

Preliminary Ecological Appraisal

Land east of Wandley's Lane
Fontwell, West Sussex

Contents

1.0 INTRODUCTION.....	4
BACKGROUND.....	4
SITE CONTEXT AND STATUS	4
2.0 METHODOLOGY.....	9
DESKTOP STUDY	9
PRELIMINARY ECOLOGICAL APPRAISAL.....	9
BADGER SURVEY.....	10
BUILDING ASSESSMENT FOR BATS	11
TREE ASSESSMENT FOR BATS	12
HABITAT SUITABILITY FOR REPTILES.....	13
OTHER PROTECTED SPECIES.....	14
LIMITATIONS.....	14
3.0 RESULTS.....	15
DESKTOP STUDY	15
PHASE 1 HABITAT SURVEY.....	19
PROTECTED SPECIES.....	22
4.0 DISCUSSION	27
SITE	27
PROTECTED SPECIES.....	31
SITE ENHANCEMENTS.....	39
5.0 CONCLUSIONS	42
6.0 REFERENCES	45
APPENDIX 1: PHASE 1 HABITAT MAP	46
APPENDIX 2: PHOTOS	47
APPENDIX 3: BIODIVERSITY RECORDS.....	48

LIABILITIES:

Whilst every effort has been made to guarantee the accuracy of this report, it should be noted that living animals and plants are capable of migration/establishing and whilst such species may not have been located during the survey duration, their presence may be found on a site at a later date.

This report provides a snap shot of the species that were present at the time of the survey only and does not consider seasonal variation. Furthermore, where access is limited or the site supports habitats which are densely vegetated only dominant species maybe recorded.

The recommendations contained within this document are based on a reasonable timeframe between the completion of the survey and the commencement of any works. If there is any delay between the commencement of works that may conflict with timeframes laid out within this document, or have the potential to allow the ingress of protected species, a suitably qualified ecologist should be consulted.

It is the duty of care of the landowner/developer to act responsibly and comply with current environmental legislation if protected species are suspected or found prior to or during works.

1.0 Introduction

Background

- 1.1 The Ecology Partnership was commissioned by ECE Architecture/Welbeck Land to carry out a preliminary ecological appraisal (PEA) of land to the east of Wandleys Lane, Fontwell, West Sussex, BN18 0QR.
- 1.2 This report presents the results of The Ecology Partnership's surveys in and around the site, which aims specifically to assess the site's potential to support protected species and protected habitats that may be affected by the proposed development. Potential mitigation measures and recommendations for the site are included within this report.
- 1.3 Section 2 of this report sets out the methodologies of the Ecology Partnership's surveys. In section 3, the results of the surveys are presented. Discussions and implications for development are found in section 4, including general site enhancements. Conclusions drawn from the report are presented in section 5.

Site Context and Status

- 1.4 The site lies on Wandleys Farm to the east of Wandleys Lane in Fontwell, West Sussex (SU 95648 06681). The site covers approximately 6.98ha and consists of grassland fields with tree lines, hedgerows and a woodland edge. The surrounding area consists of medium-density housing, agricultural land and woodland. There are no statutory designations within 2km of the site but there are four Local Wildlife Sites (LWS).
- 1.5 The aerial photograph below (Figure 1) shows the site and its immediate surroundings. The red line depicts the approximate site boundary and survey area.



Figure 1: Approximate location of the red line boundary

Description of Proposed Development

- 1.6 The proposals have yet to be finalised but are thought to include a residential development of up to 160 dwellings. The final plans will be informed by a number of surveys, of which ecology is one.

Planning Policies

- 1.7 National and local planning policies may have an effect on the proposed development. The following paragraphs identify relevant planning policies and discuss these in the context of the site.
- 1.8 Under the Natural Environment and Rural Communities (NERC) Act (2006), “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”. In order to

comply with this 'Biodiversity Duty', planning decisions must ensure that they adequately consider the potential ecological impacts of a proposed development.

1.9 In compliance with Section 41 of the NERC Act, the Secretary of State has published a list of species and habitats considered to be of principle importance for conserving biodiversity. These were known as BAP habitats and species. The UK BAP lists of priority species and habitats remain an important and valuable reference certainly at county levels. However, the UK Post 2010 Biodiversity Framework (published 2012) has succeeded BAP. It was produced by JNCC and Defra, on behalf of the Four Countries' Biodiversity Group (4CBG), through which the environment departments of all four governments in the UK work together to achieve the 'Aichi Biodiversity Targets' and the aims of the EU biodiversity strategy.

1.10 National policy guidance is provided by National Planning Policy Framework (NPPF), which sets out the Government's planning policies for England and how they should be applied. Section 11 of the document is entitled 'Conserving and Enhancing the Natural Environment'. This section highlights the following:

"The planning system should contribute to and enhance the natural and local environment by:

- *Protecting and enhancing valued landscapes, geological conservation interests and soils;*
- *Recognising the wider benefits of ecosystem services;*
- *Minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures."*

1.11 In addition to this, the following paragraphs are also considered to be relevant:

"In preparing plans to meet development needs, the aim should be to minimise pollution and other adverse effects on the local and natural environment. Plans should allocate land with the least environmental or amenity value, where consistent with other policies in this Framework."

“Planning policies and decisions should encourage the effective use of land by re-using land that has been previously developed (brownfield land), provided that it is not of high environmental value. Local planning authorities may continue to consider the case for setting a locally appropriate target for the use of brownfield land.”

- 1.12 The site falls under the jurisdiction of the Arun District Council. A new local plan is currently being produced. In the meantime, the 2003 Local Plan contains policies relating to nature conservation:

Policy GEN28 - Trees and Woodlands

“Development will not be permitted if it would damage or destroy one or more trees protected by a tree preservation order, identified as ancient woodland or in a conservation area unless:

- The removal of one or more trees would be in the interests of good arboricultural practice;*
or
- The benefits of the proposed development outweigh the amenity value of the protected trees.*

Conditions may be used to ensure, for any trees which are removed as part of a development, an equivalent number are planted on the site.”

Policy GEN29 - Nature conservation across the district

“Development will only be permitted on sites which contain semi-natural habitats, features of nature conservation interest, or within wildlife corridors, where these can be largely retained and sympathetically incorporated into the scheme. Legal agreements may be used to offset the loss of, or impact on, any nature conservation resource present on the site prior to development.”

Policy AREA13 - Sites of International Importance for Nature Conservation

“Proposals for development in, or likely to affect (directly or indirectly) a site of international importance for nature conservation will be subject to the most rigorous examination. Development not directly connected with or necessary to the management of the site which is likely to have an adverse effect on the site, will not be permitted unless: there is no alternative

solution, there are reasons of public health or public safety, or there are benefits of primary importance to the environment.

Where such sites do not host a priority habitat or species, development will not be permitted unless there are imperative reasons of overriding public interest.

Where development is permitted, the use of conditions or planning obligations will be considered in order to avoid and minimise harm to the site, to enhance the site's nature conservation interest, and to secure any compensatory or mitigation measures and appropriate management that may be required."

Policy AREA14 - Sites of National Importance for Nature Conservation

"Proposals for development in, or likely to affect (directly or indirectly) Sites of Special Scientific Interest will be subject to special scrutiny. Where such development is likely to have an adverse effect, it will not be permitted unless the reasons for the development clearly outweigh the nature conservation value of the site itself and the national policy to safeguard the national network of such sites.

Where the site concerned is a National Nature Reserve, a site identified by the Nature Conservation Review or Geological Conservation Review, particular regard will be paid to the national importance of that site.

Where development is permitted, harm to the nature conservation interest must be minimised. The use of conditions or planning agreements will be considered to ensure the protection and enhancement of the nature conservation interest, and to provide appropriate compensatory or mitigation measures and site management."

Policy AREA15 - Sites of Local Importance for Nature Conservation

"Proposals for development in, or likely to have an adverse effect (directly or indirectly) on a Local Nature Reserve, Site of Nature Conservation Importance (including ancient woodlands or wildlife corridors) or Regionally Important Geological/Geomorphological Site will not be permitted unless it can be demonstrated that reasons for the proposal outweigh the need to safeguard the nature conservation value of the site/feature. Where development is permitted which

would damage the nature conservation value of the site/feature, such damage should be kept to a minimum.

Conditions or planning obligations will be used to secure necessary compensatory or mitigation measures, enhancement and site management.

Where appropriate, the Authority will consider the use of legal agreements to provide appropriate compensatory measures, enhancement and site management."

- 1.13 The site was surveyed to assess its ecological value and to ensure compliance with national and local plan policies. The report has been produced with reference to current guidelines for preliminary ecological appraisal (CIEEM 2013) and in accordance with BS 42020:2013 Biodiversity – Code of Practice for Planning and Development.

2.0 Methodology

Desktop Study

- 2.1 A desktop study search was completed using an internet-based mapping service (www.magic.gov.uk) for statutory designated sites and an internet-based aerial mapping service (maps.google.co.uk) was used to understand the habitats present in and around the survey area and habitat linkages and features (ponds, woodlands etc.) within the wider landscape. Records for the site and local area (up to 2km) were purchased from the Sussex Biodiversity Records Centre.

Preliminary Ecological Appraisal

- 2.2 An extended preliminary ecological appraisal was undertaken on 10th April 2017 by ecologist Natalie Kay BSc (Hons) MSc ACIEEM. The surveyor identified the habitats present following the standard 'Phase 1 habitat survey' auditing method developed by the Joint Nature Conservancy Council (JNCC). The site was surveyed on foot and the existing habitats and land uses were recorded on an appropriately scaled map (JNCC

2010). In addition, the dominant plant species in each habitat were recorded, as was any evidence of protected species.

Badger Survey

- 2.3 A badger survey was undertaken at the site to assess if badgers were using the area and if any setts were located on the site and 30m away from the site that might constrain development. The evaluation of badger activity was based on methodology developed for the National Survey of Badgers (Creswell *et al.* 1990) and includes searching for badger field signs such as setts, badger pathways, tracks (pawprints), dung piles with latrines, badger hairs and feeding signs such as snuffle holes.
- 2.4 During the survey, all habitats potentially suitable for badgers were systematically examined for evidence of badger activity including:
- Setts: several sett types may be present within a social group territory, ranging from a single hole to numerous interconnecting tunnels. Setts can be categorised into main, annexe, subsidiary and outlier (Wilson *et al.* 1997).
 - Latrine sites: badgers characteristically deposit dung in pits, which may be located along the boundaries and within the social group territory. These sites serve as means of inter- and intra-group communication.
 - Paths and runs: well used routes between setts and/or foraging areas. Often used by generations of badgers.
 - Snuffle holes: areas of disturbed vegetation often formed by badgers foraging for ground dwelling invertebrates such as earthworms and larvae and the underground storage organs of plants.
 - Hair: often found among spoil and bedding outside entrances to setts or snagged on fences (such as barbwire) along well-used runs.
 - Footprints: easily distinguishable from other large mammal species. Often found along paths and runs or in spoil outside sett entrances.

Building Assessment for Bats

- 2.5 Buildings that are considered to have a high potential to support roosting bats would include the following:
- Agricultural buildings (e.g. farmhouses, barns and out buildings) of traditional brick or stone construction and/or with exposed beams;
 - Buildings with weather boarding and/or hanging tiles that are within 200m of woodland and/or water;
 - Pre-1960s detached buildings and structures within 200m of woodland and/or water;
 - Pre-1914 buildings within 400m of woodland and/or water;
 - Pre-1914 buildings with gable ends or slate roofs regardless of location;
 - Buildings which are located within or immediately adjacent to woodland and/or immediately adjacent to water;
 - Dutch barns or livestock buildings with a single skin roof and board and gap or Yorkshire boarding if, following a preliminary roost assessment the site, appear to be particularly suited to bats.
- 2.6 The surveyor assessed the buildings visually and searched for evidence such as:
- Staining beneath or around a hole caused by natural oils in bat fur.
 - Bat droppings beneath a hole, roost or resting area.
 - Audible squeaking from within a hole.
 - Insects (especially flies) around a hole.
 - Dead bats.
- 2.7 The buildings were assessed during the day. An external investigation assessed the tiles, any weatherboarding and structural timber joints of the building. This was undertaken in order to see if there were access points readily available for bats to utilise or crevices that bats could be roosting in.

Tree Assessment for Bats

2.8 The trees on site were assessed for their potential to support roosting bats. Bats can use trees to rest, give birth, raise young and/or hibernate. The trees were assessed visually for evidence of bats as well as for features that increase the likelihood of roosting bats, such as the following:

- Woodpecker holes, natural cracks and rot holes in trunks and branches;
- Frost cracks;
- Trunk and branch splits;
- Hollow sections of trunk and branches;
- Loose bark;
- Cavities beneath old root buttresses and coppice stools;
- Dense epicormic growth;
- Dense ivy cover.

2.9 Veteran trees typically exhibit many of these features and should usually be regarded as sites with clear potential, but any tree possessing one or more such feature, may host bats. Any tree species can be suitable but oak and beech often seem to be the preferred options. However, bats rarely restrict themselves to one tree. They change their roost sites frequently, sometimes every two to three days, looking for small differences in temperature and humidity.

2.10 Roosts of bats in trees may be identified from the following field signs:

- Black stains beneath cracks, splits and other features where bat droppings have fallen;
- Dark marks at entrance points where bats have rubbed against the wood and left natural body oils;
- Feeding remains beneath roosts, such as insect wings;
- Chattering of bats;
- Bat droppings under access points;
- Scratch marks around a feature (cavity or split) caused by bat claws;
- Urine stains below the entrance or end of split;
- Large roosts or regularly used sites may produce an odour;

- Flies around the entrance, attracted by the smell of guano.

2.11 Trees scheduled for arboricultural work should also be assessed, and may be categorised to relate the value of their features to recommended actions (Table 1). This approach allows trees to be graded according to their potential to support bat roosts. Trees may be assessed as having the potential to support bats (from an individual to a larger roost) even if no bats have been found.

Table 1: Protocol for visual inspection of trees to assess their value to bats - taken from Table 4.1 within the 'Bat Surveys for Professional Ecologists: Good Practice Guidelines, 3rd edition' (Bat Conservation Trust 2016)

Suitability	Roosting habitat description
Negligible	Negligible habitat features on-site likely to be used by roosting bats.
Low	A tree of sufficient size and age to contain potential roosting features but with none seen from the ground or features seen with only very limited roosting potential.
Moderate	A tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status.
High	A tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

Habitat Suitability for Reptiles

2.12 Habitat surveys were carried out to assess the potential of the site to hold populations of reptile species. This involved looking for the presence of factors that would increase the suitability of the site for reptiles such as:

- Scrub and grassland (long sward) mosaic across the site;
- Features that can be potential hibernation sites for common reptiles such as log piles;
- Grass tussocks within the grassland that can act as shelter and burrowing sites;
- Water bodies or damp places on site (grass snakes);
- Compost heaps or decaying vegetation (slow worms);
- Features that can act as refugia on the ground such as disused roofing felt.

Other Protected Species

2.13 The site was also inspected for indications of the presence of other protected species, as follows:

- Relevant habitat for dormice such as dense deciduous woodland, coppice and thick shrubbery
- Ponds and associated habitat suitable to support great crested newts
- The presence of ditches for water voles
- The presence of fresh water stream/rivers for otters
- Suitable nesting places for birds
- Other potential protected species

Limitations

2.14 It should be noted that whilst every effort has been made to provide a comprehensive description of the site, no single investigation could ensure the complete characterisation and prediction of the natural environment. The site was visited over the period of one site visit, as such seasonal variations cannot be observed and potentially only a selection of all species that potentially occur within the site have been recorded. Therefore, the survey provides a general assessment of potential nature conservation value of the site and does not include a definitive plant species list.

2.15 The protected species assessment provides a preliminary view of the likelihood of protected species occurring on site, based on the suitability of the habitat and any direct evidence on site. It should not be taken as providing a full and definitive survey of any protected species group. The assessment is only valid for the time when the survey was carried out. Additional surveys may be recommended if, on the basis of this assessment, it is considered reasonably likely that protected species may be present.

3.0 Results

Desktop Study

- 3.1 The site does not fall within or adjacent to any statutory designated areas. The South Downs National Park lies approximately 450m north of site. The next nearest statutory designation is Fairmile Bottom Local Nature Reserve (LNR) approximately 3km northeast of site.
- 3.2 In terms of non-statutory designations, there are four Local Wildlife Sites (LWSs) within 2km of the site. These are:
- Slindon Bottom approximately 600m northwest;
 - Fontwell Park Racecourse approximately 700m west;
 - Binstead Wood Complex approximately 1.7km east;
 - Rewell Wood Complex approximately 1.7km east.
- 3.3 There are numerous units of ancient semi-natural and priority deciduous woodland within 2km of the site. The nearest of these woodlands is immediately adjacent to the southern boundary of the site, which contains both ancient and priority deciduous woodland. There are also areas of priority parkland to the north of the site as part of Slindon Park.
- 3.4 Satellite imagery revealed no ponds on site but four within 250m of the red line boundary.

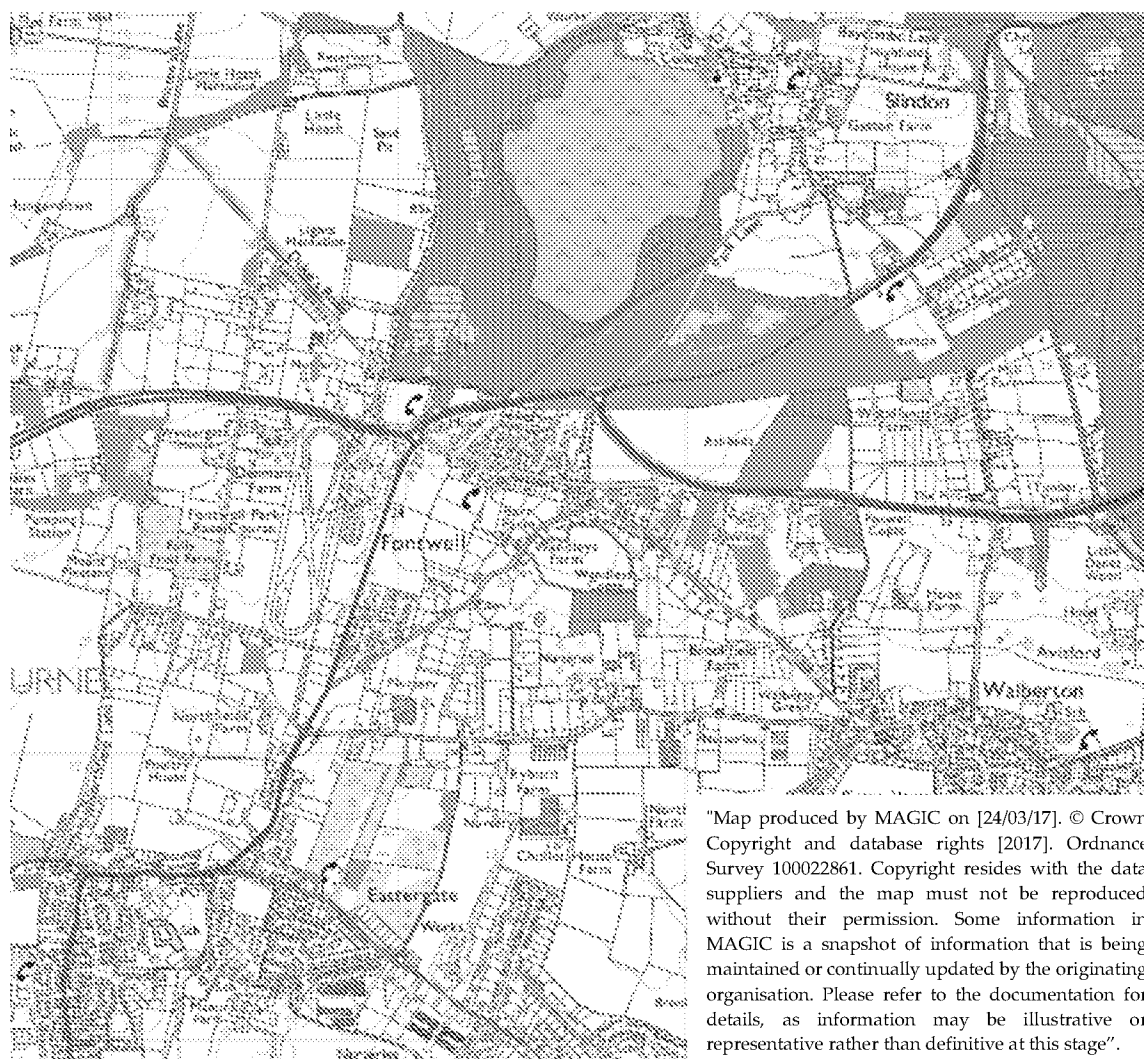


Figure 2: Priority deciduous woodland (green), ancient semi-natural woodland (hatches) and parkland (tree symbol) habitat surrounding the red line boundary

- 3.5 A 2km radius data search was requested from the Sussex Biodiversity Records Centre. Notable protected species from this search are outlined below (Table 2). Only records from within the last ten years and those closest to site have been included.

Table 2: Notable species recorded within 2km of site over the last 10 years

Species	Status	Record distance	Record year
Slow Worm <i>Anguis fragilis</i>	Wildlife and Countryside Act (1981 as amended) Schedule 5; NERC Act (2006) Section 41; Bern Convention Appendix 3	Approximately 1.7km S	2010
Grass Snake	NERC Act (2006) Section 41; Bern	Approximately	2011

<i>Natrix natrix</i>	Convention Appendix 3	200m E	
Common Lizard <i>Zootoca vivipara</i>	Wildlife and Countryside Act (1981 as amended) Schedule 5; NERC Act (2006) Section 41; Bern Convention Appendix 3	Approximately 450m N	2014
Western European Hedgehog <i>Erinaceus europaeus</i>	NERC Act (2006); Bern Convention Appendix 3	Approximately 700m E	2015
Hazel Dormouse <i>Muscardinus avellanarius</i>	Wildlife and Countryside Act (1981 as amended) Schedule 5; Conservation of Habitats and Species Regulations (2010) Schedule 2; Habitats and Species Directive (1992) Annex 4; NERC Act (2006) Section 41; Bern Convention Appendix 3	Approximately 700m E	2011
Western Barbastelle <i>Barbastella barbastellus</i>	Conservation of Habitats and Species Regulations (2010) Schedule 2; Habitat and Species Directive (1992) Annex 4; Wildlife and Countryside Act (1981 as amended) Schedule 5	Within 2km	2015
Serotine <i>Eptesicus serotinus</i>	Conservation of Habitats and Species Regulations (2010) Schedule 2; Habitat and Species Directive (1992) Annex 4; Wildlife and Countryside Act (1981 as amended) Schedule 5	Approximately 1.5km N	2016
Alcathoe Bat <i>Myotis alcathoe</i>	Conservation of Habitats and Species Regulations (2010) Schedule 2; Habitat and Species Directive (1992) Annex 4; Wildlife and Countryside Act (1981 as amended) Schedule 5	Approximately 1.5km N	2013
Brandt's bat <i>Myotis brandtii</i>	Conservation of Habitats and Species Regulations (2010) Schedule 2; Habitat and Species Directive (1992) Annex 4; Wildlife and Countryside Act (1981 as amended) Schedule 5	Approximately 1.2km N	2013
Whiskered Bat <i>Myotis mystacinus</i>	Conservation of Habitats and Species Regulations (2010) Schedule 2; Habitat and Species Directive (1992) Annex 4; Wildlife and Countryside Act (1981 as amended) Schedule 5	Approximately 1.2km N	2013
Natterer's <i>Myotis nattereri</i>	Conservation of Habitats and Species Regulations (2010) Schedule 2; Habitat and Species Directive (1992) Annex 4; Wildlife and Countryside Act (1981 as amended)	Within 2km	2013

	Schedule 5		
Common Pipistrelle <i>Pipistrellus pipistrellus</i>	Conservation of Habitats and Species Regulations (2010) Schedule 2; Habitat and Species Directive (1992) Annex 4; Wildlife and Countryside Act (1981 as amended) Schedule 5	Approximately 400m NW	2015
Soprano Pipistrelle <i>Pipistrellus pygmaeus</i>	Conservation of Habitats and Species Regulations (2010) Schedule 2; Habitat and Species Directive (1992) Annex 4; Wildlife and Countryside Act (1981 as amended) Schedule 5	Approximately 1.5km SE	2015
Brown Long-eared <i>Plecotus auritus</i>	Conservation of Habitats and Species Regulations (2010) Schedule 2; Habitat and Species Directive (1992) Annex 4; Wildlife and Countryside Act (1981 as amended) Schedule 5	Approximately 1.4km NE	2014
Barn Owl <i>Tyto alba</i>	Bern Convention Appendix 2; Wildlife and Countryside Act (1981 as amended) Schedule 1	Within 2km	2011
Red Kite <i>Milvus milvus</i>	Birds Directive Annex 1; Wildlife and Countryside Act (1981 as amended) Schedule 1; Convention on Migratory Species Appendix 2	Within 2km	2015
Lapwing <i>Vanellus vanellus</i>	Birds Directive Annex 2.2; Convention on Migratory Species Appendix 2; NERC Act (2006) Section 41	Within 2km	2010
Woodcock <i>Scolopax rusticola</i>	Red List BoCC	Within 2km	2015
Cuckoo <i>Cuculus canorus</i>	NERC Act (2006); Red List BoCC	Within 2km	2011
Skylark <i>Alauda arvensis</i>	NERC Act (2006) Section 41; Birds Directive Annex 2.2	Within 2km	2015
Nightingale <i>Luscinia megarhynchos</i>	Bern Convention Appendix 2; Red List BoCC	Within 2km	2010
Firecrest <i>Regulus ignicapillus</i>	Wildlife and Countryside Act (1981 as amended) Schedule 1	Within 2km	2015
Linnet <i>Linaria cannabina</i>	NERC Act (2006) Section 41; Red List BoCC	Within 2km	2011
Common Crossbill <i>Loxia curvirostra</i>	Wildlife and Countryside Act (1981 as amended) Schedule 1; Bern Convention	Within 2km	2012

	Appendix 2		
Bullfinch <i>Pyrrhula pyrrhula</i>	NERC Act (2006) Section 41; Amber List BoCC	Within 2km	2014
Yellowhammer <i>Emberiza citronella</i>	NERC Act (2006) Section 41; Red List BoCC	Within 2km	2011

Phase 1 Habitat Survey

- 3.6 The site was dominated by a large area of semi-improved grassland which was used for grazing sheep and a pony. The boundaries of the site consisted of gappy hedgerows and tree lines with some areas of longer grass. There was a plot of ancient woodland immediately adjacent to the southern boundary. There were also two buildings and storage containers close to the entrance of the site surrounded by hardstanding and areas of scrub and ruderal vegetation.

Neutral semi-improved grassland

- 3.7 A large proportion of the site was made up of semi-improved grassland with certain sections separated by electric fencing to contain grazing sheep and a pony. Species included perennial ryegrass (*Lolium perenne*), Yorkshire fog (*Holcus lanatus*), cocksfoot (*Dactylis glomerata*), annual meadow grass (*Poa annua*), sweet vernal grass (*Anthoxanthum odoratum*), meadow foxtail (*Alopecurus pratensis*), dandelion (*Taraxacum* agg.), red clover (*Trifolium pratense*), greater plantain (*Plantago major*), common sorrel (*Rumex acetosa*), broad-leaved dock (*Rumex obtusifolius*), curled dock (*Rumex crispus*), creeping thistle (*Cirsium arvense*), yarrow (*Achillea millefolium*), common mouse-ear (*Cerastium fontanum*), cat's-ear (*Hypochaeris radicata*), buttercup (*Ranunculus* sp.), woodruff (*Galium odoratum*), common field speedwell (*Veronica persica*), ivy-leaved speedwell (*Veronica hederifolia*) and thyme-leaved speedwell (*Veronica serpyllifolia*).

Scrub and ruderal vegetation

- 3.8 Near the entrance of the site is an area of hardstanding surrounded by tall ruderal vegetation which also covers two mounds. Species included perennial ryegrass, Yorkshire fog, annual meadow grass, dandelion, white clover (*Trifolium repens*), daisy

(*Bellis perennis*), common ragwort (*Senecio jacobaea*), broad-leaved dock, common nettle (*Urtica dioica*), bramble (*Rubus fruticosus*), red dead nettle (*Lamium purpureum*), greater plantain, cleavers (*Galium aparine*), green alkanet (*Pentaglottis sempervirens*) and groundsel (*Senecio vulgaris*).

- 3.9 There was also an area of scrub just to the east of the hardstanding adjacent to the northern boundary. This was dominated by bramble and common nettle but also consisted of ivy (*Hedera helix*), bugle (*Ajuga reptans*), dandelion, broad-leaved dock, common ragwort, spear thistle (*Cirsium vulgare*), creeping thistle, ribwort plantain (*Plantago lanceolata*), common sorrel and cat's-ear.
- 3.10 In the corner to the southwest of the buildings is a patch of dense bracken with some bramble.

Hedgerows and tree lines

- 3.11 Along the northern boundary of the site were hedgerows separating the site from neighbouring gardens. These consisted of a mixture of native and ornamental species such as holly (*Ilex aquifolium*), elder (*Sambucus nigra*), hawthorn (*Crataegus monogyna*), hebes and cherry laurel (*Prunus laurocerasus*) and contained the occasional oak tree (*Quercus sp.*).
- 3.12 The tree line connected to this hedgerow along the eastern boundary consisted of oak, willow (*Salix sp.*), hazel (*Corylus avellana*), hawthorn, holly and cherry laurel. The understorey also had patches of bluebells.
- 3.13 The hedgerow along the southern boundary was gappy and consisted of hawthorn, blackthorn (*Prunus spinosa*), bramble and common nettle. There were no linear features connecting this hedgerow to the western corner of the site and any shrubs or trees were on the other side of the fence line.
- 3.14 Along the western boundary between the entrance to the site and the western corner was a tree line separating the site from the road. Species included hazel, elder and cherry

laurel with an understorey of ivy, bramble, common nettle, broad-leaved dock and bluebell.

Woodland edge

- 3.15 Running along the southern boundary of the site, particularly the eastern half, was the edge of Wandleys Copse, which is designated ancient woodland. Tree species identified along this edge include hazel, holly, hawthorn, blackthorn, oak, elder and ash (*Fraxinus excelsior*). This was considered to be a species-rich woodland, with numerous ancient woodland indicators for the southeast present such as butcher's broom (*Ruscus aculeatus*), wood anemone (*Anemone nemorosa*), bluebell (*Hyacinthoides non-scripta*) and primrose (*Primula vulgaris*). Other species identified along this edge include lords and ladies (*Arum maculatum*), dog's mercury (*Mercurialis perennis*), wood avens (*Geum urbanum*), yellow archangel (*Lamium galeobdolon*), lesser celandine (*Ranunculus ficaria*), common nettle, ivy and cleavers. This edge also contained a standing dead tree covered in ivy.

Log/brash/rubble piles

- 3.16 There were a number of log piles identified within the scrub to the east of the buildings. There was also a brash and rubble pile adjacent to the buildings within the area of hardstanding and ruderal vegetation.

Dry ditch

- 3.17 There was a small narrow ditch running within the tree line on the eastern boundary and was connected to a ditch running through the woodland edge. Both ditches were dry at the time of the survey.

Buildings and hardstanding

- 3.18 There are two buildings on site and some storage containers close to the entrance of the site. The driveway onto site and an area around the buildings is made up of hardstanding.

Protected Species

Badgers

- 3.19 No evidence of badgers, such as latrines or snuffle holes, was identified anywhere on site. No badger setts were identified on site; however, a small mammal burrow was found along the western boundary adjacent to the area of bracken. The small size and shape of the holes would suggest this was not made by badgers. The entrance had a dense cover of leaf litter and was not considered to be in active use.
- 3.20 A mammal path was identified through the bracken in the western corner of the site and another was found next to the patch of scrub along the northern boundary. These could be used by a range of mammals including deer given the droppings found on site. However, it is possible that badgers use the site for foraging and commuting purposes.

Bats

- 3.21 There were two buildings on site which were surveyed internally and externally for their roosting bat potential. The first was a small brick stable block with a corrugated asbestos roof. At the time of the survey it was being used for storage and portions of the two doors were missing/open so that the internal space was open and exposed to the environment. There were no suitable crevices for roosting identified and no evidence of bats, such as droppings or feeding remains, was found.
- 3.22 The second building was a brick barn with a flat metal roof. Only part of the barn was accessible but this area was used to store hay and the entrance to this section was always open, again leaving it open and exposed to the elements. No evidence of bats was found

inside or outside of this building and there were no suitable crevices for roosting. Both buildings were not considered suitable for roosting bats.

- 3.23 There were also a number of metal storage containers next to the buildings on site but these were not considered suitable for roosting bats due to the construction materials, a lack of access and a lack of suitable crevices.
- 3.24 Many of the trees on site were considered to be immature and therefore lacking the potential to support complex growth forms, cracks and crevices, which are traditionally associated with roosting bats. There were, however, many mature trees present along the boundaries of the site. An oak along the northeast boundary of the site within the hedgerow was considered to have low roosting bat potential due to a crack created from a limb breaking away. Another mature oak was identified within the tree line along the eastern boundary as having low roosting bat potential due to the presence of a hole in the trunk and a crack in a limb. A third oak within the woodland edge along the southern boundary was considered to have low roosting bat potential due to its dense cover of ivy.
- 3.25 The linear features on site, including the tree lines and hedgerows which are largely located around the very edges of the site, may provide foraging opportunities for bats in the local area. The tree lines also provide connectivity into the wider landscape.
- 3.26 It should be noted that there is another proposed development on the opposite side of Wandleys Lane to the west of this proposal (WA/22/15/OUT). As part of the application for the neighbouring site, numerous protected species surveys were carried out by FCPR Environment and Design including bat transect and automated surveys in 2014. These surveys found relatively low levels of bat activity across the site, with most activity recorded around tree groups and linear features. Common pipistrelle was the most frequently encountered species on the transect surveys with occasional soprano pipistrelles, brown long-eared bats and *Nyctalus* species also recorded. During the automated surveys, common pipistrelles were again the most common species recorded

with smaller numbers of *Myotis*, soprano pipistrelle, *Nyctalus*, brown long-eared bat and rarely noctule, barbastelle, Leisler's and Nathusius' pipistrelle detected.

Dormice

- 3.27 Along the boundaries of the site are tree lines and hedgerows which might be considered to have some suitability for dormice. However, these are gappy in places and lack the species diversity required to support dormice. The ancient woodland adjacent to the southern boundary, on the other, was thought to contain optimal dormouse habitat. This is a species-rich woodland with hazel, holly, oak, ash, hawthorn, bramble present, all of which provide potential foraging opportunities for dormice.
- 3.28 Records from Sussex Biodiversity Information Centre identify numerous dormouse records 700m east of site in Potwell Copse, which is attached to site via hedgerows and tree lines. It is considered possible that dormice are using these areas along the boundary of the site.

Great Crested Newts

- 3.29 There were no ponds on site but four were identified within 250m of the red line boundary (Figure 3). Pond 1 and 4 were visible from the site boundaries, however, ponds 2 and 3 was not accessible. Pond 1 and 4 were surveyed for their potential to support GCN using the Habitats Suitability criteria. The suitability index is calculated for each of the 10 categories. These are then analysed using the equation below to obtain the geometric mean or HSI score of the ten suitability indices.

$$HSI = (SI_1 \times SI_2 \times SI_3 \times SI_4 \times SI_5 \times SI_6 \times SI_7 \times SI_8 \times SI_9 \times SI_{10})^{1/10}$$

The calculated score should be between 0 and 1 and will fall within one of several bands, which correspond to a given category for the pond.

Table 3: HSI scores and pond suitability

HSI score	Pond Suitability
<0.5	Poor
0.5-0.59	Below Average
0.6-0.69	Average
0.7-0.79	Good
>0.8	Excellent

*Figure 3: Location of ponds within 250m of the red line boundary*

3.30 Table 4 below shows the habitat suitability scores for ponds 1 and 4. Pond 1 was calculated as having 'average' suitability for GCNs, predominantly due to its small size and limited suitable terrestrial habitat surrounding it. Pond 4 was found to have 'poor' suitability due to the presence of ducks and their impact on vegetation and water quality.

Table 4: HSI scores for pond 1 and 4

Suitability indices no.	Feature	Pond 1 Score	Pond 4 Score
1	Location	1	1
2	Area	0.2	0.95
3	Permanence	1	0.9
4	Water quality	0.67	0.67
5	Shading	1	1
6	Presence of waterfowl	0.67	0.01
7	Presence of fish	0.67	0.67
8	Pond density	0.9	0.9
9	Suitable newt habitat within 500m	0.33	0.67
10	Macrophyte content	0.6	0.4
10th Root		0.64	0.50
Pond Suitability		Average	Poor

- 3.31 GCN surveys were carried out by FPCR on ponds surrounding the neighbouring proposed development in May 2014 (Figure 3). This included ponds 2, 3 and 4 identified during this survey. Access was not granted for pond 2 and pond 3 was not present in May 2014, possibly due to drying out. It appears pond 1 was created at some point between 2013 and 2015 and thus may not have been present at the time of the previous survey. Pond 4 was surveyed using torching, bottle trapping and egg searching but no GCNs were found over four survey visits.

Reptiles

- 3.32 Whilst the majority of the site is grazed, the longer areas of grassland behind the electric fence along the edges of the site were considered to be suitable for reptiles. The areas of scrub and ruderal grassland in the northwest corner of the site were also considered optimal for reptiles, especially since there are log, rubble and brash piles present which could be used as hibernacula.
- 3.33 FCPR carried out reptile surveys on the neighbouring development site in August and September 2014. Only a single grass snake was recorded during this survey and no other reptile species were found. The site was considered to contain sub-optimal habitat for reptiles due to the lack of features for shelter or hibernation such as developed tussocks,

soil or log piles, or clearings for basking. Whilst part of the site was tall grassland for a hay crop, other areas were grazed by horses.

Other Species

- 3.34 The trees, hedgerows and shrubs on site have the potential to support nesting birds. Several common species were seen and heard on site at the time of the survey, including robin, great tit, blue tit and wood pigeon.
- 3.35 Breeding bird surveys were undertaken for the neighbouring proposed development in May and June 2014. A total of 29 bird species were recorded, eight of which were considered notable as they appear under one or more of the following: NERC S41 species of principal importance, BoCC Red List or Amber List. Eleven species were confirmed as breeding including 3 notable species: dunnock (*Prunella modularis*), common whitethroat (*Sylvia communis*) and swallow (*Hirundo rustica*). Kestrel (*Falco tinnunculus*) was considered to be a possible breeder.
- 3.36 Standing dead wood was identified on the woodland edge and a fallen tree was found in the southwest corner. These can provide opportunities for bryophytes and saprophytic insects such as stag beetles.
- 3.37 The site does not support habitats which are considered to be suitable for other protected species, such as water voles or otters.

4.0 Discussion

Site

- 4.1 The site does not fall within or adjacent to any statutory or non-statutory designations. There are no internal designations within 5km of the site and therefore there are no issues regarding local policy AREA13 (Sites of International Importance for Nature Conservation).

- 4.2 However, the South Downs National Park is approximately 450m north of the site. The current proposals are yet to be finalised but are thought to be for a residential dwelling of up to 160 dwellings. The distance between the development and the National Park is considered to be a sufficient buffer for any direct impacts on this designation, especially since the A27 also lies between the sites. However, indirect impacts need to be considered given the scale of the development. It is considered that the proposals will not result in any habitat fragmentation or isolation and will not impact on hydrology, therefore it is not considered to impact upon the ecological functionality of the landscape.
- 4.3 An increase in recreational pressure may be considered an issue for the National Park as it can lead to a degradation of habitats due to erosion, littering and dog waste. However, it should be noted that recreational use of the National Park is facilitated through well-established footpaths and any impacts as a result of increased footfall are expected to be minimal. Therefore, it is considered that the development will not result in any significant direct or indirect impacts on this designation and there are no issues regarding local policy AREA 14 (Sites of National Importance for Nature Conservation).
- 4.4 In terms of non-statutory designations, there are four Local Wildlife Sites (LWSs) within 2km of the site. The closest of these is Slindon Bottom approximately 600m northwest and Fontwell Park Racecourse approximately 700m west. Given the distance between the site and these designations and the presence of significant barriers (A27 and A29), it is considered that there will be no adverse impacts on these designations. Therefore, there are no issues regarding local policy AREA15 (Sites of Local Importance for Nature Conservation).
- 4.5 Immediately adjacent to the southern boundary of the site is Wandleys Copse which has been designated as ancient semi-natural woodland. The National Planning Policy Framework (NPPF 2012) is the key governmental policy document relating to planning decisions affecting ancient woodland as well as aged or veteran trees. The importance of

ancient woodlands as an irreplaceable habitat is set out in paragraph 118 of the NPPF, which states:

“Planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, unless the need for, and benefits of, the development on that location clearly outweigh the loss.”

4.6 Whilst ancient woodland is not protected under statute, there is a presumption that ancient woodland should be maintained where possible. Benefits of development affecting ancient woodland must be significant in terms of social or economic drivers and mitigation measures and/or compensation must be provided to reduce significant impacts where possible.

4.7 Since ancient woodland lies directly adjacent to the southern boundary of the site, it must be considered as part of the design layout. Natural England's standing advice on ancient woodland (2014) is therefore considered within the design scheme. Natural England identify the following significant effects from adjacent land that may have an effect on ancient woodland, which must be considered within the scheme:

- Fragmentation and loss of ecological connections with surrounding woodland/veteran trees and the wider landscape;
- Effects on the root protection area of individual trees;
- Reduction in the area of other semi-natural habitats adjoining ancient woodland;
- Increased exposure to pollutants from the surrounding area;
- Increased deposition of dust, particularly from quarries, resulting in physical and/or chemical effects;
- Impacts on local hydrology through drainage and water table levels changing;
- Increased public use near veteran trees such that safety works leading to possible damage to the tree may be needed;
- Change to the landscape context for ancient woods and veteran trees;
- Change to light pollution at night (if development includes street lighting);
- Fly-tipping, garden encroachment and increased predation from cats.

-
- 4.8 Natural England standing advice for ancient woodland is for the creation of a buffer zone of 15m from the edge of the woodland. The buffer zone has been identified as being of this size due to the above considered effects with regards to development and ancient woodland.
- 4.9 However, additional buffer zones may be required if protected species such as dormice are found to be present within the ancient woodland to ensure that a robust and effective mitigation strategy can be delivered on site.
- 4.10 As the current plans involve creating a large residential development on a predominantly undeveloped site, it is considered that there will be significant indirect impacts on the adjacent woodland. These are likely to include increased recreational usage, light pollution, garden encroachment and increased predation from cats. It is recommended that the proposed development is designed with a permanent 15m buffer zone between the ancient woodland edge and the site boundary, which should be allowed to develop into semi-natural habitat. Gardens should not be included in this buffer zone and it is recommended that gardens are not adjoining this buffer zone in order to reduce the likelihood of fly-tipping and garden encroachment.
- 4.11 The remaining habitats on site are common and widespread throughout the local area and the UK as a whole. The site is dominated by semi-improved grassland which appears to be regularly grazed. Only the edges of the grassland which are protected by electric fencing are considered to offer habitat for protected species such as reptiles. The most ecological valuable habitat on site is considered to be the boundary hedgerows and tree lines which can support a number of species and provide habitat connectivity. The log, brash and rubble piles are also considered to provide refuge opportunities for reptiles, amphibians and small mammals. Given that the development will be built within the area of grassland and will not impact upon boundary features, it is considered that it will not lead to habitat fragmentation or isolation in the surrounding areas and therefore will not affect the ecological functionality of the local landscape. It is also considered that the loss of habitats on site can be addressed through appropriate mitigation, compensation and enhancement measures.

- 4.12 With regards to local policy GEN28 (Trees and Woodlands), the local authority outlines the need to protect trees and woodland on development sites and any trees removed should be replaced elsewhere on site in an equivalent number. The development should not affect the boundary features on site and it is recommended that all trees on site be retained, particularly as there are a number of mature oaks present. Enhancements for the site should also include tree and shrub planting (see enhancements further below).
- 4.13 Policy GEN29 (Nature conservation across the district) states that developments will only be permitted where features of ecological value are retained and sympathetically incorporated into the scheme. Again, the entirety of the development is to take place on the grassland which has been identified as having low ecological value. The boundary features, including hedgerows and tree lines, will be retained and enhanced where possible. It is believed that biodiversity loss will be kept to a minimum and significant enhancements can be made post-development to increase biodiversity opportunities.

Protected Species

Badgers

- 4.14 No evidence of badgers, such as setts, latrines or snuffle holes, was identified anywhere on site at the time of the survey. Mammal holes were found along the western boundary of the site but these were considered too small to have been made by badgers and were more likely used by rabbits. There were, however, mammal paths near the northern and western boundaries. It is considered likely that badgers use the site for foraging and commuting purposes.
- 4.15 Foraging and commuting habitat is not legally protected, however, safety measures can be taken to ensure no badgers are harmed during the development process. It is recommended that any excavations and trenches associated with construction are either covered at night or supplemented with a means of escape for any badgers that may fall into the excavation whilst foraging. Any open pipes or conduits laid should be blocked

off each night to prevent badgers from entering them. If possible, construction work should only take place between dawn and dusk with no late evening work to reduce possible disturbance.

- 4.16 It is always recommended that badger update surveys are undertaken across the site prior to any development works and/or if there is a lapse in time between the survey and development as badgers may move onto the site in the intervening period.

Bats

- 4.17 There were two buildings on site, a barn and stables, but neither were considered to have roosting bat potential due to their building materials, their open and exposed nature, a lack of suitable crevices for roosting. The storage containers on site were also ruled out for roosting bats due to a lack of access and their metal construction. As such, all buildings were considered to have 'negligible' bat potential as per Table 1.
- 4.18 Many of the trees on site were not considered suitable for roosting bats due to their age and/or lack of features typically associated with roosting bats such as complex growth forms and woodpecker holes. However, three mature oaks along the boundaries of the site were considered to have low roosting bat potential due to the presence of holes, cracks in the limbs or dense ivy cover. It is recommended that these trees are retained on site along with all other mature trees present. It is recommended that these trees be sufficiently buffered from development. If any bat potential trees need to be removed, then further surveys will be required.
- 4.19 The linear features along the boundaries of the site, including the tree lines and hedgerows, are likely to provide foraging and commuting habitat for bats. Hedgerows and tree lines also help to connect the site to the wider landscape ensuring that bats can move with ease across the area using the linear features for shelter, protection and opportunistic foraging. These features should therefore be maintained and enhanced where possible.

- 4.20 For a development of this size, it is considered necessary that bat transect surveys be carried out to establish what species may be using the site and to identify the most important areas of the site for commuting bat species. It must be demonstrated that significant commuting routes for bat species between roost sites and foraging grounds are considered within the design of the scheme. Linear features must be considered within the development brief and must consider indirect impacts on bats such as lighting levels. All corridors within the design should be maintained as 'dark corridors'.
- 4.21 Transect surveys are also considered necessary given that rare species, such as barbastelles, have been found close to site within the last 3 years. Barbastelles are known to forage over a large area and are thought to be associated with pastoral habitats close to woodland, which would fit the description of the site and the surrounding area.
- 4.22 According to survey guidelines outlined by the Bat Conservation Trust (2016), the habitat on site was considered to be of 'low' suitability for commuting and foraging bats. This was due to the gappy nature of the hedgerows and tree lines along the majority of the boundaries and the lack of features running through the site. Therefore, it is recommended that one transect survey per season (spring – April/May, summer – June/July/August, autumn – September/October) be carried out in appropriate weather conditions for bat activity. It is also recommended that automated surveys are carried out. Data should be collected on 5 consecutive nights each season in appropriate weather conditions.
- 4.23 Any proposed lighting scheme as part of the development will have to take into account bats in the surrounding area as well as the site. All bat species are nocturnal, resting in dark conditions in the day and emerging at night to feed. Bats are known to be affected by light levels, which can affect both their roosting and foraging behaviour. This needs to be taken into account with a sympathetic lighting scheme. Recommendations include:
- Installing lighting only if there is a significant need;
 - Using low-pressure sodium lamps or high-pressure sodium instead of mercury or metal halide lamps where glass glazing is preferred due to its UV filtration characteristics;

- Directing light to where it is needed and avoiding light spillage;
- Using baffled lighting where light is directed towards the ground;
- Avoid putting lighting near treelines or hedgerows and angling light away from these linear features which are used by commuting and foraging bats;
- Planting a barrier or using man-made features required within the scheme to form a barrier.

4.24 To enhance the local bat population and provide roosting opportunities, it is recommended that boxes should be hung on mature trees or buildings around the site.

Recommended boxes include:

- Schwegler 2F Bat Box – These boxes are attractive to small bats such as pipistrelles and long-eared bats and can be hung on trees (Figure 4).
- Schwegler 2FN Bat Box – This is slightly larger than the 2F and provides opportunities for the larger bats such as noctules. These should be hung on mature trees.
- Schwegler 1FD Bat Box - This box has been designed specifically for smaller bats and provides opportunities as a maternity roost (Figure 4).

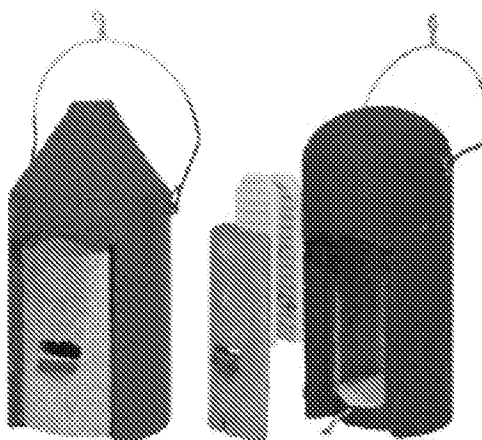
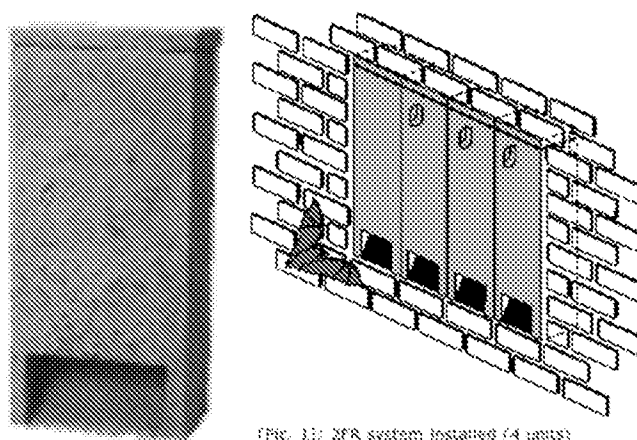


Figure 4: Schwegler 2F (left) and 1FD (right) bat boxes

4.25 Incorporating specially designed bat boxes into the design can enhance the habitat on site for bats. Suitable bat boxes include a variety of wooden bat boxes, such as an improved cavity box, a double chamber bat box and other wood based varieties. Schwegler boxes have been recommended as these are long-lasting and require no maintenance.

- 4.26 Bat boxes/tubes can also be incorporated into the structure of new buildings. These provide good opportunities for crevice-dwelling species such as pipistrelles. The opening of the bat box/tube will be the only section of the bat box/tube that would be visible. Several of these tubes can be established in a row together providing a good-sized roost space. The bat tubes should be inserted as high up as possible in the brickwork (Figure 5).



[Fig. 5]: BFR system installed (4 tubes)

Figure 5: Bat tubes incorporated into the wall of a building to provide roosting space

Dormice

- 4.27 The site is considered to offer some suitable habitat for dormice in the form of ancient woodland edge habitat and hedgerows and tree lines along the boundaries of the site. There are numerous records of dormice to the east of the site and this area is connected to site via hedgerows and tree lines, albeit with a small lane in between. Therefore, the possibility of dormice being present on site cannot be ruled out and further surveys are recommended.
- 4.28 Dormouse surveys involve erecting dormouse tubes within potential suitable habitat on site and within adjacent off-site habitats to detect presence/likely absence. Dormouse surveys should be carried out over a number of months. Each month of the year is given a score of suitability. A survey effort adding up to a score of 20 will need to be achieved throughout the course of a year. A hazel nut search will also need to be carried out where fruiting hazel is present on site to identify whether any nuts have been opened by

dormice, which can be detected by their distinctive method of opening this important food source.

- 4.29 If dormice are found to be present on or adjacent to the site as a result of the surveys then an appropriate mitigation and enhancement strategy will need to be implemented as part of the scheme. Whilst it is considered that direct impacts are unlikely, indirect impacts such as an increase in pets associated with residential development could have significant impacts on local dormouse populations.

Great Crested Newts

- 4.30 There are no ponds on site, however there are four within 250m of the red line boundary. One of these ponds could not be accessed on the day of the survey but the other two were assessed for their habitat suitability for GCNs. Pond 1 was assessed as having average suitability whilst pond 4 was calculated as having poor suitability. Pond 4 has been previously surveyed by FPCR in 2014 and no GCNs were found. Pond 1 and 3 were not present in 2014 at the time these surveys were being carried out.
- 4.31 The site contains largely suboptimal habitat for great crested newts in the form of short, grazed grassland which limits foraging opportunities and lack cover from potential predators. The hedgerows and tree lines may provide some potential habitat but they are gappy and missing in places. The neighbouring woodland, however, would be considered optimal terrestrial habitat.
- 4.32 There are no records of GCNs in the surrounding area from the last 10 years but this does not rule out the possibility of GCNs being present. Given the proximity of the ponds to the site (three within 100m), it is recommended eDNA surveys be carried out as a precautionary approach. This survey analyses samples taken from the pond's water column for great crested newt DNA in order to give an indication of historical presence of great crested newts in the pond. If a positive result is identified, further presence/likely absence surveys will be required. Indeed, using Natural England's licence risk assessment and based on the approximate size of the development, if any of

these ponds are used by breeding GCNs then the development would likely result in an offence (Table 5).

- 4.33 If any of the ponds come back with a positive result for GCN eDNA, then the development would require a European Protected Species (EPS) licensed issued by Natural England. As part of the licence, further surveys will be carried out between March and May to determine population size. Once completed, a mitigation enhancement strategy will be developed to ensure that GCNs are considered as part of the scheme.

Table 5: Natural England risk assessment

Component	Likely effect (select one for each component; select the most harmful option if more than one is likely; lists are in order of harm, top to bottom)	Notional offence probability score
Great crested newt breeding pond(s)	No effect	0
Land within 100m of any breeding pond(s)	0.01 - 0.1 ha lost or damaged	0.3
Land 100-250m from any breeding pond(s)	0.1 - 0.5 ha lost or damaged	0.1
Land >250m from any breeding pond(s)	0.1 - 0.5 ha lost or damaged	0.005
Individual great crested newts	No effect	0
Maximum:		0.3
Rapid risk assessment result:	AMBER: OFFENCE LIKELY	

"Amber: offence likely" indicates that the development activities are of such a type, scale and location that an offence is likely. In this case, the best option is to redesign the development (location, layout, methods, duration or timing; see **Non-licensed avoidance measures tool**) so that the effects are minimised. You can do this and then re-run the risk assessment to test whether the result changes, or preferably run your own detailed site-specific assessment. Bear in mind that this generic risk assessment will over- or under-estimate some risks because it cannot take into account site-specific details, as mentioned in caveats above. In particular, the exact location of the development in relation to resting places, dispersal areas and barriers should be critically examined. Once you have amended the scheme you will need to decide if a licence is required; this should be done if on balance you believe an offence is reasonably likely.

- 4.34 As a precautionary approach, it is also recommended that the log and rubble piles on site be sensitively removed by hand so as to avoid harming any amphibians or other animals which may be using them. The log piles can then be placed along the boundaries of the site to provide refuges for a range of wildlife.

Reptiles

- 4.35 The majority of the site is considered to be sub-optimal for reptiles as much of the grassland is grazed and therefore the sward is kept short. This reduces the foraging

opportunities as well as cover from predators. However, the edges of the fields behind the electric fence are longer and considered suitable for reptiles. Near the buildings of the site are patches of scrub and ruderal vegetation which are also thought to be suitable, especially with the presence of log, brash and rubble piles which may act as hibernacula.

- 4.36 These areas are likely to be affected by the development works and therefore a reptile presence/likely absence survey is recommended. Reptile surveys should be carried out between April and September on suitable dry days with temperatures between 8°C and 18°C.

Breeding Birds

- 4.37 Breeding birds are likely to use the trees, hedgerows and shrubs on site. It is recommended that as many trees as possible be retained and the boundary features should be left in situ. Any vegetation removal which needs to be carried out should be done outside of the breeding bird season (March-September inclusive) or immediately after a nesting bird check by a suitably qualified ecologist. If active nests are identified, works in the vicinity of the nest must cease until the birds have fledged the nest.

- 4.38 It is not considered necessary to carry out breeding bird surveys on this site due to the fact that the majority of the site is made up of regularly managed and grazed grassland. This means it is highly disturbed and reduces the chance of ground-nesting birds on site. The boundary features are most likely to be used by birds, however, these are gappy in places, make up a very small area on site and are to be retained within the scheme. Therefore, there will be no significant habitat loss and significant enhancements of these boundaries have been recommended (see further below) which should increase the value of the site for a number of bird species post-development.

- 4.39 Nest boxes should be installed in order to provide new nesting opportunities for birds and to achieve ecological enhancements in line with policies set out by the local planning authority. These can be hung on the buildings or surrounding mature trees post-development. Recommended boxes include:

-
- Schwegler 1N Deep Nest Box – gives added nest protection from predators;
 - Schwegler 1B Bird Box – general purpose bird box, suitable for many species;
 - Schwegler Bird House – This is suitable for all common garden birds and may be attached to a building or wall so is suitable for siting behind climbing plant.

Other Species

- 4.40 A small burrow was identified along the western boundary of the site. It was considered likely to have been created by rabbits given its shape and size. This should not be affected by the development as it is situated within the boundary tree line which is to be retained. However, if plans change and works need to be carried out in this area, then the burrow should be excavated by hand rather than using mechanical equipment. This is because the Wild Mammals Protection Act 1996 states that it is an offence to crush or cause asphyxiation to mammals.

Site Enhancements

- 4.41 A number of enhancements can be made to the final development to help reduce potential ecological impacts. It is important to utilise native species of local provenance in landscaping schemes to enhance the ecological value of a development.
- 4.42 New tree planting should be carried out across the site and any trees removed on site need to be replaced elsewhere on site in line with local planning policy. These should include native species of value to wildlife such as oak (*Quercus sp.*), ash (*Fraxinus excelsior*), hazel (*Corylus avellana*), beech (*Fagus sylvatica*), cherry (*Prunus sp.*), hornbeam (*Carpinus betulus*) and rowan (*Sorbus aucuparia*), wayfaring tree (*Viburnum lantana*), yew (*Axus baccata*) and privet (*Ligustrum vulgare*). Fruit trees should also be incorporated into the scheme with species such as apples, pears, gages and damsons. Fallen fruit provides good foraging opportunities for a range of species, including birds, badgers and hedgehogs.

4.43 The hedgerows and site boundaries should be enhanced and any sections replaced if they are to be removed. Hedgerows help to provide a layering of different habitats that can be utilised by a wide variety of species. Species that can be planted include blackthorn (*Prunus spinosa*), hawthorn (*Crataegus monogyna*), hazel, holly (*Ilex aquifolium*), elder (*Sambucus nigra*), alder (*Frangula alnus*), guelder rose (*Viburnum opulus*), dog rose (*Rosa canina*) and dogwood (*Cornus sanguinea*).

4.44 Planting the base and edges of the hedgerows with herbaceous plants and bulbs will attract bees, butterflies and other insects as well as providing ground cover for smaller animals. Seeds that are tolerant of semi-shade and are suitable for sowing beneath newly planted or established hedges should be used. The following species can include the mix:

- Yarrow (*Achillea millefolium*)
- Agrimony (*Agrimonia eupatoria*)
- Garlic mustard (*Alliaria petiolata*)
- Common knapweed (*Centurea nigra*)
- Wild basil (*Clinopodium vulgare*)
- Hedge bedstraw (*Galium album*)
- Wood avens (*Geum urbanum*)
- Oxeye daisy (*Leucanthemum vulgare*)
- Ribwort plantain (*Plantago lanceolata*)
- Cowslip (*Primula veris*)
- Selfheal (*Prunella vulgaris*)
- Red campion (*Silene dioica*)
- Bladder campion (*Silene vulgaris*)
- Hedge woundwort (*Stachys sylvatica*)
- Upright hedge parsley (*Torilis japonica*)
- Tufted vetch (*Vicia cracca*)

4.45 It is recommended that the buffer between the ancient woodland and the development be planted with thorny species. This will help to create understorey vegetation below the line of mature trees which provides opportunities for a range of species in addition to protecting dormouse habitat.

- 4.46 Log and brush piles should be created under hedgerows to provide refugia and hibernacula for amphibians, reptiles, small mammals and invertebrates. Log piles should be located in a variety of locations, such as damp places, with some situated in more sunny locations. These should be stacked and perhaps some amounts of leaf litter added. Planting around log piles with such species as honeysuckle or clematis can also add value.
- 4.47 Newly formed areas of amenity grassland post-development could be supplemented by integrating a variety of native plant species. Patches of bare soil can be sown with wildflower seed mixes to increase the biodiversity of the site and also offer aspects of aesthetic appeal.
- 4.48 Shrub and herb planting can be carried out in gardens and open areas. Species which are recommended include those which produce flowers and berries which provide additional food sources for local wildlife such as box (e.g. dwarf sweet box *Sarcococca hookeriana*), bilberry (*Vaccinium myrtillus*), various hebes and cotoneaster species. Herbs should include species which provide nectar opportunities for invertebrates such as lavender, jasmine, chamomile, fennel, oregano, evening primrose, thyme, mint and heather.
- 4.49 Additional habitats may be provided for species including birds and insects in the form of green walls. Green walls can be created by planting climbing plants in the ground and training these either directly onto the external walls of the building or on to trellis. Alternatively, it is possible to create an instant green wall using established climbing plants rooted in containers and grown onto frames. Species could include:
- Honeysuckle (*Lonicera japonica*, *L. fragrantissima*, *L. standishii*)
 - Clematis spp. (*Clematis vitalba*, *C. armandii*, *C. alpina*, *C. montana*, *C. tangutica*)
 - Ivy (*Hedera helix*)
 - Climbing hydrangea (*Hydrangea petiolaris*)
 - Dog rose (*Rosa canina*)

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- 4.50 Sustainable Urban Drainage Systems (SUDS) should be considered as part of the development. They help to reduce potential impacts associated with surface water discharge on the local landscape. They can also provide additional habitat for local wildlife. Examples include swales, ponds, green roofs, filter drains and permeable paving. A pond could be created on site which would help to provide a net gain in biodiversity. The pond can be planted to provide enhancements for invertebrates on site which would in turn benefit other species such as amphibians and bats. Species of ecological value should be used such as water mint (*Mentha aquatica*), common reed (*Phragmites australis*), soft rush (*Juncus effusus*), water plantain (*Alisma plantago-aquatica*) and yellow flag iris (*Iris pseudacorus*).

5.0 Conclusions

- 5.1 The site does not lie within or adjacent to any statutory or non-statutory designated sites. It is considered unlikely that the development will cause adverse effects to any nearby designations or the surrounding landscape.
- 5.2 However, the site lies immediately adjacent to Wandley's Copse which is a designated ancient woodland. Natural England guidance outlines the need for a 15m buffer zone between the development and the woodland to protect this habitat.
- 5.3 The majority of the habitats on site are common and widespread throughout the local area and the UK as a whole. The most ecologically valuable habitats on site were considered to be the tree lines and hedgerows along the boundaries which are to remain in situ.
- 5.4 No evidence of badgers was found on site at the time of the survey, however badgers are likely to use the site for foraging and commuting purposes and so should be considered during construction works. A badger update survey is recommended before works begin.

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- 5.5 The majority of the trees on site were immature and lacked features typically associated with roosting bats. However, three mature trees along the boundaries were considered to have low roosting bat potential. These trees are to be retained within the scheme, however, should this change then further surveys will be required.
- 5.6 Bats may use the tree lines along the boundaries of the site as foraging and commuting habitat. Surveys for a neighbouring development found common bat species such as pipistrelles, brown long-eared and Myotis species have been recorded close to site as well as rare species such as barbastelles in 2014. It is recommended bat transect surveys be carried out on site. A sensitive lighting scheme and bat boxes should be incorporated into the scheme.
- 5.7 Dormice are considered likely to be using the boundaries of the site for commuting and potentially foraging and nesting. There are records of dormice 700m east of the site and this area is connected to site via tree lines and hedgerows. The ancient woodland adjacent to site is also considered to provide optimal habitat. It is recommended that dormouse presence/likely absence surveys be carried out on site and within the ancient woodland.
- 5.8 There are four ponds within 250m of the red line boundary. Whilst no GCNs have been recorded in previous surveys of some of these ponds, it is considered necessary to conduct eDNA surveys of these ponds as a precautionary approach given their proximity to site.
- 5.9 Whilst the majority of the grassland on site is kept short by grazing, the edges which are protected by electric fencing are considered to be optimal for reptiles. There are also patches of scrub and ruderal vegetation along with log, rubble and brash piles present which are considered suitable for reptiles. Therefore, reptile presence/likely absence surveys are recommended.

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- 5.10 Nesting birds are likely to use the trees and shrubs on site. Any vegetation clearance should be undertaken outside of the breeding bird season (March-September inclusive) or immediately after a nesting bird check by a suitably qualified ecologist.
- 5.11 The site is not considered to be constrained by other protected species, such as otters and water voles. No further survey work for these species is required.
- 5.12 Log and rubble piles on site should be removed by hand as a precautionary approach in case any animals such amphibians or reptiles are using them as hibernacula.
- 5.13 Recommendations for enhancements have been made within this report, aimed at improving the ecological value of the site and providing a net gain in biodiversity post-development.

6.0 References

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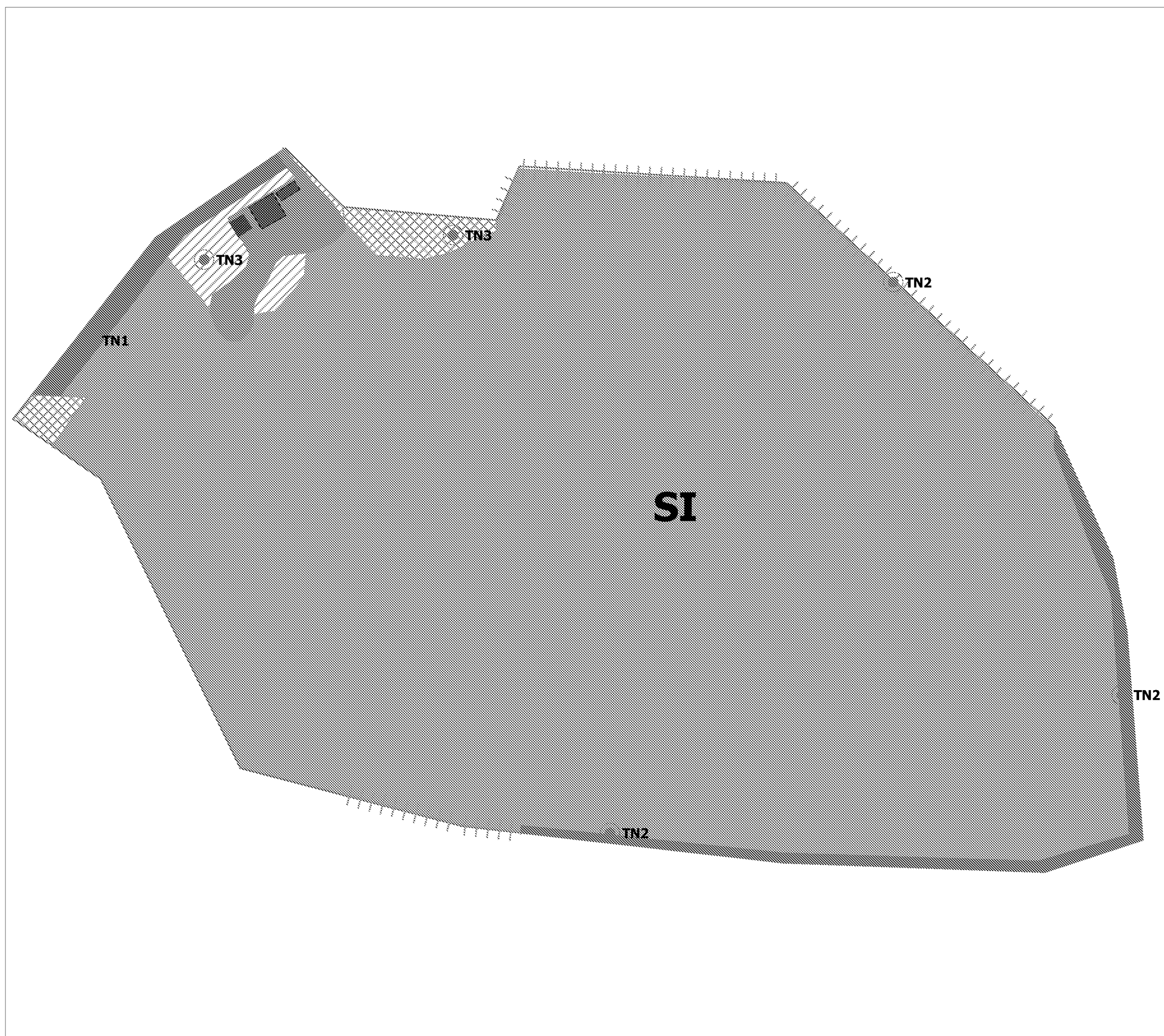
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Internet resources:

Google Maps: www.google.co.uk/maps

Magic Interactive Map: www.magic.gov.uk

Appendix 1: Phase 1 Habitat Map



Key

-  Semi-improved grassland
-  Ruderal vegetation
-  Scrub
-  Hedgerows
-  Tree cover
-  Hardstanding
-  Buildings
-  Storage containers
-  **TN1** Target note 1: Mammal holes
-  **TN2** Target note 2: Low bat potential tree
-  **TN3** Target note 3: Log/rubble/brash pile
-  Survey boundary

Site: Wandleys Farm
Client: ECE Architecture
Surveyor: N. Kay
Survey Date: 10th March 2017
Drawing Title: Habitat Map

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ecology
partnership

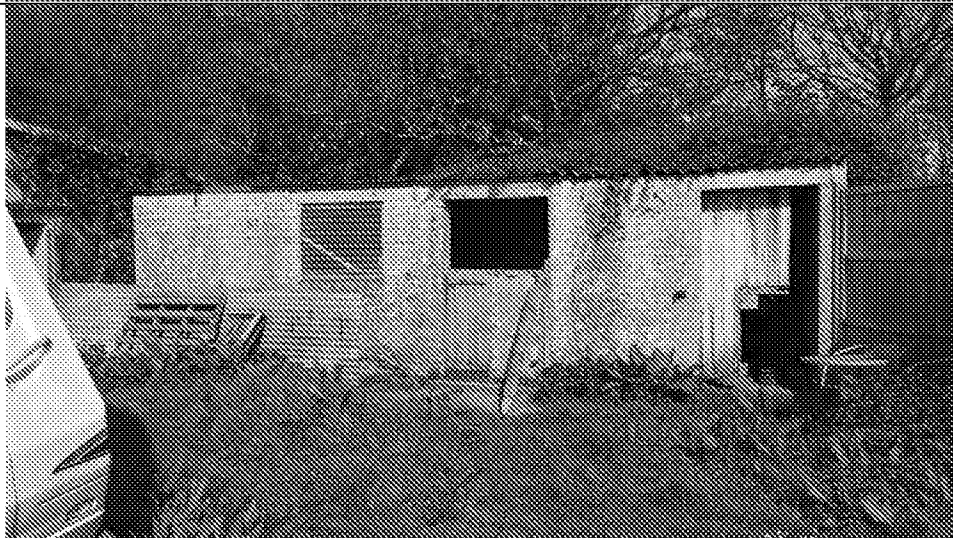
The Ecology Partnership Ltd
Dorset House, 297 Kingston Road, Leatherhead,
Surrey, KT22 7PL
01372 824 205 www.ecologypartnership.com

Appendix 2: Photos

Photograph 1:
The buildings
near the
entrance of the
site.



Photograph 2:
Northern
section of the
site between
the boundary
and the
parking area.



Photograph 3:
Log and
rubble pile in
the northern
section of the
site.



Photograph 4:

The brick storage barn adjacent to the stables with a flat roof.

**Photograph 5:**

The entrance to the barn permanently open.

**Photograph 6:**

Inside the barn with no suitable crevices for roosting bats.

