
| T31: Outbuildings                                        | None          | Low         |                                       |
| <b>E) CONTEXTUAL INFORMATION - EXTERIOR</b>              |               |             |                                       |
| T32: Gaps >8mm in weather boarding, soffits and fascia's | Some          | Low         |                                       |
| T33: Cellar access                                       | No cellar     | n/a         |                                       |
| T34: Vegetation cover                                    | None          | Low         |                                       |
| <b>F) CONTEXTUAL INFORMATION - INTERIOR</b>              |               |             |                                       |
| T35: Unused rooms                                        | None          | Low         |                                       |
| T36: Cellar                                              | n/a           | n/a         |                                       |
| T37: Condition of walls and pointing/render in void      | Gappy         | Moderate    |                                       |
| T38: Dimensions in roof void(s)                          | n/a           | n/a         | No void                               |
| <b>G) CONTEXTUAL INFORMATION - SIGNS OF BATS</b>         |               |             |                                       |
| T39: Dropping number                                     | None observed | n/a         |                                       |
| T40: Dropping pattern                                    | None observed | n/a         |                                       |
| T41: Dropping age                                        | None observed | n/a         |                                       |
| T42: Oil staining or fur at potential access points      | None observed | n/a         |                                       |
| T43: Urine staining                                      | None observed | n/a         |                                       |
| T44: Bats                                                | None observed | n/a         |                                       |
| T45: Scratch marks                                       | None observed | n/a         |                                       |
| T46: Feeding remains                                     | None observed | n/a         |                                       |
| T47: Bat noises                                          | None observed | n/a         |                                       |
| <b>H) CONTEXTUAL INFORMATION - SIGNS OF BIRDS</b>        |               |             |                                       |
| T48: Barn owl potential                                  | None observed | Low         | No suitable access, no signs recorded |
| T49: Bird nests                                          | None observed | Low         |                                       |
| <b>BAT ROOST SUITABILITY =</b>                           |               | <b>Low</b>  |                                       |

## Building B2

BAT ROOST TRIGGER INDEX (TI): RESULTS



| Project:                                                          | Roundstone Lane, Angmering - B2          | Evidence:    | None     |
|-------------------------------------------------------------------|------------------------------------------|--------------|----------|
| Code:                                                             | UE0410                                   | Constraints: | None     |
| Date:                                                             | 02/10/2020                               | Surveyor:    | JT       |
| TRIGGER INDICES                                                   |                                          | CATEGORY     | TI VALUE |
| A) Location, habitat and environmental context of structure       |                                          |              |          |
| T1: General location                                              | Suburban or intensive farmland           |              | 0.67     |
| T2: Foraging opportunities within 250 m                           | Moderate                                 |              | 0.67     |
| T3: Foraging opportunities within 5 km                            | Poor                                     |              | 0.33     |
| T4: Commuting opportunities                                       | Moderate                                 |              | 0.67     |
| T5: Cover in vicinity of structure                                | Poor                                     |              | 0.33     |
| T6: External lighting in vicinity of structure                    | None                                     |              | 1        |
| T7: Number and character of nearby buildings                      | None or all modern                       |              | 0.33     |
| T8: Structure/building exposure                                   | Low                                      |              | 1        |
| B) Exterior features and characteristics of structure or building |                                          |              |          |
| T9: Structure/building age                                        | Less than 50 years                       |              | 0.33     |
| T10: Size of Building                                             | Small size                               |              | 0.33     |
| T11: Main wall construction material                              | Mixture of materials                     |              | 0.67     |
| T12: Condition of wall/roof pointing/render                       | Noticeable crevices or cavities          |              | 1        |
| T13: Condition of lintel/door frame features                      | Noticeable cracks or crevices            |              | 1        |
| T14: Condition of eaves/soffits/bargeboards                       | Tightly sealed                           |              | 0.33     |
| T15: Condition of weatherboarding/cladding                        | No boarding present                      |              | 0.2      |
| T16: Condition of lead flashing                                   | No flashing                              |              | 0.2      |
| T17: Roofing material                                             | Corrugated metal/asbestos/similar        |              | 0.33     |
| T18: Bat access potential                                         | Numerous gaps or open-sided structure    |              | 1        |
| C) Interior features and characteristics of structure or building |                                          |              |          |
| T19: Character of roof void/roof space                            | No void or very limited roof space       |              | 0.2      |
| T20: Character and condition of roof supports                     | No apparent supports or flat roof        |              | 0.2      |
| T21: Presence and extent of cobwebbing                            | Some cobwebs                             |              | 0.67     |
| T22: Presence and condition of roof lining                        | Unlined or cavity filled with insulation |              | 0.2      |
| T23: Light levels in roof void/space                              | Intermediate                             |              | 0.67     |
| T24: Protection from weather/wind                                 | Draughty and exposed                     |              | 0.33     |
| T25: Temperature regime                                           | Cold, north-facing or too hot            |              | 0.33     |
| T26: Level of (human, animal) disturbance                         | Moderate                                 |              | 0.67     |
| T27: Flight Space                                                 | Good                                     |              | 1        |
| T28: Flying Access (Horseshoe bats)                               | None                                     |              | 0.33     |
| TRIGGER INDEX SCORE =                                             |                                          | 0.46         |          |
| BAT ROOST SUITABILITY =                                           |                                          | NEGLECTABLE  |          |

| INDICES                                                  | CATEGORY          | SUITABILITY | NOTES                                 |
|----------------------------------------------------------|-------------------|-------------|---------------------------------------|
| <b>D) CONTEXTUAL INFORMATION - GENERAL</b>               |                   |             |                                       |
| T29: Current usage                                       | Occasional        | Low         |                                       |
| T30: Roof type                                           | Flat              | Low         |                                       |
| T31: Outbuildings                                        | None              | Low         |                                       |
| <b>E) CONTEXTUAL INFORMATION - EXTERIOR</b>              |                   |             |                                       |
| T32: Gaps >8mm in weather boarding, soffits and fascia's | Many              | Low         |                                       |
| T33: Cellar access                                       | No cellar         | n/a         |                                       |
| T34: Vegetation cover                                    | None              | Low         |                                       |
| <b>F) CONTEXTUAL INFORMATION - INTERIOR</b>              |                   |             |                                       |
| T35: Unused rooms                                        | All for storage   | Low         |                                       |
| T36: Cellar                                              | n/a               | n/a         |                                       |
| T37: Condition of walls and pointing/render in void      | Very gappy        | Moderate    |                                       |
| T38: Dimensions in roof void(s)                          | n/a               | n/a         | No void                               |
| <b>G) CONTEXTUAL INFORMATION - SIGNS OF BATS</b>         |                   |             |                                       |
| T39: Dropping number                                     | None observed     | n/a         |                                       |
| T40: Dropping pattern                                    | None observed     | n/a         |                                       |
| T41: Dropping age                                        | None observed     | n/a         |                                       |
| T42: Oil staining or fur at potential access points      | None observed     | n/a         |                                       |
| T43: Urine staining                                      | None observed     | n/a         |                                       |
| T44: Bats                                                | None observed     | n/a         |                                       |
| T45: Scratch marks                                       | None observed     | n/a         |                                       |
| T46: Feeding remains                                     | None observed     | n/a         |                                       |
| T47: Bat noises                                          | None observed     | n/a         |                                       |
| <b>H) CONTEXTUAL INFORMATION - SIGNS OF BIRDS</b>        |                   |             |                                       |
| T48: Barn owl potential                                  | None observed     | Low         | No suitable access, no signs recorded |
| T49: Bird nests                                          | Some potential    | Low         |                                       |
| <b>BAT ROOST SUITABILITY =</b>                           | <b>Negligible</b> |             |                                       |

## Building B5

BAT ROOST TRIGGER INDEX (TI): RESULTS



|          |                                 |              |      |
|----------|---------------------------------|--------------|------|
| Project: | Roundstone Lane, Angmering - B5 | Evidence:    | None |
| Code:    | UE0410                          | Constraints: | None |
| Date:    | 02/10/2020                      | Surveyor:    | IT   |

| TRIGGER INDICES                                                   | CATEGORY                                 | TI VALUE    |
|-------------------------------------------------------------------|------------------------------------------|-------------|
| A) Location, habitat and environmental context of structure       |                                          |             |
| T1: General location                                              | Suburban or intensive farmland           | 0.67        |
| T2: Foraging opportunities within 250 m                           | Moderate                                 | 0.67        |
| T3: Foraging opportunities within 5 km                            | Poor                                     | 0.33        |
| T4: Commuting opportunities                                       | Moderate                                 | 0.67        |
| T5: Cover in vicinity of structure                                | Poor                                     | 0.33        |
| T6: External lighting in vicinity of structure                    | None                                     | 1           |
| T7: Number and character of nearby buildings                      | None or all modern                       | 0.33        |
| T8: Structure/building exposure                                   | Low                                      | 1           |
| B) Exterior features and characteristics of structure or building |                                          |             |
| T9: Structure/building age                                        | Less than 50 years                       | 0.33        |
| T10: Size of Building                                             | Intermediate size                        | 0.67        |
| T11: Main wall construction material                              | Modern                                   | 0.33        |
| T12: Condition of wall/roof pointing/render                       | Tightly sealed                           | 0.33        |
| T13: Condition of lintel/door frame features                      | Tightly sealed                           | 0.33        |
| T14: Condition of eaves/soffits/bargeboards                       | Tightly sealed                           | 0.33        |
| T15: Condition of weatherboarding/cladding                        | Tightly sealed                           | 0.33        |
| T16: Condition of lead flashing                                   | No flashing                              | 0.2         |
| T17: Roofing material                                             | Corrugated metal/asbestos/similar        | 0.33        |
| T18: Bat access potential                                         | No gaps noted                            | 0.33        |
| C) Interior features and characteristics of structure or building |                                          |             |
| T19: Character of roof void/roof space                            | No void or very limited roof space       | 0.2         |
| T20: Character and condition of roof supports                     | No apparent supports or flat roof        | 0.2         |
| T21: Presence and extent of cobwebbing                            | Very few cobwebs                         | 1           |
| T22: Presence and condition of roof lining                        | Unlined or cavity filled with insulation | 0.2         |
| T23: Light levels in roof void/space                              | Light                                    | 0.33        |
| T24: Protection from weather/wind                                 | Well protected                           | 1           |
| T25: Temperature regime                                           | Intermediate                             | 0.67        |
| T26: Level of (human, animal) disturbance                         | High                                     | 0.33        |
| T27: Flight Space                                                 | Poor                                     | 0.33        |
| T28: Flying Access (Horseshoe bats)                               | None                                     | 0.33        |
| TRIGGER INDEX SCORE =                                             |                                          | 0.41        |
| BAT ROOST SUITABILITY =                                           |                                          | NEGLECTIBLE |

| INDICES                                                  | CATEGORY           | SUITABILITY | NOTES                                 |
|----------------------------------------------------------|--------------------|-------------|---------------------------------------|
| <b>D) CONTEXTUAL INFORMATION - GENERAL</b>               |                    |             |                                       |
| T29: Current usage                                       | Used often         | Low         |                                       |
| T30: Roof type                                           | Flat               | Low         |                                       |
| T31: Outbuildings                                        | Storage containers | Low         |                                       |
| <b>E) CONTEXTUAL INFORMATION - EXTERIOR</b>              |                    |             |                                       |
| T32: Gaps >8mm in weather boarding, soffits and fascia's | None               | Low         |                                       |
| T33: Cellar access                                       | No cellar          | n/a         |                                       |
| T34: Vegetation cover                                    | None               | Low         |                                       |
| <b>F) CONTEXTUAL INFORMATION - INTERIOR</b>              |                    |             |                                       |
| T35: Unused rooms                                        | None               | Low         |                                       |
| T36: Cellar                                              | n/a                | n/a         |                                       |
| T37: Condition of walls and pointing/render in void      | Gappy              | Moderate    |                                       |
| T38: Dimensions in roof void(s)                          | n/a                | n/a         | No void                               |
| <b>G) CONTEXTUAL INFORMATION - SIGNS OF BATS</b>         |                    |             |                                       |
| T39: Dropping number                                     | None observed      | n/a         |                                       |
| T40: Dropping pattern                                    | None observed      | n/a         |                                       |
| T41: Dropping age                                        | None observed      | n/a         |                                       |
| T42: Oil staining or fur at potential access points      | None observed      | n/a         |                                       |
| T43: Urine staining                                      | None observed      | n/a         |                                       |
| T44: Bats                                                | None observed      | n/a         |                                       |
| T45: Scratch marks                                       | None observed      | n/a         |                                       |
| T46: Feeding remains                                     | None observed      | n/a         |                                       |
| T47: Bat noises                                          | None observed      | n/a         |                                       |
| <b>H) CONTEXTUAL INFORMATION - SIGNS OF BIRDS</b>        |                    |             |                                       |
| T48: Barn owl potential                                  | None observed      | Low         | No suitable access, no signs recorded |
| T49: Bird nests                                          | None               | Low         |                                       |
| BAT ROOST SUITABILITY =                                  | <b>Negligible</b>  |             |                                       |

## Appendix IV: Habitat Suitability Index Results

| Variable                            | Pond P1               |          |
|-------------------------------------|-----------------------|----------|
|                                     | Field score           | SI value |
| Location                            | A                     | 1        |
| Pond area (m2)                      | 500-700m <sup>2</sup> | 1        |
| Pond permanence                     | Never dries           | 0.9      |
| Water quality                       | Good                  | 1        |
| % shaded 1m from bank               | 0-60%                 | 1        |
| Fowl                                | Minor                 | 0.67     |
| Fish                                | Minor                 | 0.3      |
| Pond density (per km <sup>2</sup> ) | 0                     | 0.1      |
| Terrestrial habitat                 | Moderate              | 0.67     |
| Macrophyte cover %                  | 66-80%                | 1        |
| <b>HSI value</b>                    | <b>0.6494</b>         |          |
| <b>Suitability</b>                  | <b>Average</b>        |          |

*This page is intentionally blank.*

## **Appendix V: Plant Species which encourage Bats**

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

*This page is intentionally blank.*

| 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>Aluga reptans</i>             | Bugle                    | N      | HP   | C,F     | Any                     | Sun / shade           | Y                     |              |              |              |              |
| <i>Anthyllus 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 cinerea</i>             | Bell heather             | N      | S    | F       | Sandy                   | Full sun              |                       |              |              |              | Y            |
| <i>Erysimum cheiri</i>           | Wallflower               |        | Bi,F | F       | Well drained            | Sun                   |                       | Y            |              |              |              |
| <i>Eupatorium cannabinum</i>     | Hemp agrimony            | 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>Hyacinthoides 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>            | Lavender 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>Mysotis 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 |        | Ei   | 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 vera</i>              | Coxslop                  | N      | HP   | F       | Well drained/moist      | Sun / partial shade   | Y                     |              |              |              |              |
| <i>Primula vulgaris</i>          | Primrose                 | N      | HP   | F       | Moist                   | Partial 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>         | Scots 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</i> spp.              | 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 columbiana</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>Siene dioica</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>Symotrichum</i> spp.        | 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</i> spp.          | Clover species     | N      | HP     | F       | Any                    | Sun                   | Y                     |              |              |              |              |
| <i>Valeriana</i> spp.          | Valerian species   | N      | HP     | F       | Moist                  | Sun / partial shade   |                       |              | Y            |              |              |
| <i>Verbascum</i> spp.          | 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          | <b>Benefit:</b>                          |                                |  |
| 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 VI: 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 Birds Directive. 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 consolidate and update the Conservation of Habitats and Species Regulations 2010 and all its various amendments. The Regulations are the principal means by which Council Directive 92/43/EEC (The Habitats Directive) is 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 are, in conjunction with the European Commission, designated as Sites of Community Importance, which are subsequently identified as Special Areas of Conservation (SAC) by the European Union member states.

The Habitats Regulations also place a duty upon the government to maintain a register of European protected sites designated as a result of Council Directive 2009/147/EC on the Conservation of Wild Birds (The Birds Directive). These sites are termed Special Protection Areas (SPA) and, in conjunction with SACs, form a network of sites known as Natura 2000. The Habitats Directive introduces for the first time for protected areas, the precautionary principle; that is that

projects can only be permitted having ascertained no adverse effect on the integrity of the site. Projects may still be permitted if there are no alternatives, and there are imperative reasons of overriding public interest.

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 dunnoek *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 natrix*) 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 February 2019, 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 incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.

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***

Adopted Arun Local Plan 2011-2031 (July 2018) Section 17: Natural Environment

##### **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.

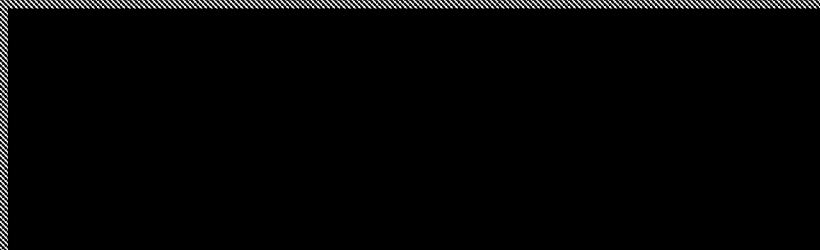
## Appendix VII: Legal and Technical Limitations

- 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.

*This page is intentionally blank.*

Urban Edge Environmental Consulting Ltd

Unit 5 | Westergate Business Centre | Brighton | BN2 4QW



## Urban Edge Environmental Consulting Ltd

Unit 5 | Westergate Business Centre | Brighton | BN2 4QN



© Urban Edge Environmental Consulting Ltd 2021



URBAN EDGE  
ENVIRONMENTAL  
CONSULTING

NATURAL PROGRESSION

