



LINDSAY CARRINGTON  
ECOLOGICAL SERVICES

PHASE 1 BAT AND ECOLOGICAL APPRAISAL REPORT

RYEFIELDS FARMHOUSE  
OAK TREE LANE  
WOODGATE  
PO20 3GU

ON BEHALF OF TURNBULL LAND



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## SUMMARY

1. Lindsay Carrington Ecological Services Limited were commissioned by Turnbull Land to conduct an ecological appraisal and phase 1 bat survey at The Land at Ryefields Farmhouse, Oak tree lane, Woodgate, PO20 3GU (Grid reference: SU 94039 04247). This survey was required to support an application for the development of ten residential units and a detached twin garage.
2. An ecological appraisal is essentially a multi-disciplinary walk-over survey and was conducted with the objective of identifying any ecological constraints associated with the proposals such as the site's potential to support any legally protected species or habitats of high nature conservation value. A phase 1 bat survey was incorporated into this site visits and involves the assessment of the buildings on site for their potential to support roosting bats and to describe any evidence of bat roosting.
3. The development area is within 300 metres of chalk stream which qualifies as a priority habitat under the Natural Environment and Rural Communities Act 2006. There is no risk of direct impact but measures to prevent indirect pollution effects are outlined in section 5.1.
4. No bat roosts were identified on site but the unlit lane to the north of the site is within the core sustenance range of known barbastelle roosts. It is considered unlikely that the lane would function as an important route but lighting mitigation is advised to avoid causing the accumulative loss of commuting routes at a landscape level. This is outlined in section 5.2.
5. The hedgerows and scattered trees on site were found to be suitable for nesting birds. A precautionary working methodology to prevent impacts to nests has been outlined in section 5.3.
6. Montbretia (*Crocasmia Montbretia* × *crocosmiiflora*) was recorded within the eastern hedgerow. This species of plant which is listed as high invasive species under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) and recommendations for its removal, if possible, have been made in section 5.4.
7. Recommendations for the enhancement of the site to produce a net gain in biodiversity in accordance with the national planning and policy framework has been made in section 5.5

## 1.0 INTRODUCTION

Lindsay Carrington Ecological Services Limited were commissioned by Turnbull Land to conduct an ecological appraisal and phase 1 bat survey at The Land at Ryefields Farmhouse, Oak tree lane, Woodgate, PO20 3GU (Grid reference: SU 94039 04247). This survey was required to support an application for the development of ten residential units and a detached twin garage.

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Section 2 of the report provides background information on relevant legislation and policy. Section 3 details the methodologies adopted for the ecological surveys that were conducted and section 4 provides an account of the survey results. Section 5 provides information on the relevance of the results to the development proposal and recommends measures to avoid, mitigate or compensate for the effects on a particular habitat or species.

## 2.0 LEGISLATION AND POLICY

### 2.1 Legislation

The following legislation may be of relevance to the proposed works. Full details of statutory obligations with respect to biodiversity and the planning system can be recorded in DCLG Circular 06/2005.

- **The Conservation of Habitats and Species Regulations 2017:**

This transposes the EU Habitats Directive (Council Directive 92/43/EEC) into domestic law. The Regulations provide protection for a number of species including:

- All species of bat;
- Dormouse (*Muscardinus avellanarius*);
- Otter (*Lutra lutra*); and
- Great crested newt (*Triturus cristatus*).

This legislation makes it an offence to deliberately capture, kill or injure individuals of these species listed on Schedule 2 and damage or destroy their breeding site or place of shelter. It is also illegal to deliberately disturb these species in such a way as to be likely to significantly affect: (i) the ability of any significant group of the species to survive, breed or rear or nurture their young; or (ii) the local distribution or abundance of the species<sup>1</sup>;

This legal protection means that where development has the potential to impact on bats, or other European protected species, the results of a protected species survey must be submitted with a planning application.

Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) are also protected under this legislation. These are a network of sites designated for supporting habitats or species of high nature conservation importance in the European context. Any activity that has a detrimental effect on these European sites is made an offence under the Regulations. Where a development is likely to have a significant impact on a European site, the Regulations require a rigorous assessment of the impacts, known as an Appropriate Assessment.

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<sup>1</sup> The Conservation of Habitats and Species Regulations 2017 consolidates the numerous amendments that were made to the Conservation (Natural Habitats, &c.) Regulations 1994. Of particular relevance are amendments made in August 2007 and January 2009 which increased the threshold of illegal levels of disturbance to European Protected Species (EPS). An offence is only committed if the deliberate disturbance would result in significant impacts to the EPS population. However, it should be noted that activities that cause low levels of disturbance to these species continue to constitute an offence under Section 9 of the Wildlife and Countryside Act (see below).

- **The Wildlife and Countryside Act 1981 (and amendments):** Protected fauna and flora are listed under Schedules 1, 5 & 8 of the Act. Species likely to be of relevance include:
  - All species of **bat**. It is an offence to intentionally or recklessly disturb any bat whilst it is occupying a roost or to intentionally or recklessly obstruct access to a bat roost;
  - All species of British **reptile** (in particular grass snake (*Natrix natrix*), common lizard (*Zootoca vivipara*), adder (*Vipera berus*) and slow-worm (*Anguis fragilis*)). It is illegal to kill or injure these species; and
  - **Great crested newt**. It is illegal to obstruct access to any structure or place which great crested newts use for shelter or protection or to disturb any great crested newt while it is using such a place.
  - **Water vole**. It is an offence to intentionally kill, injure or take water vole (*Arvicola amphibius*), intentionally or recklessly damage, destroy, obstruct access to water vole holes or disturb them whilst in a hole.

This Act also makes it an offence to intentionally kill, injure or take any wild bird or to take, damage or destroy their eggs and nests (whilst in use or being built). In addition, it is an offence to disturb any nesting bird listed on Schedule 1 or their young.

Schedule 9 of the Act lists those species for which it is an offence to cause their spread. Schedule 9 species that are most likely to be encountered are Japanese knotweed (*Fallopia japonica*) and New Zealand pigmyweed (*Crassula helmsii*).

Sites of Special Scientific Interest (SSSIs) are also protected under the Wildlife and Countryside Act 1981. These are a network of sites identified as being of national nature conservation importance and hence afforded legal protection.

- **The Countryside and Rights of Way Act 2000:** This Act strengthens nature conservation and wildlife protection. It places a duty on Government Ministers and Departments to conserve biological diversity, provides police with stronger powers relating to wildlife crimes, and improves protection and management of SSSIs.
- **The Protection of Badgers Act 1992:** This Act makes it an offence to wilfully take, injure or kill a badger (*Meles meles*); cruelly mistreat a badger; interfere with badger setts. A licence is required for work which may damage or disturb a sett.
- **Wild Mammals (Protection) Act 1996:** This Act provides protection for all wild animals from intentional acts of cruelty.

- **Hedgerow Regulations 1997:** These Regulations establish a set of criteria for assessing the importance of hedgerows. Where a hedgerow is deemed to be ‘important’ its removal is prohibited without consent from the local Planning Authority.

## 2.2 Policy

The following policy is of relevance to the proposed works:

- **National Planning Policy Framework (NPPF):** This sets out the Government’s vision for biodiversity in England with the broad aim that planning, construction, development and regeneration should maintain and enhance, restore or add to biodiversity and geological conservation interests. NPPF (2018) includes sections on legally protected species and sites in section 15(2) (see section 2.1).
- **Local Sites (including Sites of Nature Conservation Interest (SNCIs), Local Nature Reserves (LNR), and Biological Notification Sites (BNSs)/County Wildlife Sites (CWSs)):** These are a network of sites designated for their nature conservation importance in a local context. Although they are not afforded legal protection they contribute towards local and national biodiversity. Where such development is permitted, the local planning authority will use conditions and/or planning obligations to minimise the damage and to provide compensatory and site management measures where appropriate.
- **Biodiversity Action Plans (BAPs):** BAPs set out policy for protecting and restoring priority species and habitats as part of the UK’s response as signatories to the Convention on Biological Diversity. BAPs operate at both a national and local level with priority species and habitats identified at a national level and a series of Local BAPs that identify ecological features of particular importance to a particular area of the country. The requirement to consider and contribute towards BAP targets was strengthened through the Countryside and Rights of Way Act 2000. Habitat and Species Action Plans that are likely to be of relevance include:
  - Hedgerow (UK BAP)
  - Reptiles (UK BAP)
  - Brown long-eared bat (*Plecotus auritus*) (UK BAP)
  - Soprano pipistrelle (*Pipistrellus pygmaeus*) (UK BAP)

## **3.0 METHODOLOGY**

### **3.1 Desk study**

Sussex Biodiversity Record Centre (SBRC) and the Multi-Agency Geographical Information for the Countryside (MAGIC) website were used to provide any information they may hold on protected species within two kilometres and designated sites within five kilometres of the proposed development.

The Multi-Agency Geographical Information for the Countryside (MAGIC) website was also used to provide information on any European protected species mitigation (EPSM) licences for bats within two kilometres of the proposed development.

### **3.2 Field survey**

#### **3.2.1 Vegetation**

The standard phase 1 habitat survey methodology (JNCC, 2010) was adopted whereby habitats are mapped using colour codes (appendix III). A detailed walkover survey was undertaken on the 15<sup>th</sup> January 2019 by William Davis directly searching for legally protected and invasive species of plant and categorising any habitats of ecological value that were encountered. A general description of the vegetation was also noted, listing species encountered and scoring their abundance using the DAFOR scale:

- D Dominant;
- A Abundant;
- F Frequent;
- O Occasional;
- R Rare;
- L Local (used as a prefix to any of the above).

#### **3.2.2 Protected species assessment**

Habitats and features were assessed for their potential to support protected species (see section 2). In many cases determining the presence, distribution and population size of protected species will require additional, specialist surveys.

##### ***Badgers***

A direct search was undertaken for signs of badger. Signs of badger may include setts, dung pits, latrines, paths or hairs on fences and vegetation. Any setts encountered were classified according to the number of entrances and the extent of their use.

##### ***Bats***

*Phase 1 bat survey*

Bats roost in a wide variety of sites within buildings, with many species roosting in cracks and crevices, within brick work, under slates and tiles, and within timber beam joints where they are difficult to see.

Bats often access roosts at key areas such as the gable end, soffits, barge boards, ridge tiles, between double lintels, around window frames, through open joints in the brickwork or broken tiles through open doors / entrances to the buildings.

The presence of roosting bats can be spotted through signs such as accumulations of moth or butterfly wings, staining, bat droppings, or bats themselves. The absence of these cannot, however, be treated as conclusive evidence that bats are not using the buildings. An assessment was therefore also made of the potential of the building to support bats based on the following scale:

**Table 1: Criteria for assessing bat roosting potential of structures.**

|                                             |                                                                                                                                               |
|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Confirmed Roost</b>                      | Evidence of bat occupation found                                                                                                              |
| <b>High Roosting Potential</b>              | With significant roosting potential, either because they contain a large number of suitable features or those features present appear optimal |
| <b>Moderate Roosting Potential</b>          | Features with moderate roosting potential, with roosting features appearing less suitable                                                     |
| <b>Low or Negligible Roosting Potential</b> | Buildings with few, if any, features suitable for roosting                                                                                    |

A direct search for evidence of bats was therefore conducted on the 15<sup>th</sup> January 2019 by William Davis. This assessment of the building was undertaken using the guidelines for a preliminary roost assessment (Collins, 2016).

*Dormice*

The habitat on the site was assessed for the potential to support dormice, which are recorded in habitats such as woodlands, scrub and hedgerows with good connectivity and suitable food plants. Satellite images were used to assess the connectivity of any suitable habitat present on the site to other areas of woodland and hedgerow networks.

*Great crested newts*

Suitable breeding ponds are essential to support populations of great crested newt although they actually only spend a relatively short period of the year in the ponds during

the spring for breeding. The remainder of the year is spent in suitable 'foraging' habitat such as tall grassland and woodland. During the winter the great crested newt hibernates, often amongst the roots of trees and scrub or in places such as piles of rubble, amongst foundations of buildings or under fallen trees and logs.

Great crested newts are known to forage up to at least five hundred metres from their breeding sites and suitable habitats that fall within five hundred metres must be considered even in situations where the breeding site itself will not be affected. Ponds within a five hundred metre radius were therefore identified during this survey and habitats within and immediately adjacent to the site at were assessed in terms of their suitability as foraging habitat. The site and surrounding area was assessed for the presence of ponds that would be suitable breeding habitat for great crested newts during the phase 1 habitat survey. Suitable terrestrial habitat was also assessed.

### Habitat Suitability Index (HSI)

A Habitat Suitability Index (HSI) assessment was carried out to determine the suitability of water bodies and ponds to support great crested newts. The assessment uses criteria and values as provided by Oldham et al. (2000, 2008). HSI cannot be used to predict the presence of great crested newts.

The results are categorised according the following scale:

- <0.5 = poor
- 0.5 – 0.59 = below average
- 0.6 – 0.69 = average
- 0.7 – 0.79 = good
- >0.8 = excellent

### ***Reptiles***

Reptiles are widespread in habitats that provide both cover, in the form of scrub or tall vegetation, and basking areas such as areas of hard standing or short grassland communities. Piles of debris or rubble also provide excellent cover and hibernation sites for reptiles. Effective survey for reptiles is time-consuming and labour intensive involving the use of artificial refuges (usually roofing felt or carpet tiles) which attract individuals. Habitats within the site were therefore assessed for their suitability to support reptiles and further specialist surveys recommended where appropriate.

## 4.0 RESULTS

### 4.1 Desk study

#### *Statutory and non-statutory sites*

Table 2 below lists statutory sites designated for nature conservation located within five kilometres and non-statutory sites designated within a two kilometre radius of the site.

**Table 2: Statutory designated sites within a five kilometre radius and non-statutory sites within a two kilometre radius of The Land at Ryefields Farmhouse.**

| Site name                  | Conservation status | Distance from site (km) | Size (Ha) | Habitat description                                                                                                                                                                                                |
|----------------------------|---------------------|-------------------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Eartham pit, Boxgrove      | SSSI <sup>2</sup>   | 4.5 N                   | 9.76      | Site of geological significance.                                                                                                                                                                                   |
| Halnaker Chalk pit         | SSSI                | 5.0 N                   | 6.37      | The site comprises bare and partly vegetated chalk pit with scrub and woodland around the periphery.                                                                                                               |
| Felpham                    | SSSI                | 5.0 S                   | 0.97      | Site of geological significance                                                                                                                                                                                    |
| The Brooks                 | LNR <sup>3</sup>    | 2.6 S                   | 19.11     | Wide areas of meadow, narrow reedbeds and ditches, permanent and temporary ponds, and an extensive newly planted floodplain woodland. The Brooks floods every winter, making it a good place for wetland wildlife. |
| Barnham Road at Eastergate | NRV <sup>4</sup>    | 1.3 N                   | n/a       | A road verge known to support a population of the notable plant species wild clary ( <i>Salvia verbenaca</i> ).                                                                                                    |

*The proposed development is situated at suitable distance from the surrounding statutory and non-statutory sites that direct impacts are unlikely as no routes of direct or indirect impacts are present between the development area and the site. There is a chalk stream located 300 metres to the east of the site. This habitat is a priority habitat listed under the Natural Environment and Rural Communities Act (2006) and as such is a material consideration in planning. Potential impacts to the stream from pollution have been discussed in section 5.1.*

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<sup>2</sup> SSSI: Site of Special Scientific Interest

<sup>3</sup> LNR: Local Nature Reserve

<sup>4</sup> NVR: Notable Road Verge

***Protected and notable species***

Table 3 below presents records obtained from SBRC for protected and notable species within two kilometres of the survey area.

**Table 3: Protected and notable species within a two kilometre radius of The Land at Ryefields Farmhouse.**

| Common Name                             | Scientific Name             | Status                                                               | Records                                 |
|-----------------------------------------|-----------------------------|----------------------------------------------------------------------|-----------------------------------------|
| <b><i>Reptiles &amp; Amphibians</i></b> |                             |                                                                      |                                         |
| Slow worm                               | <i>Anguis fragilis</i>      | Schedule 5 WCA <sup>5</sup> UK BAP <sup>6</sup>                      | 3 records dated between 2009-2010.      |
| Smooth newt                             | <i>Lissotriton vulgaris</i> | Schedule 5 WCA, UK BAP                                               | 3 records dated between 2015 and 2018   |
| Grass snake                             | <i>Natrix helvetica</i>     | Schedule 5 WCA, UK BAP                                               | 2 records between 2009 and 2010         |
| Common frog                             | <i>Rana temporaria</i>      | Schedule 5 WCA,                                                      | 1 record dated 2010                     |
| Great crested newts                     | <i>Triturus cristatus</i>   | Schedule 2 HabReg <sup>7</sup><br>Schedule 5 WCA, UK BAP             | 5 records dated between 2013 and 2018.  |
| Common lizard                           | <i>Zootoca vivipara</i>     | Schedule 5 WCA, UK BAP                                               | 1 record dated 2010.                    |
| <b><i>Birds</i></b>                     |                             |                                                                      |                                         |
| Lesser redpoll                          | <i>Acanthis cabaret</i>     | UK BAP, Red list BoCC <sup>8</sup>                                   | 14 records dated between 2012 and 2017. |
| Skylark                                 | <i>Alauda arvensis</i>      | UK BAP, Red list BoCC                                                | 103 records most recently dated 2017.   |
| Kingfisher                              | <i>Alcedo atthis</i>        | Annex 1 <sup>9</sup> , Schedule 1 WCA, Amber list BoCC <sup>10</sup> | 19 records most recently dated 2016.    |
| Barnacle goose                          | <i>Branta leucopsis</i>     | Birds Directive, Amber list BoCC                                     | 1 record dated 2015.                    |
| Ruff                                    | <i>Calidris pugnax</i>      | Annex 1, Schedule 1 WCA, Red list BoCC                               | 6 records most recently dated 2017.     |
| Cetti's warbler                         | <i>Cettia cetti</i>         | Schedule 1 WCA                                                       | 47 records dated between 2009 and 2017. |
| Little ringed plover                    | <i>Charadrius dubius</i>    | Schedule 1 WCA                                                       | 5 records between 2014 and 2016.        |
| White stork                             | <i>Ciconia ciconia</i>      | Annex 1                                                              | 3 records dated between 2010 and 2017.  |

<sup>5</sup> WCA: The Wildlife and Countryside Act 1981 (as amended)

<sup>6</sup> UK BAP: UK Biodiversity Action Plan species (priority species)

<sup>7</sup> HabReg: The Conservation of Habitats and Species Regulations 2017

<sup>8</sup> Red list BoCC: Birds of Conservation Concern red list

<sup>9</sup> Annex 1: Annex 1 of the Birds Directive 2009

<sup>10</sup> Amber list BoCC: Birds of Conservation Concern amber list

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| Common Name         | Scientific Name              | Status                                   | Records                                 |
|---------------------|------------------------------|------------------------------------------|-----------------------------------------|
| Cuckoo              | <i>Cuculus canorus</i>       | UKBAP, Amber list BoCC                   | 15 records most recently dated 2016.    |
| Bewick's swan       | <i>Cygnus columbianus</i>    | Annex 1, Schedule 1 WCA, UK BAP          | 3 records dated 2011                    |
| Whooper swan        | <i>Cygnus cygnus</i>         | Annex 1, Schedule 1 WCA                  | 49 records dated between 2011 and 2015  |
| Little egret        | <i>Egretta garzetta</i>      | Annex 1                                  | 34 records most recently dated 2016     |
| Corn bunting        | <i>Emberiza calandra</i>     | UK BAP, Red list BoCC                    | 21 records most recently dated 2014.    |
| Merlin              | <i>Falco columbarius</i>     | Annex 1, Schedule 1 WCA, Red list BoCC   | 13 records dated between 2011 and 2017. |
| Peregrine           | <i>Falco peregrinus</i>      | Annex 1, Schedule 1 WCA                  | 55 records most recently dated 2017     |
| Hobby               | <i>Falco subbuteo</i>        | Schedule 1 WCA                           | 34 records most recently dated 2017.    |
| Kestrel             | <i>Falco tinnunculus</i>     | Amber list BoCC                          | 108 records most recently dated 2017.   |
| Crane               | <i>Grus grus</i>             | Annex 1, Amber list BoCC                 | 7 records dated 2014.                   |
| Hen harrier         | <i>Hen Harrier</i>           | Annex 1, Schedule 1 WCA, Red list BoCC   | 3 records dated between 2011 and 2013.  |
| Black-winged stilt  | <i>Himantopus himantopus</i> | Annex 1, Schedule 1 WCA                  | 1 record in 2014.                       |
| Little gull         | <i>Hydrocoloeus minutus</i>  | Annex 1, Schedule 1 WCA                  | 4 records dated between 2012 and 2014.  |
| Mediterranean gull  | <i>Larus melanocephalus</i>  | Annex 1, Schedule 1 WCA, Amber list BoCC | 11 records dated between 2011 and 2017. |
| Black-tailed godwit | <i>Limosa limosa</i>         | Schedule 1 WCA, Red list BoCC, UK BAP    | 14 records most recently dated 2017.    |
| Linnet              | <i>Linaria cannabina</i>     | UK BAP, Red list BoCC                    | 66 records most recently dated 2016.    |
| Common crossbill    | <i>Loxia curvirostra</i>     | Schedule 1 WCA                           | 2 records most recently dated 2015.     |
| Woodlark            | <i>Lullula arborea</i>       | Annex 1, Schedule 1 WCA, UK BAP.         | 2 records most recently dated 2013.     |
| Marsh harrier       | <i>Marsh Harrier</i>         | Annex 1, Schedule 1 WCA, Amber list BoCC | 11 records most recently dated 2017     |
| Red kite            | <i>Milvus milvus</i>         | Annex 1, Schedule 1 WCA                  | 12 records most recently dated 2017.    |
| Yellow Wagtail      | <i>Motacilla flava</i>       | UK BAP, Red list BoCC                    | 32 records dated between 2008 and 2017. |

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| Common Name        | Scientific Name             | Status                                   | Records                                 |
|--------------------|-----------------------------|------------------------------------------|-----------------------------------------|
| Spotted flycatcher | <i>Muscicapa striata</i>    | UK BAP, Red list BoCC.                   | 39 records most recently dated 2017     |
| Whimbrel           | <i>Numenius phaeopus</i>    | Schedule 1 WCA, Red list BoCC            | 16 records most recently dated 2017.    |
| Osprey             | <i>Pandion haliaetus</i>    | Annex 1, Schedule 1 WCA, Amber list BoCC | 5 records most recently dated 2012.     |
| House sparrow      | <i>Passer domesticus</i>    | UK BAP, Red list BoCC                    | 143 records most recently dated 2017.   |
| Grey partridge     | <i>Perdix perdix</i>        | UKBAP                                    | 55 records most recently dated 2017     |
| Honey-buzzard      | <i>Pernis apivorus</i>      | Annex 1, Schedule 1 WCA, Amber list BoCC | 4 records most recently dated 2016      |
| Black redstart     | <i>Phoenicurus ochruros</i> | Schedule 1 WCA, Red list BoCC            | 10 records most recently dated 2017     |
| Spoonbill          | <i>Platalea leucorodia</i>  | Annex 1, Schedule 1 WCA, Amber list BoCC | 1 record dated 2014                     |
| Glossy ibis        | <i>Plegadis falcinellus</i> | Annex 1                                  | 22 records dated between 2012 and 2014. |
| Marsh tit          | <i>Poecile palustris</i>    | UK BAP, Red list BoCC                    | 4 records dated between 2008 and 2012.  |
| Dunnock            | <i>Prunella modularis</i>   | UKBAP, Amber list BoCC                   | 201 records most recently dated 2017.   |
| Bullfinch          | <i>Pyrrhula pyrrhula</i>    | UK BAP, Amber list BoCC                  | 87 records most recently dated 2017.    |
| Firecrest          | <i>Regulus ignicapilla</i>  | Schedule 1 WCA                           | 12 records dated between 2010 and 2017. |
| Common tern        | <i>Sterna hirundo</i>       | Annex 1, Amber list BoCC                 | 1 record dated 2015.                    |
| Turtle dove        | <i>Streptopelia turtur</i>  | UKBAP, Amber list BoCC                   | 16 records most recently dated 2012.    |
| Starling           | <i>Sturnus vulgaris</i>     | UK BAP, Red list BoCC                    | 145 records most recently dated 2017.   |
| Dartford warbler   | <i>Sylvia undata</i>        | Annex 1, Schedule 1 WCA, Red list BoCC.  | 1 record dated 2016.                    |
| Wood sandpiper     | <i>Tringa glareola</i>      | Annex 1, Schedule 1 WCA, Amber list BoCC | 3 records dated between 2012 and 2016   |
| Greenshank         | <i>Tringa nebularia</i>     | Schedule 1 WCA, Amber list BoCC          | 10 records between 2012 and 2016.       |
| Green sandpiper    | <i>Tringa ochropus</i>      | Schedule 1 WCA, Amber list BoCC          | 30 records most recently dated 2017.    |
| Redshank           | <i>Tringa totanus</i>       | Amber list BoCC                          | 12 records most recently dated 2016.    |
| Redwing            | <i>Turdus iliacus</i>       | Schedule 1 WCA, Red list BoCC            | 59 records most recently dated 2017     |

| Common Name            | Scientific Name                  | Status                                          | Records                                |
|------------------------|----------------------------------|-------------------------------------------------|----------------------------------------|
| Song thrush            | <i>Turdus philomelos</i>         | UK BAP, Red list BoCC.                          | 151 records most recently dated 2017   |
| Fieldfare              | <i>Turdus pilaris</i>            | Schedule 1 WCA, Red list BoCC                   | 77 records most recently dated 2017.   |
| Ring ouzel             | <i>Turdus torquatus</i>          | UKBAP                                           | 4 records dated between 2012 and 2015. |
| Barn owl               | <i>Tyto alba</i>                 | Schedule 1 WCA                                  | 30 records most recently dated 2016.   |
| Lapwing                | <i>Vanellus vanellus</i>         | UK BAP, Red list BoCC                           | 103 records most recently dated 2017.  |
| <b>Mammals</b>         |                                  |                                                 |                                        |
| European water vole    | <i>Arvicola amphibius</i>        | Schedule 5 and 9.4, WCA, UK BAP                 | 3 records dated between 2009 and 2013  |
| West European hedgehog | <i>Erinaceus europaeus</i>       | Schedule 5, WCA, UK BAP                         | 10 records dated between 2015 & 2017   |
| <b>Mammals-bats</b>    |                                  |                                                 |                                        |
| Western Barbastelle    | <i>Barbastella barbastellus</i>  | Schedule 5, WCA, Habs Regs <sup>11</sup> UK BAP | 15 records dated 2015.                 |
| Serotine               | <i>Eptesicus serotinus</i>       | Schedule 5, WCA, Habs Regs                      | 1 record dated 2017                    |
| Noctule bat            | <i>Nyctalus noctula</i>          | Schedule 5, WCA, Habs Regs, UK BAP              | 2 records in 2013 and 2016.            |
| Common pipistrelle     | <i>Pipistrellus pipistrellus</i> | Schedule 5, WCA, Habs Regs.                     | 8 records dated between 2011 and 2016  |
| Pipistrelle species    | <i>Pipistrelle sp.</i>           | Schedule 5, WCA, Habs Regs                      | 4 records dated between 2009 & 2014    |
| Soprano pipistrelle    | <i>Pipistrellus pygmaeus</i>     | Schedule 5, WCA, Habs Regs, UK BAP              | 1 record dated 2016                    |
| Brown long-eared       | <i>Plecotus auritus</i>          | Schedule 5, WCA, Habs Regs, UK BAP              | 1 record dated 2009.                   |

*These records of protected and notable species in the vicinity of the site increase the likelihood of them being present where suitable habitat is identified in the field survey.*

Two records of approved EPSM licences were identified within two kilometres of the site. These records are outlined in table 4.

**Table 4: EPSM licenses within two kilometres of The Land at Ryefields Farm House**

| Licence number     | Species included in licence                | Distance from site (km) | Impacts to breeding sites |
|--------------------|--------------------------------------------|-------------------------|---------------------------|
| 2016-24108-EPS-MIT | Common pipistrelle ( <i>Pipistrellus</i> ) | 1.4 NE                  | No                        |

|                      |                                                       |       |    |
|----------------------|-------------------------------------------------------|-------|----|
|                      | <i>pipistrellus</i> )                                 |       |    |
| 2017-32235-EPS-MIT-1 | Hazel dormouse<br>( <i>Muscardinus avellanarius</i> ) | 1.5 N | No |

The records of these European protected species within two kilometres of the site indicate that there is an increased potential for them to be present within the survey area. As neither of the licences are within close proximity to the site or linked by adjoining habitat, it is unlikely that any works to the site will directly affect the populations identified by these licences.

## 4.2 Field study

### 4.2.1 Vegetation

The accompanying phase 1 habitat map provided as appendix I depicts the habitats encountered and highlights areas of particular interest with target notes.

Descriptions of these habitats are provided below:

#### *Amenity grassland (Target note 1)*

The majority of the site is occupied by a large area of amenity grassland which is maintained at a very low sward height (photograph 1, appendix II). The regular maintenance of the amenity grassland has suppressed the majority of the grass species on site, with the dominant grass species being creeping bent (*Agrostis stolonifera*) with an abundance of perennial rye-grass (*Lolium perenne*). In general, there was a very low number of herb species which were largely rarely distributed. These herb species included red clover (*Trifolium pratense*), meadow buttercup (*Ranunculus acris*) and springy turf moss (*Rhytidiadelphus squarrosus*). A comprehensive list of the species recorded is provided in table 5 below:

**Table 5: Species recorded within the amenity grassland**

| Common name                               | Latin name                        | Abundance | Status              |
|-------------------------------------------|-----------------------------------|-----------|---------------------|
| <i>Grasses, sedges, mosses and rushes</i> |                                   |           |                     |
| Creeping bent                             | <i>Agrostis stolonifera</i>       | D         | Common & widespread |
| Yorkshire fog                             | <i>Holcus lanatus</i>             | O         | Common & widespread |
| Perennial rye-grass                       | <i>Lolium perenne</i>             | A         | Common & widespread |
| Springy turf-moss                         | <i>Rhytidiadelphus squarrosus</i> | R         | Common & widespread |
| <i>Herbaceous plants</i>                  |                                   |           |                     |

| Common name      | Latin name                  | Abundance | Status                                                            |
|------------------|-----------------------------|-----------|-------------------------------------------------------------------|
| Yarrow           | <i>Achillea millefolium</i> | R         | Common & widespread                                               |
| Daisy            | <i>Bellis perennis</i>      | R         | Common & widespread                                               |
| Creeping thistle | <i>Cirsium arvense</i>      | R         | Common & widespread                                               |
| Great willowherb | <i>Epilobium hirsutum</i>   | R         | Common in fens, marshes, river banks and occasionally drier areas |
| Wild strawberry  | <i>Fragaria vesca</i>       | R         | Common in woodlands, scrub & on basic soils                       |
| Ribwort plantain | <i>Plantago lanceolata</i>  | R         | Common & widespread                                               |
| Meadow buttercup | <i>Ranunculus acris</i>     | R         | Common & widespread                                               |
| Dandelion        | <i>Taraxacum agg.</i>       | R         | Common & widespread                                               |
| Red clover       | <i>Trifolium pratense</i>   | O         | Common & widespread                                               |
| White clover     | <i>Trifolium repens</i>     | R         | Common & widespread                                               |

*Species present are common and widespread. The amenity grassland within the survey area was unsuitable for protected species due to its uniformly low sward height.*

### **Hedgerows (hedgerows H1 – H5)**

A total of five hedgerows were identified on the site. Three of these hedgerows were entirely formed from cypress trees (H1-3), with two of them being formed from Leyland cypress (*Cupressus × leylandii*). The remaining hedges were located on the southern and western site boundaries and were largely formed from sycamore (*Acer pseudoplatanus*) (H4 and H5) (photograph 2, appendix II). The hedgerows on site are described in table 6 below.

**Table 6: Descriptions of the hedgerows on site.**

| Key | Woody species                                           | Ground flora                                     | BAP status | General description                                                                                                     |
|-----|---------------------------------------------------------|--------------------------------------------------|------------|-------------------------------------------------------------------------------------------------------------------------|
| H1  | Leyland cypress<br>( <i>Cupressus × leylandii</i> )     | N/a                                              | No.        | A low well maintained hedge which is located in the shade of scattered mature trees on the northern boundary.           |
| H2  | Leyland cypress                                         | Creeping bent<br>( <i>Agrostis stolonifera</i> ) | No         | A hedge entirely formed from saplings which have been recently planted.                                                 |
| H3  | Lawson's cypress<br>( <i>Chamaecyparis lawsoniana</i> ) | N/a                                              | No         | A hedge entirely formed from mature trees which is located on the southern boundary and has shaded out the understorey. |
| H4  | Sycamore ( <i>Acer pseudoplatanus</i> )                 | N/a                                              | No         | A low pollarded hedgerow that is located adjacent to H3 along the southern boundary.                                    |
| H5  | Silver birch ( <i>Betula pendula</i> )                  | Montbretia<br>( <i>Crocsmia</i> )                | No         | A gap filled hedge that is dominantly formed from                                                                       |

| Key | Woody species                                                                                | Ground flora                                                                                                                                   | BAP status | General description                                             |
|-----|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------------------------------------------------|
|     | Sycamore<br>Alder ( <i>Alnus glutinosa</i> )<br>Snowberry<br>( <i>Symphoricarpos albus</i> ) | <i>Montbretia</i> × <i>crocosmiflora</i><br>Snowberry<br>Bramble ( <i>Rubus fruticosus</i> agg)<br>Herb Robert ( <i>Geranium robertianum</i> ) |            | sycamore but also contains a number of individual native trees. |

None of the hedgerows on site qualify as priority habitats as the composition of the hedgerows is less than 80% native species. All the hedgerows on site hold habitat that is likely to be used by nesting birds. Within hedgerow 3 montbretia (*Crocospia Montbretia* × *crocosmiflora*) was recorded. This species is listed under schedule 9 of the Wildlife and countryside act 1981 (as amended) as an invasive species.

*Recommendations in relation to the protection of nesting birds has been made in section 5.3. Recommendations in relation to the removal of the montbretia have been made in section 5.4.*

#### **Scattered trees (Target note 2)**

The grassland on site holds a large number of scattered trees which are located outside the hedgerows. The majority of these species are large mature specimens of Leyland cypress. The scattered trees also include a number of native species including mature oak (*Quercus robur*) and immature sweet chestnut (*Castanea sativa*) and hawthorn (*Crataegus monogyna*). A full species list has been provided in table 7 below.

**Table 7: Species recorded within the scattered trees**

| Common name             | Latin name                          | Abundance | Status                                                            |
|-------------------------|-------------------------------------|-----------|-------------------------------------------------------------------|
| <b>Trees and shrubs</b> |                                     |           |                                                                   |
| Sycamore                | <i>Acer pseudoplatanus</i>          | A         | Introduced, common on richer soils                                |
| Silver birch            | <i>Betula pendula</i>               | R         | Common & widespread in dry woodlands, downs & heaths              |
| Sweet chestnut          | <i>Castanea sativa</i>              | R         | Common & widespread                                               |
| Hawthorn                | <i>Crataegus monogyna</i>           | R         | Common & widespread                                               |
| Leyland cypress         | <i>Cupressus</i> × <i>leylandii</i> | D         | Ornamental                                                        |
| Pedunculate oak         | <i>Quercus robur</i>                | O         | Common & widespread, except on very poor soils                    |
| Crack-willow            | <i>Salix fragilis</i>               | R         | Common on streamsides, wet woodlands, fens & richer lowland soils |
| Elder                   | <i>Sambucus nigra</i>               | R         | Common on nutrient-                                               |

| Common name | Latin name | Abundance | Status         |
|-------------|------------|-----------|----------------|
|             |            |           | enriched soils |

*The scattered trees on site contain suitable habitat for nesting birds. Further recommendations have been made in section 5.3.*

#### ***Bare ground (Target note 3)***

The amenity grassland holds several areas of bare ground where the shade of the mature trees has blocked out the light to the grassland (photograph 3, appendix II). In some areas the bare ground has been colonised by small fragments of creeping bent and daisy (*Bellis perennis*). The majority of these areas hold no vegetation.

*No recommendations have been made in relation to this habitat as it is devoid of ecological receptors.*

#### ***Dense scrub (Target note 4)***

There is a small area of dense scrub located in the north west boundary of the site within the fence line. This area is very small and is located entirely within the boundary feature. This area of scrub is quite low and almost entirely formed from bramble (*Rubus fruticosus* agg) and nettle (*Urtica dioica*) with a small number of cleavers (*Galium aparine*), snowberry (*Symphoricarpos* sp.), ground ivy (*Glechoma hederacea*) and black bryony (*Dioscorea communis*).

*This habitat has no value for ecological receptors as it is too low to support nesting birds.*

#### ***Ornamental planting (Target note 5)***

The survey area contained a number of small areas of dense ornamental planting (photograph 4, appendix II). These include areas of Wilson's honeysuckle (*Lonicera nitida*), Pampas grass (*Cortaderia selloana*), bamboo (*Bambusoideae* sp.) and a wide distribution of montbretia. Along the western boundary of the site there was a dense patch of snowberry. The ornamental planting was largely isolated to small dense areas within the grassland or adjacent to the scattered trees.

*This habitat has potential to support nesting birds. Recommendations for the removal of these areas have been presented in section 5.3. Montbretia is listed as an invasive plant under schedule 9 of the wildlife and countryside act 1981 (as amended.) Recommendations for the removal of this species have been made in section 5.4.*

#### ***Buildings (Target notes 6-8)***

The survey area holds three buildings which are all outbuildings. These buildings include a wooden goat shed, a sunroom and a concrete garage that was converted previously to a stable.

*The potential for these buildings to support roosting bats is discussed further in section 4.2.2.*

## **4.2.2 Protected species assessment**

### ***Badgers***

No evidence of badger activity was recorded during the survey and no biological records were returned for this species. This indicates that no part of the survey area is currently being used by badgers as a core foraging area or forms part of an extended habitat range.

*No further recommendations have been made.*

### ***Bats***

The survey area holds three buildings which are all outbuildings. Two of these building, a goat shed and a sunroom, are temporary wooden structures. The other building is a concrete garage that was previously used as a stable.

#### **Phase 1 bat survey**

##### ***Land at Ryefields Farmhouse- Concrete garage***

The weather conditions at the time of the survey were as follows:

Wind –1 /12 (breeze), Cloud – 3/8, dry. The temperature was 10°C.

The immediate surroundings of the site are described in section 4.2.1 above. The wider landscape around the survey area includes a combination of urban development and pasture. The small settlement of Woodgate is largely situated to the west of the site. The hedgerows that surround the survey area connect to a small local network that is linked to a railway located 53 metres to the north of the site. As an unlit corridor it is possible that this network can be use by a local bat population, however given its limited activity it is unlikely to be highly important. The assessment of each building and its bat potential is outlined in table 8 below.

**Table 8: The bat potential of the buildings on site**

| Building                                    | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Internal survey                                                                      | External survey                                                                      | Access features                                                                                                                                                                                                      | Roosting features                                        | Bat potential               |
|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-----------------------------|
| Concrete garage (photograph 5, appendix II) | <ul style="list-style-type: none"> <li>• Single storey pre-fabricated concrete garage.</li> <li>• The walls are constructed from interlocking concrete panels.</li> <li>• The eastern elevation is constructed out of ship lap wood and contains two of the doors.</li> <li>• The building is subdivided internally by a chicken wire wall and is currently used for storage.</li> <li>• The roof of the building is constructed out of concrete panels and a single skin of corrugated asbestos cement panels laid over a metal frame.</li> <li>• There are no voids present within the building.</li> <li>• No evidence of bat roosting was identified within the building.</li> </ul> | <ul style="list-style-type: none"> <li>• No evidence of bat use recorded.</li> </ul> | <ul style="list-style-type: none"> <li>• No evidence of bat use recorded.</li> </ul> | <ul style="list-style-type: none"> <li>• Gaps between the shiplap of the wooden doors.</li> <li>• A large hole approximately 50 centimetres wide within the roof near the door on the northern elevation.</li> </ul> | <ul style="list-style-type: none"> <li>• None</li> </ul> | <b>Negligible potential</b> |
| Sun room (photograph 6, appendix II)        | <ul style="list-style-type: none"> <li>• The sunroom is constructed out of a single skin of wooden panels and holds a large number of windows.</li> <li>• The pitched roof is constructed from bitumastic felt that was been laid over wood.</li> <li>• The building has no void and is well lit internally by the windows</li> </ul>                                                                                                                                                                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>• No evidence of bat use recorded.</li> </ul> | <ul style="list-style-type: none"> <li>• No evidence of bat use recorded.</li> </ul> | <ul style="list-style-type: none"> <li>• None</li> </ul>                                                                                                                                                             | <ul style="list-style-type: none"> <li>• None</li> </ul> | <b>Negligible potential</b> |

| Building  | Description                                                                                                                                                                                                             | Internal survey                                                                  | External survey                                                                  | Access features                                      | Roosting features                                    | Bat potential               |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|-----------------------------|
| Goat shed | <ul style="list-style-type: none"><li>The goat shed is a pre-fabricated wooden hut approximately one metre tall.</li><li>The building is formed of a single skin of shiplap wood with a bitumastic felt roof.</li></ul> | <ul style="list-style-type: none"><li>No evidence of bat use recorded.</li></ul> | <ul style="list-style-type: none"><li>No evidence of bat use recorded.</li></ul> | <ul style="list-style-type: none"><li>None</li></ul> | <ul style="list-style-type: none"><li>None</li></ul> | <b>Negligible potential</b> |

The concrete garage was considered to hold **negligible potential** for roosting bats. Though access was possible to the internal of the building there were no roosting features useable by bats. The rafters of the roof were metal beams that would not be suitable for bats. The thermal properties of the building were also very poor. Though the roof was largely intact, there were substantial holes around the doors which would cause rapid changes in temperature when combined with the thin roofing materials.

The biological records also returned known bat roosts for western barbastelle (*Barbastella barbastellus*) located in Oving, Aldingbourne, Yapton and Barnham. This species utilises tree roosts that were not identified on site. The site is also not located between any ancient woodland fragments that this species is known to commute between, however this species has a very large core sustenance range of six kilometres. The existing unlit lane to the north of the development area is unlikely to be highly important to this species but should be maintained as a dark corridor in order to prevent accumulative loss of landscape routes for this species to use. It is likely that the road to the north of the survey area is used by a low number of commuting and foraging bats as it is an existing dark corridor that should be maintained by appropriate lighting post development.

*Recommendations in relation to suitable lighting for bats have been made in section 5.2.*

### ***Dormice***

There was no evidence of dormice such as nests or feeding remains observed during the walkover survey, but due to the cryptic nature of this species, this is not considered sufficient evidence to determine the absence of dormice on site. There is a record of a dormouse EPSM licence one and a half kilometres to the north of the development area. There is no connecting habitat between the site and the licence area. A dormouse survey tube was also identified on site which indicates that survey has previously been undertaken on the adjacent land as part of a development proposal in 2011. As far as can be determined from the application information, no dormouse population was identified.

The survey area did not contain any habitats large enough to support a population of dormouse and held only very limited food species. The only suitable habitat within the survey area is found in the hedgerows on site and within the scattered trees. The majority of these habitats contained large gaps between canopies which would inhibit movement by dormouse across the site and to any larger habitats within the landscape.

None of the habitats on site are connected to the woodland fragments within the wider landscape. Due to this limited connectivity and low suitability it is considered that a dormouse population is likely to be absent from site.

*No further recommendations have been made.*

### ***Great crested newts***

The majority of terrestrial habitat on site is not suitable for great crested newts. This is as it is either formed of uniformly short sward amenity grassland or bare ground. This kind of habitat offers no refuge or foraging potential and would be unlikely to be of use to a dispersing population. The remaining areas of habitat within the development area is mainly ornamental planting and non-native scattered trees. These areas of habitat would be suitable for refuge but unsuitable for foraging.

There is no aquatic habitat within the survey area but there is a small ornamental pond located adjacent to the eastern boundary (photograph 7, appendix II). This pond was constructed within the garden of Ryefield Farmhouse and is stocked with fish. This pond represents the only suitable aquatic breeding habitat within 500 metres of the site. The pond was assessed for its suitability for great crested newts and this is presented in table 9 below.

**Table 9: Results of the Habitat Suitability Index assessment on the pond present at The Land at Ryefield Farmhouse.**

---

| HSI criteria             | Score         |
|--------------------------|---------------|
| Location                 | 1             |
| Pond area                | 0.05          |
| Pond drying              | 0.9           |
| Water quality            | 0.33          |
| Shading                  | 0.3           |
| Waterfowl                | 0.67          |
| Occurrence of fish       | 0             |
| Pond density             | 0.1           |
| Newt terrestrial habitat | 0.33          |
| Macrophytes              | 0.35          |
| <b>Overall HSI score</b> | <b>0.2258</b> |
|                          | <b>Poor</b>   |

The pond was recorded as holding poor suitability for great crested newts. The dispersion range of great crested newts is considered to be 500 metres. Water bodies within this range will form a metapopulation of breeding newts and the adult newts will disperse in to habitats within this radius between them. The only other water body is a drainage area located 209 metres west that has a main road and housing between it and the site and does not hold water for extended periods. Given the temporal nature of the aquatic habitat and the intervening habitat it is considered that this drainage area would not support a population of a great crested newts and could not colonise the survey area or the adjacent pond. There is also a chalk stream located 300 metres to the east of the site. As this stream is flowing it is unlikely to be used as a breeding site but could be used for dispersion by a low number of individuals. Though the stream is within the 500-metre maximum dispersion distance it is outside the average dispersion distance of 300 metres. As such it is considered highly unlikely that colonisation from the stream would occur, especially in the absence of any records of this species within the wider stream network.

The biological records returned a population of great crested newts within ponds situated over 600 metres to the north west of the site. This population is outside the maximum dispersion range required to colonise the habitats within the survey area and are separated by urban and road habitats which this species is unlikely to commute through.

As there are no other suitable aquatic habitats within 500 metres of the development area it is likely that a population would have to use the pond adjacent to the site as the sole aquatic habitat and breeding location. As the pond is of poor suitability and stocked with fish that would predate the larval stages, it is unlikely that a breeding population could be supported solely within the pond. Similarly, as there was no existing waterbody within the dispersion radius at the time of the ornamental pond's creation or since, there is no possibility of colonisation of this pond by an existing population of great crested newts at a landscape level. Due to this it is concluded that a meta population is not using the surrounding habitats and is absent from the survey area.

*No further recommendations have been made.*

### ***Reptiles***

The grassland habitats on site are maintained at a very short sward height which includes large areas of bare ground. The only area that is not maintained in this manner is the area being grazed by goats, but this is isolated by the surrounding short amenity grassland and is still maintained at a short sward height by the grazing.

The habitat on site is unsuitable for reptiles. Reptiles require a mixed height sward with areas of foraging, refuge and potential hibernation habitat. There is no grassland habitat within the development areas which would provide any of these vital functions.

The adjacent offsite grassland is grazed by horses to a very low sward height and as such colonisation or utilisation of the tree roots on site for hibernation by an offsite population of reptiles is not possible. As the connecting habitat is unsuitable it is highly unlikely that colonisation would occur should the maintenance of the grassland be relaxed.

*No further recommendations have been made.*

### ***Nesting birds***

The habitat on site that is suitable for nesting birds is limited to the hedgerows and scattered trees and ornamental planting within the survey area. The current design proposals would seek to retain the majority of the native trees within the site boundaries and remove significant amounts of non-native trees and ornamental planting. The proposed vegetation removal will result in the loss of habitat that this likely to be used by widespread nesting birds.

*Further recommendations have been made in section 5.3*

## 5.0 CONCLUSIONS AND RECOMMENDATIONS

Habitats within the site were generally considered to be of low ecological value and were of importance at site level only. The following potential ecological constraints were identified:

- The development is located within 300 metres of a chalk stream which is a priority habitat. Though direct impacts are not possible, there may be pollution impacts during the construction phase.
- No mitigation to prevent impacts to bat roost will be required but a lighting scheme should be implemented to prevent impacts to commuting bats.
- Suitable nesting bird habitat was identified in the form of mature trees and hedgerows.
- There is the potential for nesting birds to be found within scattered trees and ornamental planting on site.
- Montbretia was identified on site. This species is highly invasive and is listed under Schedule 9 of Wildlife and Countryside Act 1981 (as amended). This species should ideally be removed from the site.

Mitigation strategies and further recommendations for these have been outlined below along with recommendations to enhance the developed site for wildlife.

### 5.1 *Priority habitats*

#### 5.1.1 Summary of findings

There is a chalk stream priority habitat located 300 metres to the east of the site. There is the potential for pollution impacts from dust and run off during the construction phase. These impacts should be mitigated for by the use of a construction management plan (CSM).

#### 5.1.2 Conclusions and recommendations

##### Construction method statement

A construction method statement (CMS) will be created and implemented to ensure that dust deposition and groundwater run-off from the development site does not negatively impact the nearby stream.

Details to be included on the CMS will include details on how materials / chemicals will be stored and controlled on-site to avoid pollution and siltation (for example, there is

refuelling on site only within a designated controlled area, the provision of drip-trays to machinery to prevent fuel leakage, the provision of spill kits, and the protection of the stream from the disposal of construction materials).

## **5.2 Bats**

### **5.2.1 Summary of findings**

The survey area is adjacent to Oak Tree Lane, which runs along the northern boundary of the site. This route is unlikely to represent a key foraging route due to the low-quality foraging habitats within the surrounding area. However, the lighting of the road could contribute to the accumulative loss of commuting routes within the wider landscape. This is especially important when considering that there are multiple barbastelle roosts within two kilometres and the core sustenance range for this species is six kilometres. This means that there is an increase likelihood of the existing commuting routes being used by this species to access the wider landscape.

### **5.2.2 Conclusions and recommendations**

#### Lighting

All bats are naturally light adverse and consideration of light levels and placement will be required to ensure that the bat species identified are not adversely affected. It is important that the bat species within the local area are not dissuaded from existing commuting routes and foraging areas that would contribute to a loss of natural range.

The impact of additional lighting as a result of the proposed development will be minimised through:

- Directing lighting to only where it is needed away from the trees along Oak Tree Lane on the northern boundary.
- Through the design of the luminaire by using accessories such as cowls or hoods.
- Light sources should emit minimal ultra-violet light, peak higher than 550nm and be of a warm/neutral colour <4,200 kelvin.
- Using low pressure sodium lighting with light levels kept as low as practically possible (between 1 and 3 lux).
- Restricting the height of the lighting columns to three metres or less.
- Light pollution should also be minimised by the use of modern lighting schemes and restrictions on private security lighting on properties adjacent to the northern boundary and other bat foraging / commuting habitat (e.g. through planning measures such as covenants or similar enforceable restrictions).

- Lighting of residential roads should only be installed where it is explicitly needed for road or pedestrian safety or security reasons, such as at road junctions or pedestrian crossings.

### **5.3 Nesting birds**

#### **5.3.1 Summary of findings**

The scattered trees and ornamental planting on site provide foraging and nesting habitat both for common and widespread species of bird such as blue tit (*Cyanistes caeruleus*) and wren (*Troglodytes troglodytes*) as well as birds listed as amber on the BoCC (Birds of Conservation Concern) list such as dunnoek (*Prunella modularis*), and Biodiversity Action Plan (BAP) species such as song thrush (*Turdus philomelos*). The current design proposals indicate the removal of a number of these trees and the majority of the ornamental planting. During the removal of suitable nesting habitat, the following is advised.

#### **5.3.2 Conclusions and recommendations**

The following precautions should negate risk of damaging or destroying active nesting during the removal of suitable vegetation if it is required:

- All vegetation clearance should be conducted outside of the bird nesting season which is considered to run from March to September. Where this is not possible a suitably qualified ecologist should check potential nesting habitat immediately prior to clearance. Where nesting birds are encountered clearance must be postponed until the nestlings have fledged.
- Ecological enhancement measures described in section 5.5 will provide foraging and nesting opportunities for many species.

### **5.4 Schedule 9 Plants**

#### **5.4.1 Summary of findings**

Montbretia was identified within the survey area. Measures to control the spread of these plants are required under Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). The legal requirement for the removal of these species is related to the act of allowing them to colonise the wild. The specimens were well distributed across the site and have mainly colonised the boundary features on the north and west of the survey area.

## 5.4.2 Conclusions and recommendations

Montbretia is principally spread by its corms, which are nodules on the root system. It is advised that the plants are dug out and care is taken to remove all of the corms. Once removed the plants can be disposed of as controlled waste.

## 5.5 Ecological enhancement

A few suggestions for incorporation within the design of the development have been made below:

- Provision of bat boxes and nest boxes for bird species on the new buildings and any retained mature trees outside the development area. Suitable models for the buildings include the Schwegler 1FR bat tube and 1SP house sparrow terrace which can be built into the walls to prevent any visual impacts. Suitable bird and bat boxes for the retained mature trees include Schwegler models 2FN bat box and 1ZA and 1N bird boxes.
- Use of native shrubs and trees for planting to replace the ornamental planting to be removed on site would provide foraging habitat for a range of bird species. Suitable species include hazel (*Corylus avellana*), ash (*Fraxinus excelsior*), dog-rose (*Rosa canina*), elder, blackthorn (*Prunus spinosa*), hawthorn and field maple (*Acer campestre*).
- Provision of hedgehog houses will provide potential hibernation sites for hedgehogs, these should be installed in the shade of the hedgerows and out of sight to prevent human interference. To facilitate the movement of this species it is advised that hedgehog sensitive gravel boards are used within fencing.

## 6.0 REFERENCES

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

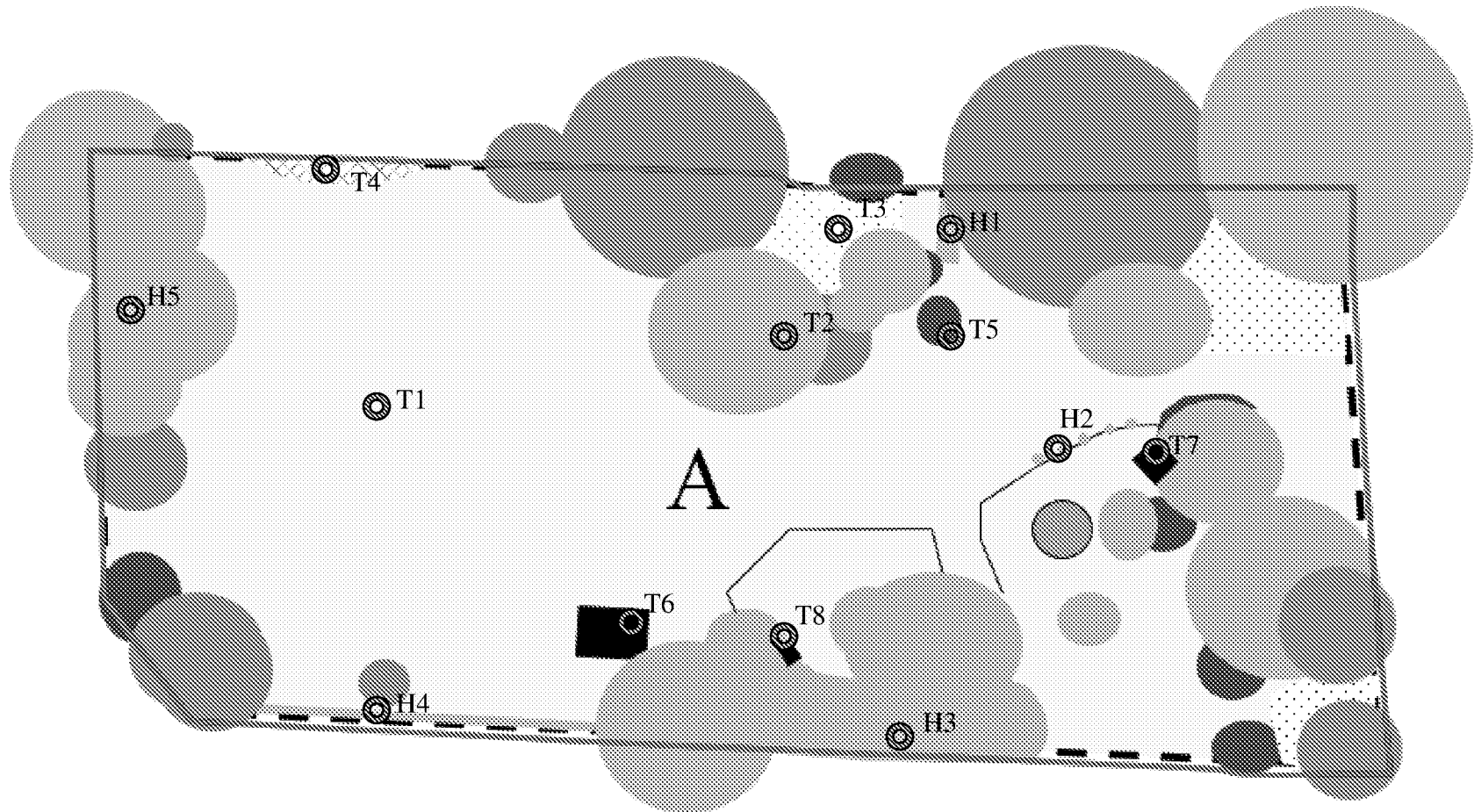
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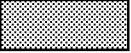
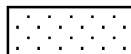
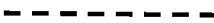
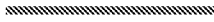
Mitchell-Jones A.J. & McLeish A.P. (2004). The Bat Workers' Manual (3<sup>rd</sup> Edition) Joint Nature Conservation Committee

Sussex Biological Record Centre (2019) Ecological data search for land at Ryefield Farm House, Woodgate 21/01/2019

## APPENDIX I: Phase 1 survey map



### Key to Phase 1 Habitat Map

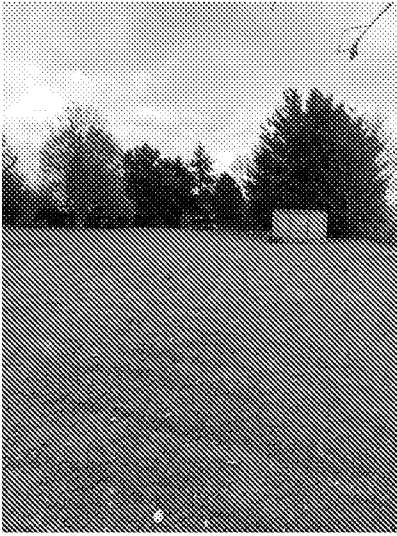
| Habitat Code                                                                           | Description          |
|----------------------------------------------------------------------------------------|----------------------|
|       | Amenity grassland    |
|       | Hardstanding         |
|       | Buildings            |
|       | Ornamental planting  |
|       | Bare ground          |
|       | Scrub                |
|      | Non-native trees     |
|     | Native trees         |
|     | Fence                |
|     | Non- native hedgerow |
|     | Scattered trees      |
|     | Survey boundary      |
|  T1 | Target note          |

**Target notes to accompany Phase 1 habitat map**

| Key | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TN1 | An area of amenity grassland maintained at a very low sward height. The dominant species is creeping bent ( <i>Agrostis stolonifera</i> ) with an abundance of perennial rye-grass ( <i>Lolium perenne</i> ) and an occasional distribution of Yorkshire fog ( <i>Holcus lanatus</i> ). The majority of the species within the grassland were rarely distributed and included Springy turf-moss ( <i>Rhytidiadelphus squarrosus</i> ), yarrow ( <i>Achillea millefolium</i> ), daisy ( <i>Bellis perennis</i> ), creeping thistle ( <i>Cirsium arvense</i> ), greater willowherb ( <i>Epilobium hirsutum</i> ), wild strawberry ( <i>Fragaria vesca</i> ), ribwort plantain ( <i>Plantago lanceolata</i> ), meadow buttercup ( <i>Ranunculus acris</i> ), dandelion ( <i>Taraxacum agg.</i> ), white clover ( <i>Trifolium repens</i> ) and red clover ( <i>Trifolium pratense</i> ). |
| TN2 | There are a number of scattered trees within the survey area. These trees are largely mature specimens. The dominant species is Leyland cypress ( <i>Cupressus × leylandii</i> ) with an abundant distribution of sycamore ( <i>Acer pseudoplatanus</i> ). There is an occasional distribution of pedunculate oak ( <i>Quercus robur</i> ). The majority of the species are rarely distributed including hawthorn ( <i>Crataegus monogyna</i> ), elder ( <i>Sambucus nigra</i> ), crack willow ( <i>Salix fragilis</i> ), silver birch ( <i>Betula pendula</i> ) and sweet chestnut ( <i>Castana sativa</i> ).                                                                                                                                                                                                                                                                        |
| TN3 | Areas of bare ground with minor colonisation from creeping bent and daisy. These areas have been shaded out by mature trees.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| TN4 | There is a small area of dense scrub located within the boundary feature. This habitat is dominantly formed from bramble ( <i>Rubus fruticosus agg</i> ) and nettle ( <i>Urtica dioica</i> ) with a rare distribution of cleavers ( <i>Galium aparine</i> ), snowberry ( <i>Symphoricarpos sp.</i> ), ground ivy ( <i>Glechoma hederacea</i> ) and black bryony ( <i>Dioscorea communis</i> ).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| TN5 | Small areas of ornamental planting located within the amenity grassland. These included areas of Wilson's honeysuckle ( <i>Lonicera nitida</i> ), Pampas grass ( <i>Cortaderia selloana</i> ), bamboo ( <i>Bambusoideae sp.</i> ) and a wide distribution of montbretia ( <i>Crocsmia Montbretia × crocosmiiflora</i> ). Along the western boundary of the site there was a dense patch of snowberry. All of these species were rarely distributed across the site in localised stands.                                                                                                                                                                                                                                                                                                                                                                                               |
| TN6 | A concrete garage which has previously been converted into a stable. The walls are constructed from interlocking concrete panels, except on the eastern elevation where the walls have been replaced with ship lap wooden doors. The roof of the building is formed from a single layer corrugated asbestos cement panels. The building has a negligible bat potential.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| TN7 | A sunroom constructed out of a single skin of wooden panels that holds a large number of windows. The pitched roof is constructed from bitumastic felt that was been laid over wood. The building has a negligible bat potential                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| TN8 | The goat shed is a pre-fabricated wooden hut approximately one metre tall. The building is formed of a single skin of shiplap wood with a bitumastic felt roof. The building has a negligible bat potential.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| H1  | A mature hedgerow formed from Leyland cypress. This hedgerow is well maintained at a moderate height.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| H2  | A recently planted hedgerow that is entirely formed from Leyland cypress saplings. The saplings have been planted over the grassland which is dominantly creeping bent.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| H3  | A large hedgerow dominantly formed form mature Lawson's cypress                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

| Key | Description                                                                                                                                                                                                                                                                                                                                          |
|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     | ( <i>Chamaecyparis lawsoniana</i> ). The hedgerow has shaded out the majority of the understorey, which is also grazed by goats.                                                                                                                                                                                                                     |
| H4  | A low well-maintained hedgerow which is entirely formed from pollarded sycamore.                                                                                                                                                                                                                                                                     |
| H5  | A hedgerow with a number of large gaps. The dominant species is sycamore with a rare distribution of alder ( <i>Alnus glutinosa</i> ) and silver birch ( <i>Betula pendula</i> ). The understorey of this hedgerow includes a large area of snowberry and a rare distribution of montbretia, bramble and herb Robert ( <i>Geranium robertianum</i> ) |

## APPENDIX II: Photographs



**Photograph 1:** The amenity grassland.



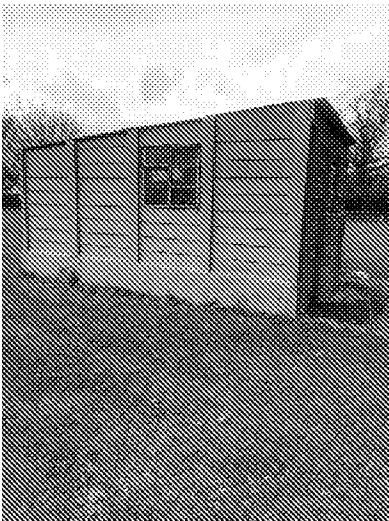
**Photograph 2:** Hedgerow 4.



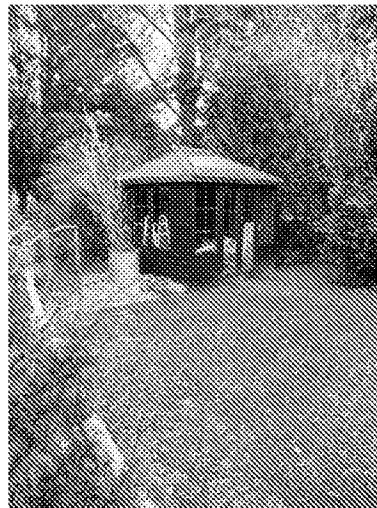
**Photograph 3:** An example of the areas of bare ground.



**Photograph 4:** Example of ornamental planting



**Photograph 5:** The concrete shed



**Photograph 6:** The sunroom.



**Photograph 7:** The adjacent pond.

## APPENDIX III: Design proposals

