

Land East of Ford Road, Arundel.

Preliminary Ecological Appraisal

A Report for Mr T Luckin

April 2020



Land East of Ford Road,
Arundel.
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01 of 02

01 Mr T. Luckin

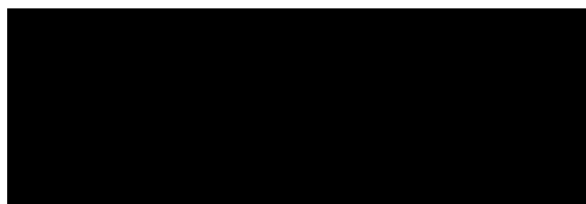
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*The content of this report is the responsibility of Greenspace Ecological Solutions Ltd.
It should be noted that whilst every effort has been made to meet the client's requirements, no site survey can ensure complete assessment or prediction of the changeable onsite environment. Furthermore, should more than 12 months elapse between the date of this survey and any subsequent development, it may be necessary to consider the need for an update survey to be undertaken.*

Report Number J20901

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1 PROJECT OVERVIEW

Client: Mr T. Luckin

Site Address: Land East of Ford Road, Arundel, BN18 0BH

Attending Ecologists: Martin Rann Qualifying CIEEM

Survey Date: 14th April 2020

Site Proposals: Construction of approximately 1 hectare of hardstanding.

Source of Relevant Documents:

Document:	Source:
Site Location Plan:	Google Earth Pro
Desk Study:	Sussex Biological Records Centre (SxBRC) Multi-Agency Geographic Information for the Countryside [REDACTED]
Site Plans:	N/A

2 INTRODUCTION

2.1 Context

- 2.1.1 In response to a proposed development at the Land East of Ford Road, Arundel a Preliminary Ecological Appraisal (PEA) has been undertaken of the land to be affected (henceforth referred to as 'the Site'), the Site's potential to support protected species and habitats has been assessed and appropriate recommendations have been provided.

2.2 Site Location

- 2.2.1 The site is situated approximately 0.5km north of the village of Ford, Arundel at Ordnance Survey (OS) Grid Reference: TQ 00303 04129. The location of the site is depicted in Image 1.



Image 1. Geographical Location of the Land East of Ford Road.

2.3 Site Description

- 2.3.1 The Site is approximately 3.25 hectares (ha) in area and comprises a large field separated by two hedgerows across the centre. The Site is bordered by hedgerows and fences. Pockets of scrub and tall ruderal are present along with a concrete pillbox located roughly in the centre of the Site.
- 2.3.2 The surrounding landscape is predominantly arable land with the village of Ford some 0.5km to the South while the urban sprawl of Littlehampton lies 1.5km to the south east. The river Arun runs adjacent to the site's eastern boundary. Grazing pasture scattered rural dwellings

and woodland blocks which are interconnected with hedgerows exist within the wider landscape.

2.4 Policies and Legislation

Legislation

2.4.1 The main legislation that applies to ecological issues within England and Wales are:

- ✦ The Conservation of Habitat and Species Regulations 2019 (as amended) transposes European Union Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive) into national law. These regulations provide for the designation and protection of 'European Sites', the protection of 'European Protected Species' and the adaptation of planning controls for the protection of such sites and species. Under the regulations, public bodies have a duty in exercising their functions to have regard to the EC Habitats Directive.
- ✦ The Wildlife and Countryside Act 1981 (as amended) provides detail on a range of protection and offences relating to wild birds, other animals, and plants. The level of protection depends on which Schedule of the Act the species is listed on. Licences are available for specific purposes to permit actions that would otherwise constitute an offence in relation to species.
- ✦ The Natural Environment and Rural Communities (NERC) Act 2006 imposes an obligation on all public bodies, including local authorities, to consider whether their activities can contribute to the protection of wildlife. The duty is created by section 40(1) of the Act, which states that: "Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity."
- ✦ The Hedgerows Regulations Act 1997 serves to; enforce under the Environment Act 1995, restrict the removal of hedgerows, or parts of hedgerows which are over 20m in length. In this case, removal includes digging up and replanting elsewhere, as well as removing from the land completely or destroying in the course of other actions. This includes developments or activities which destroy the roots, causing the vegetation to die.
- ✦ The Protection of Badgers Act 1992 exists to protect badgers *Meles meles* from cruelty. Under the act it is a criminal offense to wilfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so, or to intentionally or recklessly interfere with a sett.

2.4.2 The above summary serves as guidance only – the reader is referred to the original legislation for definitive interpretation.

UK Planning Policy

2.4.3 The recommendations of this report are in line with the key principles of the National Planning Policy Framework (NPPF), 2019 and Government Circular 06/05.

2.4.4 Local planning policies relating to ecology are invariably based on the conservation of species protected under the above legislation, including species and habitats of principal importance (HPI) listed under Section 41 of the NERC Act 2006; and the protection of designated sites. All these features are considered within the scope of this PEA and therefore any recommendations made herein are likely to be in line with this policy.

2.5 **Objectives of the Survey**

2.5.1 The objectives of the survey were to:

- ✦ Classify the main habitats present within the site;
- ✦ Evaluate the ecological importance of these habitats;
- ✦ Assess buildings and trees for their potential to support roosting bats;
- ✦ Evaluate the potential for other protected species to occur within the site; and
- ✦ Provide appropriate recommendations for further surveys and mitigation where required.

2.6 **Survey Constraints**

2.6.1 All measurements and indications of area given within this report are approximate.

3 SURVEY METHODOLOGY

3.1 Desk Study

3.1.1 A desk study was undertaken to determine the presence of sites and habitats of conservation importance together with historical records of protected and notable species within a 2km radius of the site.

3.1.2 The following bodies were consulted for the desk study:

- ✦ Magic.gov.org
- ✦ Sussex Biological Records Centre (SxBRC)

3.2 Preliminary Ecological Appraisal

Habitats

3.2.1 The Site was surveyed using the methodology outlined in 'The Handbook for Phase I Habitat Survey: A Technique for Environmental Audit' (JNCC, 2010). This involves identifying the main plant communities present on the site and classifying the habitat types following the JNCC methodology. This technique provides an inventory of the basic habitat types present and enables areas of greater botanical interest which may require further, more detailed, surveys to be identified. Any occurrences of recognised invasive species as listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) were also noted.

3.2.2 A map of the habitats and areas of interest (using a variation of the JNCC, 2010 protocol for Phase I Habitat plans) is provided in Figure 1. Photographs of features of interest are presented in Appendix A.

3.2.3 The survey identified the main plant communities present on the site, with abundance of identified characterising species noted according to the DAFOR scale. Classification of the habitat types also follows the Phase I Habitat Survey methodology.

3.2.4 The DAFOR scale characterises species abundance as Dominant (D), Abundant (A), Frequent (F), Occasional (O) or Rare (R). These scores represent the abundance within the defined area only and do not reflect national or regional abundances. Botanical species nomenclature follows Stace (2019).

3.2.5 Application of the above technique provides an inventory of the basic habitat types present and enables areas of greater botanical interest which may require further, more detailed, surveys to be identified.

Protected Species

- 3.2.6 The survey was extended to include an assessment of the site's potential to support protected and notable species. This involved assessing the suitability of the habitats present within the site for these species as well as connectivity to the site from other areas of potentially suitable habitat nearby.

Badger

- 3.2.7 Evidence of badger activity within and adjacent to the site was assessed by searching for:
- ✧ Presence of setts, indicated by suitably sized holes or burrows;
 - ✧ Evidence of badger hair and/or footprints;
 - ✧ Evidence of well-used runs supported by secondary evidence such as foraging signs or footprints; and
 - ✧ Presence of badger latrines.

Bats

- 3.2.8 Where buildings, trees or other structures are present, specific survey work was undertaken to assess their suitability to support roosting bats. In this instance, a variety of equipment was used to complete the bat scoping survey, including high powered torches, telephoto lens cameras and a ladder.
- 3.2.9 Any trees within the site, which were deemed likely to be affected by the development, were surveyed in accordance with current best practice guidance (Collins, 2016). Trees were inspected for features such as splits, fissures, delaminated bark, heavy ivy *Hedera* sp. cover and woodpecker holes. Evidence such as droppings, staining and bats themselves were searched for below and within suitable features.
- 3.2.10 Where buildings were encountered, a full external and internal inspection was undertaken (access permitting). Any likely roosting or access points for bats such as raised fascia boards, missing/lifted tiles cracks or crevices in brick/blockwork and gaps in soffit boxes were recorded and searched for evidence of use by bats (staining, droppings, scratch marks, or the bats themselves).
- 3.2.11 The results of the scoping survey enable buildings and trees to be categorised as having 'Confirmed roosts'; or 'High', 'Moderate', 'Low' or 'Negligible' suitability to support roosting bats. An outline of categorisation procedure for classifying bat suitability is presented in Appendix B.
- 3.2.12 In accordance with current best practice guidance (Collins, 2016), the level of suitability

determines the need or not for further summer emergence surveys. Although left to the discretion of the appointed ecologist, in most instances High suitability requires three surveys, Moderate suitability requires two surveys and Low suitability requires one evening emergence or pre-dawn re-entry survey(s) (although trees with Low suitability do not require further emergence or pre-dawn re-entry surveys). Greater detail on the minimum number of surveys recommended in most instances is presented in Appendix C.

Birds

- 3.2.13 The site was assessed for its potential to support nesting bird species. Factors considered include suitable cover and feeding habitat, as well as any active or disused birds' nests.

Hazel Dormouse

- 3.2.14 The site was surveyed for suitable hazel dormouse *Muscardinus avellanarius* habitat, such as the presence of a well-connected understorey broadleaf habitat, hedgerows, and suitable food sources such as oak *Quercus* sp., hazel *Corylus avellana* and other nut-bearing trees, fruiting trees and shrubs, flowers and invertebrates.

Great Crested Newt

- 3.2.15 The site was assessed for its potential to support great crested newt (GCN) *Triturus cristatus* populations. Suitable terrestrial habitat for great crested newt includes long grass, tall ruderal, woodland and hedgerow borders, as well as wood and rubble piles that act as hibernacula.
- 3.2.16 Waterbodies within 250m of the Site were also searched for using aerial mapping and subsequently assessed using an adaptation of the Habitat Suitability Index (HSI) methodology (Oldham *et al.*, 2000).
- 3.2.17 Where present, an assessment of the waterbodies suitability to support GCN was undertaken using a simplified version of the HSI methodology developed by Oldham *et al.* (2000). The HSI incorporates ten suitability indices, all of which are factors considered to affect GCN. The ten indices assessed are:
- ✧ Location (within Britain);
 - ✧ Pond area (m²);
 - ✧ Desiccation rate (years out of ten that each pond dries);
 - ✧ Water quality (subjective assessment);
 - ✧ Percentage of pond that is shaded (subjective assessment);
 - ✧ Presence of waterfowl;
 - ✧ Presence of fish;

- ✦ Number of other waterbodies within 1km;
- ✦ Terrestrial habitat quality; and
- ✦ Percentage of macrophyte cover (May-Sep) (subjective assessment).

3.2.18 The results of the HSI provide a numerical index between '0' and '1', where '0' indicates unsuitable habitat and '1' represents optimal habitat. A score of ≥ 0.5 is considered indicative of a pond that may support a population of GCN. The details of the HSI scoring criteria are provided in Table 1. The full results are presented in Figure 2.

3.2.19 The locations and suitability of the surveyed waterbodies are depicted in Figure 1.

Table 1 – GCN HSI scoring criteria

HSI Score	Waterbody Suitability for GCN
< 0.5	Poor
0.5 – 0.59	Below Average
0.6 – 0.69	Average
0.7- 0.79	Good
> 0.8	Excellent

Reptiles

3.2.20 The site was assessed for its potential to support reptile populations. Suitable habitat for reptiles includes long grass, deciduous woodland, woodland and hedgerow borders, as well as wood and rubble piles that act as hibernacula.

Other Species

3.2.21 Consideration was given to the site's suitability to support other protected and notable species.

4 SURVEY RESULTS

4.1 Desk Study

Statutory Designated Sites

- 4.1.1 The site lies neither within or adjacent to any statutory designated areas.
- 4.1.2 The nearest statutory designated site is that of The South Downs National Park which lies some 1.8km north west of the Site.

Non-statutory Designated Sites

- 4.1.3 Two non-statutory designated sites were identified within 2km of the site, as presented in Table 2.

Table 2 – Non-statutory designated sites within 2km of the site.

Site Name	Designation	Approximate Distance and Direction	Classification Criteria
Binstead Wood Complex	LWS	0.8 km NE	Mixture of woodland including Ancient Woodland
A259 Eldon Way	DRV	1.6 km SE	N/A

*(LWS – Local Wildlife Site)
(DRV – Designated Road Verge)*

Ancient Woodland

- 4.1.4 5 areas of ancient woodland were identified within 2km of the site. The closest is an unnamed block of ancient semi natural woodland located 0.4 km north west of the site.

NERC s41 Habitats of Principal Importance

- 4.1.5 Habitats listed under s41 of the NERC Act (2006) within 2km of the site are presented in Table 3.

Table 3 – NERC s41 HPI within 2km of the site.

Habitat Type	Distance and direction from site
Coastal and Floodplain Grazing Marsh	Within Site
Mudflats	0.1 km NE
Coastal Saltmarsh	0.2km SE
Deciduous Woodland	0.4 km NW
Traditional Orchards	0.9 km N
Woodpasture and Parkland	1.8 km NW

Protected or Notable Species

Bats

- 4.1.6 Bat species of conservation concern of potential relevance to the site are provided in Table 4.

Table 4 - Bat species records within 5km of the site.

Common Name	Scientific Name	Legal Protection / Conservation Priority Status
Western barbastelle	<i>Barbastella barbastellus</i>	Hab Reg Sch2, WCA Sch5 s9.4b/s9.4c/s9.5a, NERC S41
Serotine bat	<i>Eptesicus serotinus</i>	Hab Reg Sch2, WCA Sch5 s9.4b/s9.4c/s9.5a
Daubenton's bat	<i>Myotis daubentonii</i>	Hab Reg Sch2, WCA Sch5 s9.4b/s9.4c/s9.5a
Natterer's bat	<i>Myotis nattereri</i>	Hab Reg Sch2, WCA Sch5 s9.4b/s9.4c/s9.5a
Leisler's bat	<i>Nyctalus leisleri</i>	Hab Reg Sch2, WCA Sch5 s9.4b/s9.4c/s9.5a
Noctule bat	<i>Nyctalus noctula</i>	Hab Reg Sch2, WCA Sch5 s9.4b/s9.4c/s9.5a, NERC S41
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	Hab Reg Sch2, WCA Sch5 s9.4b/s9.4c/s9.5a, NERC S41
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	Hab Reg Sch2, WCA Sch5 s9.4b/s9.4c/s9.5a, NERC S41
Brown Long-eared bat	<i>Plecotus auritus</i>	Hab Reg Sch2, WCA Sch5 s9.4b/s9.4c/s9.5a, NERC S41

Other Mammals

- 4.1.7 Mammals of conservation interest of potential relevance to the site are presented in Table 4.

Table 5 – Other mammal species records within 2km of the site.

Common Name	Scientific Name	Legal Protection / Conservation Priority Status	Closest record	Date
European Water Vole	<i>Arvicola amphibius</i>	WCA Sch5 s9.4a/s9.4b/s9.4c, NERC S41	0.2km S	2011
West European Hedgehog	<i>Erinaceus europaeus</i>	Bern_III, NERC S41	0.6km SW	2015
Eurasian Badger	<i>Meles meles</i>	Bern_III, Badger Act	Confidential	Confidential
Hazel Dormouse	<i>Muscardinus avellanarius</i>	Hab Reg Sch2, WCA Sch5 s9.4b/s9.4c/s9.5a, NERC S41	1.8 km NW	2019

Birds

- 4.1.8 Bird species of conservation interest of potential relevance to the site are presented in Table 6.

Table 6 – Relevant bird species records within 2km of the site.

Common Name	Scientific Name	Legal Protection / Conservation Priority Status
Skylark	<i>Alauda arvensis</i>	BAP; Berne:A3; BoCC4:Red; BirdsDir:A2.2; S41
Meadow Pipit	<i>Anthus pratensis</i>	Berne:A2; BoCC4:Amber
Short eared Owl	<i>Asio flammeus</i>	Birds Dir A1 Bird Amber, Notable Bird
Linnet	<i>Carduelis cannabina</i>	BAP; Berne:A2; BoCC4:Red; S41
Cuckoo	<i>Cuculus canorus</i>	BAP; Berne:A3; BoCC4:Red; S41;
Corn Bunting	<i>Emberiza calandra</i>	UK BAP Priority, Bird Red, Notable Bird, S41
Yellowhammer	<i>Emberiza citrinella</i>	BAP; Berne:A2; BoCC4:Red; S41
Kestrel	<i>Falco tinnunculus</i>	BoCC4 Amber; Notable Bird
Swallow	<i>Hirundo rustica</i>	Berne:A2; BoCC4:Green
Yellow Wagtail	<i>Motacilla flava</i>	BAP; Berne:A2; BoCC4:Red; S41
Grey Partridge	<i>Perdix perdix</i>	UK BAP Priority, Bird Red, Notable Bird, S41
Marsh Tit	<i>Poecile palustris</i>	UK BAP Priority, Bird Red, Notable Bird, S41
Duncock	<i>Prunella modularis</i>	UK BAP Priority, Bird Amber, Notable Bird, S41
Firecrest	<i>Regulus ignicapilla</i>	WCA Sch1 Pt1, Notable Bird
Redshank	<i>Tringa totanus</i>	Bird Amber, Notable Bird.
Fieldfare	<i>Turdus pilaris</i>	WCA Sch1 Pt1 Bird Red
Barn Owl	<i>Tyto alba</i>	Berne:A2; BoCC4:Green; ECCITES:A; WCA1
Lapwing	<i>Vanellus vanellus</i>	UK BAP Priority, Bird Red, Notable Bird, S41

Herpetofauna

- 4.1.9 Herpetofauna species of conservation concern of potential relevance to the site are presented in Table 7.

Table 7 – Herpetofauna species records within 2km of the site.

Common Name	Scientific Name	Legal Protection / Conservation Priority Status	Closest record	Date
Slow Worm	<i>Anguis fragilis</i>	Bern_III, WCA Sch5 s9.1/s9.1 kill/s9.5a, NERC S41	On Site	2020
Grass snake	<i>Natrix helvetica</i>	Bern_III, WCA Sch5 s9.1/s9.1 kill/s9.5a, NERC S41	On Site	2020

Common Name	Scientific Name	Legal Protection / Conservation Priority Status	Closest record	Date
Common lizard	<i>Zootoca vivipara</i>	Bern_III, WCA Sch5 s9.1/s9.1 kill/s9.5a, NERC S41	On Site	2020
Great Crested Newt	<i>Triturus cristatus</i>	ECH_II, Bern_II, WCA5, CRoW	2 km W	2017
Adder	<i>Vipera berus</i>	WCA Sch5 s9.1/s9.1 kill/s9.5a, NERC S41	1.5 km NW	2014

4.2 Preliminary Ecological Appraisal

4.2.1 The following habitat types were recorded within the site:

- ✧ Semi-improved grassland
- ✧ Scrub
- ✧ Tall ruderal
- ✧ Hedgerows
- ✧ Scattered trees
- ✧ Bare ground
- ✧ Hardstanding
- ✧ Buildings

Semi-improved grassland

4.2.2 An area of rough unmanaged semi improved grassland dominates the site. Covering some 2.15ha, grass species present include dominant annual meadow grass *Poa annua* and cocksfoot *Dactylis glomerata*, and abundant red fescue *Festuca rubra* along with frequent meadow foxtail *Alopecurus pratensis*. Herbaceous species include abundant ground ivy *Glechoma hederacea*; frequent common dandelion *Taraxacum officinale*, cow parsley *Anthriscus sylvestris* and sheep sorrel *Rumex acetosella*; occasional broadleaf plantain *Plantago major*, cinquefoil *Potentilla sp.*, cleavers *Galium aparine*, hogweed *Heracleum sp.*, common nettle *Urtica dioica*, white dead nettle *Lamium album*, common vetch *Vicia sativa* and yarrow *Achillea millefolium*; and rarely occurring bramble *Rubus fruticosus*, geranium *geranium sp.*, lords and ladies *Arum maculatum*, ribwort plantain *Plantago lanceolata* and teasel *Dipsacus sp.* Pockets of locally abundant creeping buttercup *Ranunculus repens*, with locally frequent field speedwell *Veronica persica* and field wood rush *Luzula campestris* are also present.

4.2.3 Piles of rocks extend along the northern boundary fence line, denoted target note 1 (TN1) in

Figure 1. An additional rubble pile is also located in south western corner of the grassland denoted TN2 in Figure 1.

Scrub

- 4.2.4 Pockets of scrub of varying sizes are present along the boundaries and hedgerows of the Site. Species present include dominant bramble. Ground cover beneath the bramble scrub comprises, abundant annual meadow grass and cocksfoot, frequent broad-leaved dock, cow parsley and common nettle, with occasional cleavers, hogweed, lords and ladies and white dead nettle, locally abundant ground ivy and rarely occurring Spanish bluebell *Hyacinthoides hispanica*.

Tall Ruderal

- 4.2.5 A large earthen bank created from clearance work is present at the site entrance it is now completely vegetated with the following species. Dominate common nettle. Abundant annual meadow grass, cleavers and white dead nettle. Frequent bristly ox tongue *Helminthotheca echioides*. Occasional broad-leaved dock *Rumex obtusifolius*, curly dock *Rumex crispus*, garlic mustard *Alliaria petiolata*, common poppy *Papaver rhoeas* and spear thistle *Cirsium vulgare*. With rarely occurring common gorse *Ulex europaeus*, prickly sow thistle *Sonchus asper*, red campion *Silene dioica*. Locally abundant bramble, butterfly bush *Buddleja sp.*, ground ivy, red dead nettle *Lamium purpureum*, sheep sorrel and yarrow.
- 4.2.6 A pile of large timber is present on the north eastern side of the bank denoted TN3 in figure 1.
- 4.2.7 Additional pockets of tall ruderal exist within the Site. Consisting of the following species: Dominant common reed *Phragmites australis*, hairy willow herb *Epilobium hirsutum* and common nettle; frequent butterfly bush and bramble; occasional ground ivy with locally abundant red fescue and occasional cocksfoot.
- 4.2.8 Additionally, within the isolated patch of tall ruderal within the grassland is a spoil heap denoted TN7 in figure 1.
- #### *Hedgerows*
- 4.2.9 Denoted H1 – H4 in Figure 1 and located on the southern and western Site boundaries as well as crossing the Site centrally, hedgerows are described below.
- 4.2.10 H1 is approximately 8m wide x 6m high x 135m in length. Species present comprise dominant elder *Sambucus nigra* trees with an understorey consisting of common ivy *Hedera helix*, lords and ladies, common nettle and cleavers.

4.2.11 H2 is approximately 10m wide x 6m high x 125m in length. Species present comprise dominant elder with an understorey consisting of bramble, common ivy *Hedera helix*, lords and ladies, common nettle and cleavers.

4.2.12 H3 is approximately 8m wide x 5m high x 60m in length. Species present comprise dominant elder trees with an understory consisting of bramble, common ivy *Hedera helix*, lords and ladies, common nettle and cleavers.

4.2.13 H4 is approximately 13m wide x 6m high x 220m in length. Species present comprise dominant elder with occasional blackthorn *prunus spinosa*, hawthorn *Crataegus monogyna* and common privet *Ligustrum vulgare* with an understory consisting of bramble, common ivy *Hedera helix*, lords and ladies, common nettle and cleavers.

Scattered trees

4.2.14 Scattered trees exist sparsely within the Site consisting of occasional ash *Fraxinus excelsior*, elder and hawthorn.

Bare ground

4.2.15 Bare ground is present at the entrance to the Site covering 0.04ha. Sparse vegetation is encroaching into the bare ground from the vegetated earthen bank and consist of the following: occasional bristly ox tongue, broad-leaved dock, burdock *Arctium sp.*, common dandelion, hogweed, moss *Bryophyta sp.*, common thistle and white dead nettle.

Hardstanding

4.2.16 An area of hardstanding making up an electricity sub-station surrounded by security fencing is present on the western boundary. No botanicals are present.

Buildings

4.2.17 Comprising a single concrete pillbox, denoted building B1 in Figure 1, a more detailed description and an assessment into this structure's potential to support roosting bats is presented in Section 4.3 below.

4.3 Protected Species

Badgers

4.3.1 The habitats within the Site provide suitable sett creation, foraging and commuting habitats for badger and evidence of the Site's potential use by badgers was recorded during the survey.

4.3.2 Denoted TN4 in Figure 1, two well used mammal holes suitable in size to be used by badgers were identified on the southern side of the concrete pillbox. Mammal paths extend away from the entrances and the burrows from each of the two holes extend in a northern direction

toward the pillbox.

Bats Roosting Habitat - Buildings

Building B1 – The Pillbox

- 4.3.3 Denoted B1 in Figure 1, the pillbox has a footprint of c. 20m² and is constructed from concrete. The structure is open to the elements from two large openings and is well lit by daylight. The structure supports no suitable roosting features for bats.

Bats Roosting Habitat - Trees

- 4.3.4 No suitable trees for roosting bats were present within the Site.

Bats - Foraging and Commuting Habitat

- 4.3.5 The hedgerows within and along the borders of the Site provide suitable commuting habitat, while the scrub, tall ruderal, vegetated earthen bank and grassland provide suitable foraging habitat for bats. Connectivity to the wider landscape also exists in the form of interconnecting hedgerows and blocks of woodland and the adjacent river Arun.
- 4.3.6 In addition, immediately adjacent to the north east of the Site is a barn owl pole box with 2 bat boxes identified hanging below the barn owl box denoted, TN5 in Figure 1.

Birds

Barn Owl

- 4.3.7 Immediately adjacent to Site to the north east are two barn owl *Tyto alba* boxes on poles denoted TN5 and TN6 in figure 1. It should be noted that the grassland within the Site is favourable type 1 foraging habitat (Shawyer and Dixon 1999) for barn owls which are a Schedule 1 bird.
- 4.3.8 Communications with the neighbouring landowner suggest the boxes are occupied by a pair of barn owls.

Other Bird Species

- 4.3.9 Suitable nesting habitat is present in the form of dense scrub, tall ruderal, semi improved grassland, hedgerows, scattered trees and building. Dunnock *Prunella modularis*, kestrel *Falco tinnunculus* and goldfinch *Carduelis carduelis* were observed using the Site.

Hazel Dormouse

- 4.3.10 The dense scrub and hedgerows lack connectivity to areas of suitable dormouse habitat within the wider landscape and no evidence of this species was recorded within the Site.

Great Crested Newts

- 4.3.11 Suitable terrestrial habitat for GCN exists in the form of tussock semi-improved grassland,

rubble piles, spoil heap, hedgerows, tall ruderal and scrub.

- 4.3.12 Four waterbodies were identified within 250m of the Site and where accessible, were subject to HSI assessment. A summary of the survey results is presented below. The HSI calculations are presented in Appendix D.

Waterbody 1 (WB1)

- 4.3.13 Located adjacent south of the Site, WB1 is a ditch running through the southern hedgerow. It was dry at the time of survey. The overall HSI score is **0.59** which is considered '**Below Average**' for its suitability to support GCN.

Waterbody 2 (WB2)

- 4.3.14 Located adjacent west of the Site, WB2 is a ditch running through the western hedgerow. It was dry at the time of survey. The overall HSI score is **0.59** which is considered '**Below Average**' for its suitability to support GCN.

Waterbody 3 (WB3)

- 4.3.15 Located 164m west of the Site. WB3 is a stream with a moderate flow surrounded by well-managed grassland. Due to the flowing nature of the stream it is unsuitable to support GCN. This is further supported by its HSI score of **0.37**, which is considered '**Poor**' for its suitability to support GCN.

Waterbody 4 (WB4)

- 4.3.16 Located 120m north east of the Site. WB4 is an environmental agency flood storage waterbody that contains a large drainage pipe in the centre which is connected to the river Arun. Surrounded by well-managed residential gardens and arable land, it was dry at the time of survey and considered unsuitable to support GCN. This is further supported by its HSI score is **0.39** which is considered '**Poor**' for its suitability to support GCN.

Reptiles

- 4.3.17 Suitable terrestrial habitat for reptiles exists in the form of tussock semi-improved grassland, rock and rubble piles, hedgerows, tall ruderal and scrub.
- 4.3.18 Two slow worms *Anguis fragilis*, a grass snake *Natrix helvetica* and a common lizard *Zootoca vivipara* were identified during the survey within the scrub and tall ruderal.

European Water Vole

- 4.3.19 No watercourses suitable to support European water vole exist within the Site.

Other Protected Species

- 4.3.20 The Site and surrounding habitats are considered suitable to support the priority species of

European hedgehog *Erinaceus europaeus*.

- 4.3.21 Beyond those noted above, the survey identified no evidence of protected or notable species with the Site.

5 CONCLUSIONS AND RECOMMENDATIONS

5.1 Designated Areas

- 5.1.1 There are is one designated area within 2km of the Site, The South Downs National Park lies 1.8km north west of the Site
- 5.1.2 Two non-statutory designated sites exist within 2km of the site Binstead Wood Complex LWS 1.8km north west of the Site and A259 Eldon Way DRV 0.6km SE of the Site.
- 5.1.3 Due to the distance from the Site and small scale of the proposed development, no further consultation with Natural England upon the potential impacts of the proposed development on designated sites are required and no detrimental impacts will result to this or any other designated sites.
- 5.1.4 Additionally, due to the proximity of the site to river Arun a pollution prevention strategy should be implemented to prevent run off which could impact designated sites downstream.

5.2 Ancient Woodland

- 5.2.1 The closest area of ancient woodland lies 0.4km north west of the Site. Guidance from Natural England and the Forestry Commission state that no development should occur within 15m of an ancient woodland. The proposed development lies beyond 15m and no detrimental impacts to this or any other area of ancient woodland will result from the proposed.

5.3 Habitats and Botanical Species of Interest

- 5.3.1 The majority of the Site comprises the NERC s41 Habitat of Principal Importance (HPI) "*Coastal Floodplain and Grazing Marsh*". The proposed development will therefore result in the loss/detrimental impact to an HPI as listed under s41 of the NERC Act (2006) and consideration to the mitigation hierarchy of Avoid, Mitigate, Compensate will be required.
- 5.3.2 To avoid impacts through factors such as root compaction and/or collision, trees to be retained should be protected in accordance with BS 5837:2012, 'Trees in relation to design, demolition and construction.'
- 5.3.3 To compensate their loss, any trees to be removed should be replaced with a native species of value to ecology. Such species include but are not restricted to; field maple *Acer campestre*, silver birch *Betulus pendula*, wild cherry *Prunus avium*, crab apple *Malus sylvestris* and rowan *Sorbus aucuparia*.

5.4 Protected Species

Badger

5.4.1 The presence of mammal holes sufficient in size to be in use by badgers, suggest potential of a badger sett within the Site.

5.4.2 To avoid impact to badgers and their setts, development of the Site should ensure no works are conducted within 30m of the potential sett. Should works within 30m be required, further survey to confirm the presence / likely absence of badgers should be conducted.

Bats Roosting Habitat – Buildings

5.4.3 The single building B1 within the Site has been deemed of ‘**Negligible**’ suitability to support roosting bats and no further surveys for bats are required of this structure.

Bats Roosting Habitat - Trees

5.4.4 No suitable trees for roosting bats were present within the Site and no further surveys for roosting bats in tree are required.

Bats - Foraging and Commuting Habitat

5.4.5 The development will not result in the loss of commuting features but will affect a large area of foraging habitat.

5.4.6 To mitigate this loss, additional foraging and commuting features in the form of species rich native boundary hedgerow are recommended along the eastern boundary in the proposed planting plan. Additionally, the proposed planting plan should provide planting palettes considerate to the requirement of invertebrates and subsequently bats. Through application of mitigation, the impact of the proposed development upon foraging and commuting bats is anticipated to be negligible and no further bat activity surveys are required.

5.4.7 It is understood that no lighting is required to facilitate the proposals. However, since lighting can be detrimental to bats using vegetation for foraging and commuting, should any external lighting be proposed for the development should be sensitive to the boundaries and commuting features noted above, avoiding direct illumination of them through the use of directional and low-level bollard lighting. The Institution of Lighting Professionals (ILP), in partnership with the Bat Conservation Trust (BCT), has published guidance relating to bats and lighting – this is available at the following link: [Guidance Note 8 Bats and Artificial Lighting](#).

5.4.8 Should the existing plans change to include lighting which does not adhere to the above, then the need for bat activity surveys should be further considered.

*Birds**Barn Owl*

5.4.9 The two barn owl boxes adjacent to the Site to the north east have been suggested as occupied by a pair of barn owls by the landowners. The Site itself contains type 1 foraging habitat which is extremely valuable for barn owls as they require between 14 and 47 hectares of rough grassland within 2km of suitable nesting and roosting sites. In order to mitigate for the loss of this habitat following construction a hectare of replacement rough grassland should be created within the Site and follow the management strategy outlined below enhance the newly created grassland for barn owls.

5.4.10 The most important aspect of managing rough grassland is not to disturb the litter layer which is the perfect environment for mammals, reptiles and invertebrates. However, grassland that is never cut or grazed will gradually become over-grown by brambles and scrub, and eventually trees, therefore management is essential in the long term.

- ✧ Low density cattle grazing is often the best form of management. However, it is important not to over-graze which would destroy the litter layer altogether.
- ✧ Topping the grass to a height of no less than 130mm every other year is an alternative method or small sites can be 'topped' using a brushcutter, strimmer or scythe.
- ✧ Another option is in late July or August to cut alternate strips across the field to a height of about 80mm. The following year cut the other strips in the same way, so each strip is cut every two years.
- ✧ The rough grass banks of drainage ditches should be cut alternately to a height of not less than 80mm.
- ✧ Areas next to hedges should be left to grow long and other areas mown once or twice a year, with the cuttings removed. This prevents a build-up of nutrients which causes coarser weeds to smother the more delicate wildflowers.
- ✧ Reducing the number of cuts has benefits for wildlife as well as delaying the cut until late summer. This allows plants to set seed and avoids conflicts with other wildlife interests such as invertebrates and nesting birds.

Other Birds of Conservation Interest –

5.4.11 As the dominant habitat on Site, the NERC s41 Habitat of Principal Importance "*Coastal Floodplain and Grazing Marsh*" is an important habitat to breeding waders and farmland birds. The Site also occupies an area deemed by the RSPB as part of the Bird Conservation Targeting Project for farmland and grassland birds. Records of species of conservation concern for this

area include Corn Bunting, Grey Partridge, Lapwing and Yellow Wagtail. Records of these species breeding were returned in the data search.

5.4.12 To determine the extent of the nesting bird assemblage, it is likely that a breeding bird survey will be required to inform the application.

5.4.13 In addition, suitable nesting habitat exists in the form of hedgerows, scattered trees, building and dense scrub. As all nesting birds are protected under the Wildlife and Countryside Act 1981 (as amended) it is recommended that works to these areas (where necessary) are conducted outside the core breeding period for birds of Late February – August inclusive.

5.4.14 Should this timeframe be unobtainable, a thorough search for the presence of nesting birds should be conducted by a suitably experienced ecologist prior to the start of works. Should evidence of nesting birds be recorded, works within 5m of the nest, or works that have potential to destroy the nest, should stop until the eggs have hatched and the chicks fledged, or the nest is deemed by a suitably experienced ecologist to have been abandoned.

Hazel Dormouse

5.4.15 Due to the isolated nature of suitable dormouse habitat within the Site, hazel dormice are considered to be likely absent from the Site and no further surveys for dormice are required.

Great Crested Newts (GCN)

5.4.16 Although suitable terrestrial habitat is present for GCN, the site and surroundings lack the network of suitable waterbodies that the species requires to breed. The four waterbodies present within 250m are considered unsuitable, therefore further consideration to GCN is not required.

Reptiles

5.4.17 The survey identified areas of suitable habitat for reptiles in the form of semi-improved grassland and scrub as well as suitable hibernacula in the form of rock and rubble piles, as well as direct evidence of reptile presence.

5.4.18 All UK native reptile species are protected under the Wildlife and Countryside Act 1981 (as amended) from killing and injury amongst other offences. As the proposed works will result in the loss of suitable habitat for reptiles, further surveys for reptiles will be required prior to the start of work, to provide an estimate of numbers of reptiles within the site and inform a suitable mitigation strategy.

5.4.19 Reptile surveys involve a minimum of seven visits undertaken by a suitably qualified ecologist, typically between late March and early October depending on the weather conditions. The

surveys must be undertaken in suitable weather conditions and should avoid prolonged periods of particularly hot or cold weather.

- 5.4.20 To avoid harm or injury to reptiles, no works that are likely to impact on habitats suitable to support reptiles can take place until these surveys have been completed and any necessary mitigation implemented.

European Water Vole

- 5.4.21 No habitat suitable to support European water vole are to be affected and no further consideration to water vole is required.

Other species

- 5.4.22 Although none were recorded, the Site supports habitat suitable to support the priority species of European hedgehog. To compensate the loss of this habitats it is recommended that a single hedgehog box be installed within vegetated areas of the Site.
- 5.4.23 Beyond those noted above, there are no obvious and immediate issues regarding other protected species on the Site and no further surveys to determine the presence of other protected species is required in this instance. However, should at any point during the development a protected or notable species be identified within the Site, then all works should **stop**, and the appointed ecologist consulted on the appropriate manner in which to proceed.

6 ECOLOGICAL ENHANCEMENTS

6.1 Opportunities to include biodiversity enhancements within the proposed development and landscaping exist and in accordance with the requirements of the NPPF 2019, the following recommendations are considered appropriate for the Site:

- ✦ The installation of bat boxes on suitable trees would increase the Site's potential for roosting bats. These boxes should be installed at a height of 3m or more on sunny, sheltered aspects, away from direct illumination by artificial lighting and in a location, which ensures connectivity to foraging habitats within the wider landscape. In this instance, Boxes such as the Kent Bat box or Schwegler 2FN (or similar) are recommended for installation within trees.
- ✦ The installation of bird boxes in suitable locations within the Site on suitable trees would increase the Site's potential for nesting birds. Tree mounted boxes should be selected from a range of open fronted and closed (with a hole) fronted boxes such as those available from The Nest Box Company.
- ✦ The incorporation of a wildlife-friendly planting scheme within the grounds post-development, using native fruiting and flowering plant species, would be of benefit to invertebrates, and subsequently birds and bats. It is recommended that any hedgerow / woodland edge mix enhancements utilise a mix of native species to maximise biodiversity.

6.2 Any tree planting should also use native species, for field maple *Acer campestre*, silver birch *Betulus pendula*, wild cherry *Prunus avium*, crab apple *Malus sylvestris* and rowan *Sorbus aucuparia*.

7 SUMMARY

- 7.1 In response to the proposed development at the Land East of Ford Road Site has been subject to a Preliminary Ecological Appraisal. The Site's potential to support protected species and habitats was assessed and where required recommendations for further surveys/ mitigation have been provided
- 7.2 Development of the Site will result in no detrimental impact to designated sites or areas of ancient woodland.
- 7.3 The NERC s41 Habitat of Principle Importance "*Coastal Floodplain and Grazing Marsh*" will be affected by the development in the form of habitat loss and consideration to the mitigation hierarchy of Avoid, Mitigate, Compensate will be required.
- 7.4 Retained trees should be protected in accordance with BS 5837:2012 and trees to be removed should be replaced with native species where practical.
- 7.5 The presence of mammal paths and a series of two mammal holes sufficient in size to support badgers, which are located away from the proposed development, As long as a 30m buffer is maintained throughout development then there will be no detrimental impacts to badgers.
- 7.6 The single building within the Site has **Negligible** suitability for use by bats. No further surveys to determine the presence/likely absence of roosting bats are required. Recommendations have been made to mitigate the loss of suitable foraging habitat.
- 7.7 Suitable foraging habitat for barn owls exists, and anecdotal evidence suggests presence of the species in the barn owl boxes adjacent to the site. In order to mitigate for the loss of grassland, new habitat should be created elsewhere, supported by a habitat management and enhancement plan.
- 7.8 Due to the number of bird species of conservation concern that have been recorded within 2km of the Site and the loss of NERC s41 Habitat of Principal Importance due to the proposed development further breeding bird surveys are likely to be required.
- 7.9 Suitable nesting habitat for birds exists and this should be retained where possible. Should suitable nesting habitat be affected, timings and methods of best practice should be adhered to.
- 7.10 GCN are considered unlikely to be present, due to the lack of suitable waterbodies in the Site and surroundings, therefore further consideration to the species is not required.

- 7.11 The habitats to be affected are suitable for reptiles, and reptiles were recorded within the Site. Further surveys for reptiles are required to inform a suitable mitigation strategy.
- 7.12 The Site support habitats suitable to support European hedgehogs and recommendations to compensate the loss of this habitat have been provided.
- 7.13 The likelihood of other protected and notable species to occur within the Site is considered unlikely. However, should at any point during the development a protected or notable species be identified within the Site, then all works should **stop** and the appointed ecologist consulted on the appropriate manner in which to proceed.
- 7.14 In accordance with the requirement of the NPPF, 2019, recommendations to improve the Site's suitability for wildlife have been provided.

8 REFERENCES

Bat Conservation Trust and the Institute of Lighting Professionals (BCT&ILP) 2018. Guidance Note 8; Bat and Artificial Lighting in the UK.

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The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019

<https://www.legislation.gov.uk/uksi/2019/579/regulation/35/made>

Wildlife and Countryside Act (as amended) 1981. <http://jncc.defra.gov.uk/page-1377>

Figures



Legend

- Site Boundary
- Fence
- SI Semi Improved Grassland
- Scrub
- Tall Ruderal
- Hedgerows
- Trees
- Bare Ground
- Hardstanding
- Buildings
- Target Note



Job Reference : J01001
Project Title: Land East of Ford Road
Drawing Title: Phase 1 Habitat Map
Date : 17-04-20
Checked : JMI
Drawn : MTR
Approved : N/A
Status : Final
Scale : NTS

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Legend

- 250m Buffer from Site Boundary
- Waterbody surveyed
- Waterbody access denied



Job Reference : J20501
Project Title: Land East of Ford Road
Drawing Title: Waterbodies within 250m
Date : 17-04-20
Checked : J31
Drawn : MTR
Approved : N/A
Status : Final
Scale : NTS

Appendices

APPENDIX A – PHOTOGRAPHS



Plate 1. Semi Improved Grassland

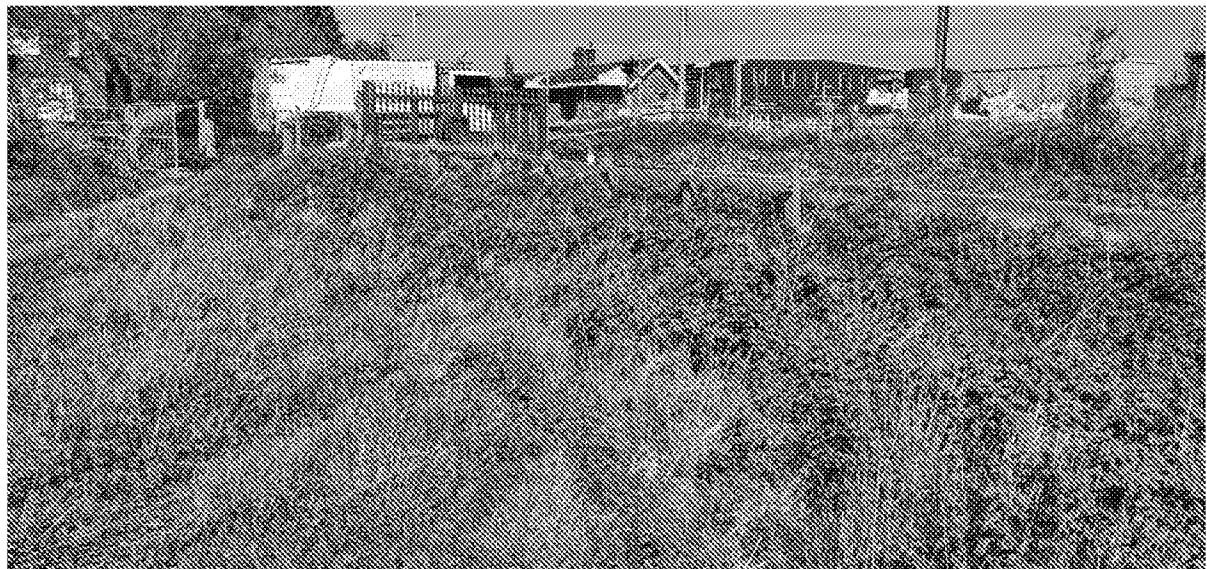


Plate 2. Scrub



Plate 3. Tall Ruderal



Plate 5. Hedgerow 1



Plate 6. Hedgerow 2



Plate 7. Hedgerow 3



Plate 8. Hedgerow 4



Plate 9. Bare Ground and vegetated earthen bank



Plate 10. Pillbox (B1)

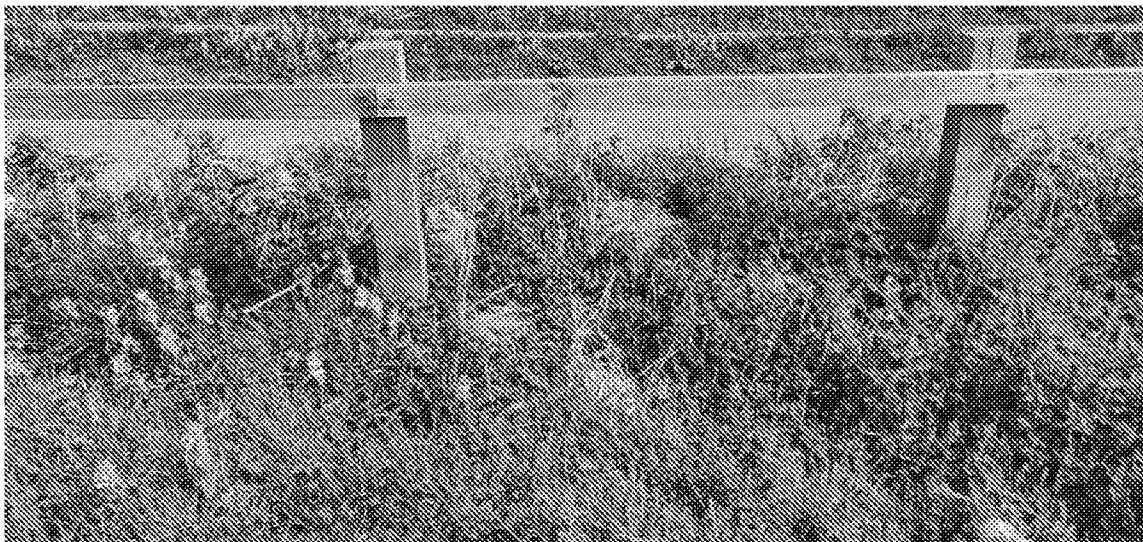


Plate 11. TN1



Plate 12. TN2

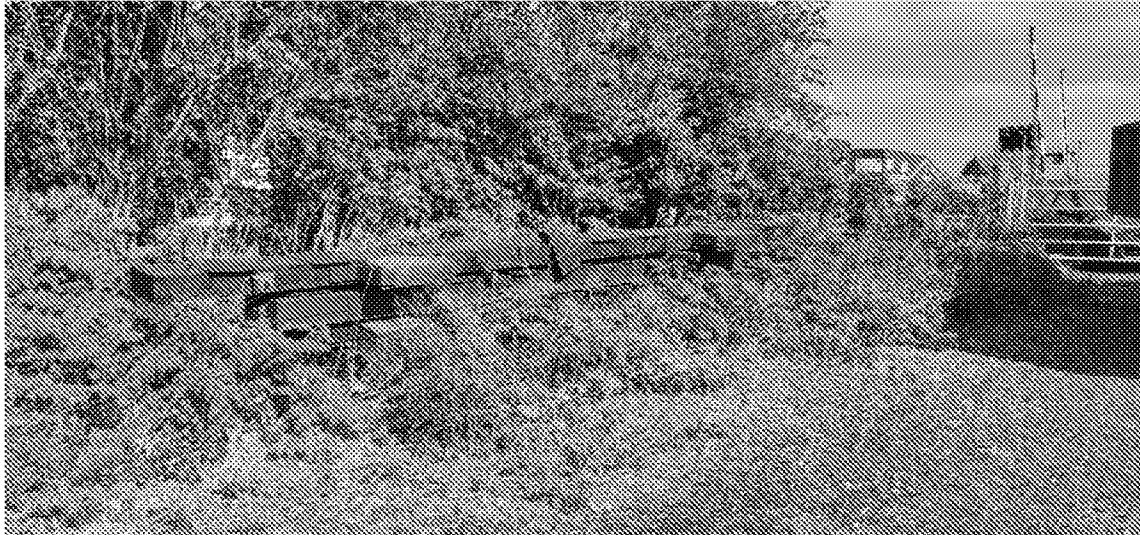


Plate 13. TN3



Plate 14. TN4



Plate 15. TN5



Plate 16. TN6



Plate 17. TN7



Plate 18. WB1

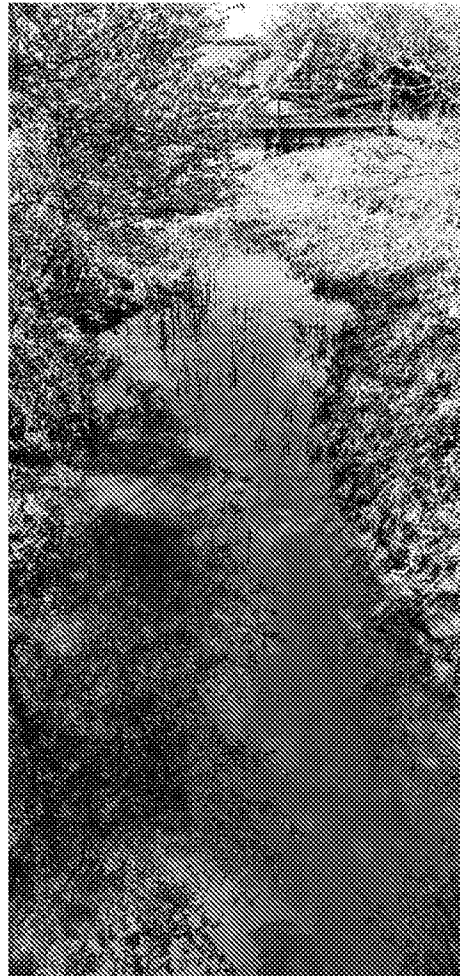


Plate 19. WB3



Plate 20. WB4



Plate 21. Slow Worms found on Site

APPENDIX B – Categories of Bat Roost Suitability

Roost type Level of suitability	Summer Roost used by Non- Breeding Bats	Maternity Roost	Hibernation Roost
Confirmed roost	Presence of bats or evidence of bats identified. Confirmation of a roost will likely require further surveys.		
High	Building/Structure or tree with multiple opportunities for one or more species of roosting bat. Optimal orientation. Good connectivity to optimal foraging habitats.	Building/Structure or tree with multiple roosting opportunities for pregnant female bats and young pups. Optimal orientation. Good connectivity to optimal foraging habitats.	Building/Structure or tree that has suitable thermal stability and levels of humidity to support torpid bats throughout the winter months.
Moderate	Building/Structure for tree with some opportunities for roosting bats. Preferable orientation. Connectivity to moderate to high quality foraging habitat available.	Building/Structure or tree with some roosting opportunities for pregnant female bats and young pups. Good orientation. Good connectivity to moderate to high quality foraging habitats.	Building/Structure or tree that has suitable thermal stability and levels of humidity to support torpid bats for some of the winter months. Moderate connectivity to suitable foraging areas.
Low	Building/Structure or tree with limited opportunities for roosting bats. Poor connectivity to foraging habitat.	Building/Structure or tree with limited opportunities for breeding bats. Poor connectivity to foraging habitat.	Building/Structure or tree with limited potential to support hibernating bats due to instable environmental conditions.
Negligible	Building/Structure or tree with no or very limited opportunities for roosting bats. Little to no connectivity to foraging habitat	Building/Structure or tree with no or very limited opportunities for breeding bats. Little to no connectivity to foraging habitat.	No suitable roosting opportunities for hibernating bats.

APPENDIX C – Minimum Number of Bat Surveys Required in Most Instances

Negligible	Low roost suitability	Moderate roost suitability	High roost suitability*
Dusk emergence and/or pre-dawn re-entry surveys unlikely to be required.	Structures: 1 survey visit. 1 dusk emergence or pre-dawn re-entry survey. To be conducted during May – August. Trees: Dusk emergence and/or pre-dawn re-entry surveys unlikely to be required.	2 separate survey visits. 1 dusk emergence survey and 1 pre-dawn re-entry survey. To be conducted during May-September with at least one of the surveys May – August.	3 separate survey visits. At least 1 dusk emergence survey and a separate pre-dawn re-entry survey. The third visit could be either a dusk or dawn survey. To be undertaken during May-September with at least two of the surveys between May and August.
^a Structures that have been categorised as low suitability can be problematic, and the number of surveys required should be judged on a case by case basis. If there is a possibility that quiet calling, late-emerging species are present then a dawn survey may be more appropriate, providing weather conditions are suitable. In some cases, more than one survey may be needed, particularly where there are several buildings in this category. ^b Multiple survey visits should be spread out to sample as much of the recommended survey period as possible; It is recommended that surveys are spaced out at least two weeks apart, preferably more. A dawn survey immediately after a dusk survey is considered one visit. If there is potential for a maternity colony, then consideration should be given to seasonal detectability and the ecologist should use their professional judgement to design the most appropriate survey regime. *For the purpose of this exercise a confirmed roost is considered under the criteria of 'High roost suitability'			

APPENDIX D - HSI SCORES

Full HSI Scores for accessible waterbodies within 250m

Pond Reference	Pond Location	SI ₁	Pond Area	SI ₂	Pond Drying	SI ₃	Water Quality	SI ₄	Shade	SI ₅	Fowl	SI ₆	Fish	SI ₇	Pond Count	SI ₈	Terrestrial Habitat	SI ₉	Macrophytes	SI ₁₀	HSI Score	Pond Suitability
WB1	Zone A	1.00	700m2	1.00	Dries Annually	0.10	Moderate	0.67	96-100%	0.20	Absent	1.00	Absent	1.00	>12	1.00	Good	1.00	6-10%	0.40	0.59	Below Average
WB2	Zone A	1.00	800m2	0.99	Dries Annually	0.10	Moderate	0.67	96-100%	0.20	Absent	1.00	Absent	1.00	>12	1.00	Good	1.00	6-10%	0.40	0.59	Below Average
WB3	Zone A	1.00	>2000m2	-	Never Dries	0.90	Bad	0.01	91-95%	0.30	Minor	0.67	Possible	0.67	>12	1.00	Poor	0.33	1-5%	0.35	0.37	Poor
WB4	Zone A	1.00	400m2	0.80	Dries Annually	0.10	Bad	0.01	0-60%	1.00	Absent	1.00	Absent	1.00	>12	1.00	Poor	0.33	<1%	0.30	0.39	Poor
Pond Reference	Pond Description																					
WB1	Ditch running thorough hedgerow																					
WB2	Ditch running thorough hedgerow																					
WB3	Stream with flow																					
WB4	Flood management storage waterbody																					

Index Definitions

Index Number	Index Definition
SI ₁	Location within Britain
SI ₂	Pond area (rounded to nearest 25m ²)
SI ₃	Desiccation rate (years out of ten that pond dries)
SI ₄	Water quality (subjective assessment, using indicators such as invertebrate and plant diversity)
SI ₅	Percentage of perimeter of pond shaded to at least 1m from edge
SI ₆	Level of waterfowl disturbance
SI ₇	Fish populations
SI ₈	Number of ponds within 1km not separated by major barriers
SI ₉	Terrestrial habitat quality (based on percentage of available area)
SI ₁₀	Percentage macrophyte cover

Great Crested Newt HSI Scoring Criteria

HSI Score	Pond Suitability for GCN
< 0.5	Poor
0.5 – 0.59	Below Average
0.6 – 0.69	Average
0.7 – 0.79	Good
> 0.8	Excellent