

Six Bells, Church Road,
Felsham, Bury St
Edmunds, Suffolk
IP30 0PJ

Ecological Appraisal Report

November 2023

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Ecological Appraisal Report
Six Bells, Church Road, Felsham, Bury St Edmonds, IP30 0PJ
for
Cordage 44 Limited

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This report represents sound industry practice; reports and recommends correctly, truthfully and objectively; is appropriate given the local site conditions; scope of works proposed and resources allocated to us by the client; and avoids invalid, biased, and exaggerated statements.

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1 EXECUTIVE SUMMARY

1. This report provides information from an ecological appraisal carried out by Hampshire Ecological Services Ltd for Cordage 44 Limited in connection with a proposal to build a new development at Six Bells, Church Road, Felsham, Bury St Edmonds, IP30 0PJ (approximate Ordnance Survey Grid Reference TL946 570). The site location is shown in *Figures 1* and *2* (see *Section 6*).
2. An ecological appraisal was carried out during the daytime on the 15th January 2021 by Nicola Pyle MCIEEM.
3. The site is mostly tussocky grassland with nettlebed vegetation on the western boundary and dense *Rubus fruticosus* agg. (Bramble) scrub along the eastern boundary. There are trees scattered across the site. The habitats are shown in the Phase 1 Habitat Survey map given in *Figure 3* (see *Section 6*) with vascular plant species listed in *Appendix C*.
4. The majority of the habitats and plant species observed on site are widespread and common; the habitats are of negligible nature conservation value from a botanical perspective. The exception is the mature and semi-mature trees, which would take decades to replace. These are of high ecological value and should be retained and protected where possible (see *Section 5.6*).
5. One non-native, invasive plant species listed on *Schedule 9* of the *Wildlife and Countryside Act 1981* (as amended) was recorded on the site. This is *Lamium galeobdolon* ssp *argentatum* (Variegated Yellow Archangel), which is located on the eastern boundary in one patch (*Target Note 5*). It primarily spreads via roosting stolons (runners). Stolon (runner) fragments only require a small fragment with a single node (growing point) to grow. It also roots from stem fragments. Therefore, it can create new colonies elsewhere if broken and moved in contaminated soil. If undisturbed it may spread 1-2m in one growing season (by natural runners). Each plant can produce up to 800 seeds, but they are typically not viable in the UK. There are various options for its removal including excavation and herbicide application. Therefore, this will be removed to avoid spreading to the remainder of the site or off-site during site works (see *Section 5.6.3*). This may be done in advance of planning or as part of site preparation works prior to clearance and demolition.
6. No plant species listed on *Schedule 8* of the *Wildlife and Countryside Act 1981* (as amended) were recorded on the site.
7. The majority of trees on site were identified as having negligible bat roost suitability. However, there are nine mature and semi-mature trees on the site that have features that could be used by roosting bats such as broken limbs and crevices. These are as follows:
 - a mature *Acer pseudoplatanus* (Sycamore) tree (*Target Note 6*) with moderate bat roost suitability;

- three *Acer pseudoplatanus* (Sycamore) and two *Picea abies* (Norway Spruce) trees (*Target Note 7*) which have low bat roost suitability; and
 - two *Acer pseudoplatanus* (Sycamore) and one *Picea abies* (Norway Spruce) trees (*Target Note 8*) which have low bat roost suitability.
8. Two bat activity surveys were carried out on tree *Target Note 6* on the 26th August and 10th September 2021. No bats were observed emerging or re-entering tree *Target Note 6* during the dusk and pre-dawn surveys. Common pipistrelles, brown long-eared, noctule, *Myotis* species and barbastelle bats were recorded commuting/ foraging on or near the site during on the surveys.
 9. The mature and semi-mature trees provide good sheltered foraging habitat for bats. They also link to a network of hedges, tree-lines and strips of woodland that provide links into and from the wider landscape in all directions. In addition, Bradfield Woods is c.1,817m south of the site and Thorpe Morieux Woods is c.1,132m west of the site. Woodland provides high quality foraging habitat for a number of different species of bat.
 10. There is no suitable habitat for dormice on site. Therefore, no impacts are anticipated on dormice in the area and no further surveys are proposed.
 11. According to aerial photographs (GoogleEarth™) and online Ordnance Survey 1:25,000 maps there are 14 ponds within 500m of the site. These are located as follows:
 - three are north-east of the site (c.240m, c.245m & c.470m);
 - four are east of the site (c.195m, c.205m, c.275m & c.295m);
 - one is south-east of the site (c.355m);
 - two are south-west of the site (c.70m & c.105m); and
 - four are west of the site (c.140m, c.435m, c.450m & c.465m).
 The locations of these ponds are shown in *Figure 4* in *Section 6*.
 12. The majority of the site is suitable terrestrial habitat for amphibians, including great crested newt. The tussocky grassland, nettlebed vegetation and scrub all provide cover and foraging habitat for great crested newts. However, there are no ponds on the site and all ponds nearby are separated by roads or multiple gardens. Therefore, no impacts are anticipated on great crested newts.
 13. No badger setts or evidence of badger activity was found.
 14. The removal of any vegetation with the potential to support nesting birds should be undertaken outside of the bird breeding season (which is late February to August inclusive) to avoid the destruction of active bird nests and hence comply with the law (*Wildlife and Countryside Act 1981* (as amended)). If this is not possible, and vegetation has to be removed during the nesting season, then it should be inspected (by an ecologist) for nests immediately prior to removal of the vegetation. If any active nests are found during the works, a 5m buffer zone should be established around it and be temporarily fenced off to prevent plant or personnel disturbing the nest until the end of the breeding bird season (or until the nest is no longer in use).

15. The majority of the site is tussocky grassland, which is suitable foraging habitat for reptiles, as are the nettled vegetation along the western boundary and the dense scrub along the eastern boundary (see *Photos 1-6* in *Section 7*). In addition, the bases of the trees across the site, the dense scrub and the three log piles around the edge of the carpark all provide suitable hibernation habitat.
16. A total of 40 artificial refugia were set-out on the 14th August 2021 and checked eight times between 28th August & 22nd September 2021. No reptiles were recorded.
17. To minimise the impact on the retained trees and hedges, Heras fencing or similar should be used to protect the roots of the trees and bushes during construction. The guidance provided in *BS 5837 Trees in relation to Construction* provides further advice.
18. Retaining and enhancing connectivity around the edges of the site will help minimise any potential impact to bat populations in the local area. This is particularly important given barbastelles were recorded during the surveys (see para 21 below).
19. Changes in lighting can affect foraging and roosting bats. Therefore, no works should take place in the hours of darkness or under artificial lighting. In addition, no lighting should be directed onto the new roost exit points (see *Section 5.6.3*) and planted and retained vegetation (particularly the trees and hedges) and any lighting installed should avoid spillage of greater than 0.1 lux near to or directly onto the new roost entrances and vegetation so that light disturbance is not a problem. This is because lighting can impact bat populations directly by disturbing roosts and reducing their foraging area, or indirectly by severing commuting routes from roosts.
20. National Planning Policy Framework (NPPF 2021) states "*opportunities to incorporate biodiversity in and around developments should be encouraged*" as part of the consideration for "*presumption in favour of sustainable development*". Therefore, the following outline enhancements are proposed:
 - The landscaping on site will be enhanced to increase the biodiversity for wildlife. This will include the following:
 - hedgerows will be planted around all edges of the site using the native species in *Section 5.6.5*;
 - all new hedges will be under-sown with Emorsgate seed mix EH1 Hedgerow mixture (or equivalent);
 - the lawns will be sown with species-rich seed mix for lawns such as Emorsgate seed mix EL1 or EG1 or equivalent;
 - planting for bats and wildlife will be undertaken using the species listed in *Section 5.6.4*; and
 - refugia will be provided through the creation of log piles and turf piles.
 - The site will be enhanced for roosting bats using either;
 - at least one integrated bat box per building (*e.g.* *Habibat™* Bat Box or *Ibstock Enclosed Bat Box* or similar), which are incorporated into exterior walls; or
 - using hanging tiles with 30mm gaps for bats to roost behind.

- The site will be enhanced for birds as follows:
 - two multi-chamber box suitable for house sparrows, such as a Vivara Pro WoodStone House Sparrow Nest Box;
 - two or more house martin boxes, such as Vivara Pro WoodStone House Martin Nest;
 - two or more swift boxes, such as Istock Eco-habitat, either incorporated into the build structure or mounted on the building;
 - one 28mm hole bird box suitable for blue tits and coal tits, such as a Vivara Pro Seville 28mm Woodstone Nest Box;
 - one 32mm hole bird box suitable for blue tits and great tits, such as a Vivara Pro Seville 32mm Woodstone Nest Box.

The proposed bird boxes are summarised in *Table 5.6.7.1*.

- The site will also be enhanced for invertebrates by providing at least two insect hotels or towers. These should be in a sunny location close to vegetation. Examples are shown in *Table 5.6.91*.

21. This survey data is valid for a maximum of 12 months. If more than 12 months elapses after completion of all surveys, it may be advisable to conduct further survey work to obtain up-to-date information prior to commencement of construction to ensure protected species compliance.

22. The site is neither designated nor immediately adjacent to any designated areas of nature conservation. However, there are three nationally designated sites within 2km of the site. These are listed in *Table 4.1.1.1*. None of these will be directly affected by this development.

2 INTRODUCTION

2.1 Purpose of this report

This report provides information from an ecological appraisal carried out by Hampshire Ecological Services Ltd for Cordage 44 Limited in connection with a proposal to build a new development at Six Bells, Church Road, Felsham, Bury St Edmunds, IP30 0PJ (approximate Ordnance Survey Grid Reference TL946 570). The site location is shown in *Figures 1 and 2* in *Section 6*.

2.2 Site description

The site consists of a public house with outbuildings, a carpark and a large garden area. A Phase 1 Habitat Survey map showing the various habitats on site is given in *Figure 3* in *Section 6*.

The site lies on the north side of Church Road, in the centre of Felsham. The immediate surroundings consist of residential housing to the east and west; a garage to the north; and a church to the south. In the wider landscape, residential housing extends to the east and west for a short way, then around Felsham is a mosaic of rural houses, arable fields, grassland, woodland and waterways.

2.3 Proposed activities

This survey was carried out in connection with a proposal to convert part of the large garden area into a new dwellings.

2.4 Current planning status

Planning permission is being applied for.

2.5 *Structure of this report*

This report is structured as follows:

- *Section 1* contains the executive summary;
- *Section 2* contains an introduction;
- *Section 3* describes the survey methods;
- *Section 4* describes the results;
- *Section 5* evaluates the findings;
- *Section 6* contains the figures including:
 - *Figure 1* gives aerial photographs showing the site location;
 - *Figure 2* gives an Ordnance Survey map showing the location of the site;
 - *Figure 3* gives a Phase 1 Habitat Survey map for the site;
 - *Figure 4* gives the locations of ponds within 500m of the site boundary; and
 - *Figure 5* gives the locations of the artificial refugia during the reptile surveys.
- *Section 7* gives photographs of the site;
- *Section 8* lists the references;
- *Appendix A* lists key legislation and regulations;
- *Appendix B* gives the *Target Notes*;
- *Appendix C* lists vascular plant species recorded on site;
- *Appendix D* lists the proposed seed mix composition; and
- *Appendix E* gives the raw data and plans from the bat activity.

3 **METHODS**

3.1 **Desk study**

The *Multi-Agency Geographic Information for the Countryside* website (www.magic.gov.uk) was used to search for designated sites on or adjacent to the site including Local Nature Reserves (LNRs), National Nature Reserves (NNRs), Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites. The search area was 5km for SAC and SPA sites and 2km for LNRs, NNRs, Ramsar sites and SSSIs, as specified in Suffolk's *Biodiversity Checklist*. The search area is also 500m for County Wildlife Sites (CWSs) and ancient semi-natural and ancient replanted woodlands.

In addition, the *Multi-Agency Geographic Information for the Countryside* website (www.magic.gov.uk) was used to search for granted European Protected Species (EPS) licences within 2km of the site.

A data search from the Suffolk Biodiversity Information Service (SBIS) has not been commissioned by the client in relation to this site.

3.2 **Field survey**

3.2.1 *General*

An ecological appraisal was carried out on this site. This type of survey is not designed to prove presence or absence of significant or protected species; it is used to highlight habitat that is suitable and to identify where further work to show presence or absence is required. However, in some circumstances species can be ruled out because there is unsuitable habitat or barriers to inward migration.

Significant species were defined as follows:

- European Protected Species (listed on *Schedules 2 and 5 of the Conservation of Habitats & Species Regulations 2017*);
- nationally protected species under *Schedules 1, 5 and 8 of the Wildlife & Countryside Act 1981*, the *Protection of Badgers Act 1992* (as amended) and the *Deer Act 1991*;
- non-native pest species listed on *Schedule 9 of the Wildlife & Countryside Act 1981* (as amended);
- species listed as Critically Endangered, Endangered or Vulnerable on the *IUCN Red List*;
- all species listed on the *RSPB Birds of Conservation Concern 2015* as Red or Amber; and
- Nationally Rare or Nationally Scarce species.

3.2.2 *Dates, times and weather*

An ecological appraisal was carried out during the daytime on the 15th January 2021. The weather was cold (7°C) and dry with 100% cloud cover and a light air (Beaufort scale 1).

The ecological appraisal identified suitable reptile habitat to be present on site and a tree with moderate bat roost suitability (to be impacted by the works).

Dusk emergence and pre-dawn re-entry surveys of tree *Target Note 6* were carried out on the 26th August and 10th September 2021. The weather conditions for each visit are given in *Table 3.2.2.1*.

Table 3.2.2.1. Weather conditions during the bat surveys.

Date	Start time	End time	Sunset/ Sunrise	Temperature (°C)	Wind (Beaufort scale)	Cloud Cover (%)
26/08/21	19:46	21:46	20:01	15.0–14.0	4	100
10/09/21	04:45	06:37	06.22	16.0	2-3	100

Artificial refugia were placed around the development site on the 14th August 2021 in suitable reptile habitat and left for an eight-day settling period. Eight visits were then carried out between the 28th August & 22nd September 2021 to assess the presence or likely absence of reptiles. The weather conditions for each visit are given in *Table 3.2.2.2*.

Table 3.2.2.2. Weather conditions during the reptile surveys.

Visit	Date	Temp	Cloud cover (%)	Wind (Beaufort scale)	General weather
1	28/08/21	17.0	90	3-4	Dry but damp underfoot
2	03/09/21	18.0	90	2-3	Dry
3	05/09/21	19.0-20.0	70	2	Dry
4	09/09/21	12.0-13.0	100	1-2	Dry but damp underfoot
5	13/09/21	18.0	80	2	Dry
6	15/09/21	19.0	90	3	Dry
7	18/09/21	17.0-18.0	90	2-3	Dry but damp underfoot
8	22/09/21	16.0-17.0	80	2	Dry but damp underfoot

3.2.3 Personnel

The surveys were carried out by Nicola Pyle MCIEEM and Odette Robson MCIEEM who are both full members of the Chartered Institute of Ecology and Environmental Management (CIEEM). Both are highly competent ecologists trained in Phase 1 Habitat Survey and protected species surveys. Nicola and Odette are both multi-species licence holders and including Natural England licences allowing the disturbance and handling of bats for the purposes of survey in all counties of England with Bat Class Licence Registration numbers 2015-18259-CLS-CLS (Nicola Pyle) and 2015-10940-CLS-CLS (Odette Robson).

This report was reviewed by John Poland CEnv MCIEEM CBiol MSB, who is a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM), a Chartered Environmentalist (CEnv), a Chartered Biologist (CBiol) and multi-species licence holder with over 20 years of experience in ecological consultancy and Victoria Russell MCIEEM who is a full

member of the CIEEM and multi-species licence holder with over 23 years of experience in ecological consultancy.

All staff adhere to the Chartered Institute of Ecology and Environmental Management's (CIEEM) *Code of Professional Conduct*.

3.2.4 *Botanical surveys - Phase 1 Habitat Survey*

The botanical surveys in this report are based on the Phase 1 Habitat Survey methodology (Joint Nature Conservation Committee 2003) and involve the following elements: habitat mapping using a set of standard colour codes to indicate habitat types on a Phase 1 Habitat Survey map; and descriptions of habitats and features of ecological or nature conservation interest relating to locations on the Phase 1 Habitat Survey map.

Basic Phase 1 Habitat Survey methods are described in detail in Joint Nature Conservation Committee (JNCC, 2003). Limits to the method are discussed in Cherrill & McClean (1999).

Plant species lists were compiled for the various habitat types on the site. Subjective estimates of the relative abundance of species were added to the plant species list using a DAFOR scale. The DAFOR scale ranks species according to their relative abundance in a given parcel of land as follows: d – dominant, a – abundant, f – frequent, o – occasional, r – rare. The terms ‘abundant’ and ‘rare’ are used by convention and apply only to relative-abundance within the recorded area. It does not mean that species are ‘rare’ in the general sense.

Plant nomenclature in this report follows Poland & Clement (2009) for native, naturalised and garden species of vascular plant. Plant names in the text are given with scientific names first, followed by the English name in brackets.

3.2.5 *Animal surveys*

General

The habitat was assessed to determine whether or not it is suitable for those protected vertebrates that occur in the region. Initial surveys do not usually confirm species presence or absence, but obvious signs and incidental sightings of protected species would have been noted had they been encountered.

An assessment was made of the likelihood of protected vertebrates using the site. Taking into consideration the geographical region and habitat type, species and groups that might be encountered are:

- bats;
- dormice;
- great crested newts;
- badger;
- nesting birds; and
- reptiles.

According to aerial photographs (GoogleEarth™) and online Ordnance Survey 1:25,000 maps, there are no rivers on or adjacent to the site, therefore otter and water vole are not considered further.

Details of initial survey methods for each of the relevant species that might have been encountered are given below and an overview of the legal protection of the species and groups is provided in *Appendix A*.

Bats

General

The survey for bats concentrated on identifying foraging opportunities and potential roost locations or hibernation sites.

Tree assessment

Detailed surveys of individual trees were not carried out. However, features such as holes and crevices that could be used by roosting bats were noted and their overall bat roost suitability was assessed. If any mature trees are subsequently to be removed or if tree surgery (*e.g.* crown-lifting) is required, then a bat survey at an appropriate time of year may be required.

Following the internal and external inspections, the building and trees are assigned a level of suitability for being used by roosting bats. This is based on the criteria in *Table 3.2.5.1* (Collins, 2016).

Table 3.2.5.1. Bat Roost Suitability.

Suitability	Description of roosting habitats	Description of commuting and foraging habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats	Negligible habitat features on site likely to be used by commuting or foraging bats
Low	A structure/ tree with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (<i>i.e.</i> unlikely to be suitable for maternity or hibernation).	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or un-vegetated stream, but isolated, <i>i.e.</i> not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland) or a patch of scrub.
Moderate	A structure/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 (with respect to roost type only)	Continuous habitat connected to the wider landscape that could be used by bats for commuting, such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	A structure/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.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. The site is close to and connected to known roosts.

Assessment of commuting and foraging habitat

Bats use a variety of habitats for foraging, in particular hedgerows, woods and water bodies, and roost in a range of structures including buildings, trees, bridges and caves. Areas that could be used for foraging were noted.

Dusk emergence & pre-dawn re-entry surveys

The bat surveys followed standard survey protocol in *Bat Surveys – Good Practice Guidelines, 3rd edition* (Collins 2016).

The dusk emergence survey commenced fifteen minutes before sunset and continued for at least an hour and a half after sunset. The pre-dawn re-entry survey commenced an hour and a half before sunrise and continues until at least fifteen minutes after sunrise. The weather was suitable for bat emergence and foraging during both surveys. See *Sections 3.2.1. and 3.2.2.* for dates and personnel carrying out the surveys.

The surveyor was located with good views of the potential bat access points identified during the initial site visit. The timing of the visits, from early evening until after dark and early morning until light, was aimed at detecting active bats in the vicinity. Infrared cameras captured any bat activity when visual light levels were too low. When it was too dark for visual observation, electronic bat detectors were used to listen for the ultrasonic sounds produced by bats either flying in the vicinity or emerging from the tree.

The surveyor recorded all bat activity encountered, but particular attention was focused on any bats emerging or re-entering. The results were documented by noting the time, bat species and behaviour (*e.g.* commuting, foraging, social interaction *etc.*).

Bat detectors are used so that surveyors can identify most bat species in the field, using the heterodyne output in combination with bat shape, flight pattern and behaviour. The equipment used was EchoMeter Touch Pro2 bat detector, Sionyx Night-vision camera and Canon XA11 Camcorder with Nightfox IR illuminators.

Bat detector surveys provide one of the most effective methods of identifying bat species and activity patterns. However, it is not always possible to identify bats down to species level, even with subsequent sound analysis.

Dormice

The site was assessed for habitat with the potential to support dormice. Habitats typically suitable for dormice include:

- deciduous woodland, with a dense understory, species-rich shrub-layer and thick ground cover;
- continuous, thick, wide hedgerows over 4m high with connections to nearby suitable woodland;
- hazel or sweet chestnut coppice; or
- thick continuous areas of scrub, particularly bramble, close to hedgerows or woodlands.

Great crested newt

All water bodies on the site or within 500m that could be used as breeding locations for this species were identified, and the suitability of terrestrial habitat for this species was considered. Great crested newts can travel up to 500m from pond to pond, and between ponds and terrestrial habitat. The suitability of terrestrial habitat was assessed with this in mind.

Badger

An initial assessment was carried out to identify areas that might be used by badger for commuting, foraging and sett-building within at least 30m of all areas potentially affected by the works (where access was possible). Evidence of badgers including setts, latrines, feeding signs and paths were searched for.

Birds

Habitat that might be used by nesting birds was identified. Different bird species use buildings, trees and shrubs, undergrowth or even open fields to nest. The suitability of the site for use by a range of bird species was assessed, giving consideration to factors such as cover, food, disturbance and other habitat requirements.

Widespread species of reptile

Habitat assessment

The site was assessed for widespread species of reptile, with particular attention paid to those features that could be used as basking areas (*e.g.* south-facing slopes), hibernation sites (*e.g.* banks, walls, piles of hardcore) and opportunities for foraging (rough grassland and scrub). The site was assessed for its suitability for each of the four widespread reptile species which have broadly similar habitat requirements. However, more specific requirements include the following (Beebee & Griffiths 2000):

- common lizards (*Zootoca vivipara*) use a variety of habitats from woodland glades to walls and pastures, although one of their favoured habitats is rough grassland;
- slow-worms (*Anguis fragilis*) use similar habitats to common lizards, and are often found in rank grassland, gardens and derelict land;
- grass snakes (*Natrix natrix*) have broadly similar requirements to common lizards with a greater reliance on ponds and wetlands, where they prey on common frogs; and
- adders (*Vipera berus*) use a range of fairly open habitats with some cover, but are most often found in dry heath.

Reptile activity is highly seasonal; they hibernate over the winter (October to March) and are active over the summer months. They become increasingly active as temperatures increase in spring, and in most years they are fully active by mid-April. Reproduction varies between species, but generally peaks in mid-summer when reptiles are at their most active. In late September/ October, activity begins to decrease as reptiles seek frost-free refuges for hibernation.

Artificial refugia survey

Standard methods were used, which involved placing 100 x 50cm sheets of heavy-duty roofing felt (artificial refugia) in areas where they were most likely to be used by reptiles (*e.g.* within the grassland, tall ruderals, and at the bases of the tree-lines) so that all suitable habitat present was represented. So far as possible, they were placed on slightly uneven ground so as not to lie completely flat (creating a varied microclimate). It is common practice to lay out artificial refugia some days or weeks prior to the commencement of a survey or translocation so that reptiles become habituated to their presence.

A total of 40 pieces of heavy-duty roofing felt were placed around the development site and checked on seven suitable days. The locations of the refugia are shown in *Figure 5* in *Section 6*.

Days with heavy rain are generally accepted as unsuitable, though sunny periods after rain may be ideal because reptiles may emerge from cover to bask. Slow-worms are less sensitive than the other species, and are known to use artificial refugia in a wider range of weather conditions.

4 RESULTS

4.1 Desk study

4.1.1 Designated sites

According to the *Multi-Agency Geographic Information for the Countryside* website (www.magic.gov.uk), the site is neither designated nor immediately adjacent to any designated areas of nature conservation. However, there are three nationally designated sites within 2km of the site. These are listed in *Table 4.1.1.1*.

Table 4.1.1.1. Statutory designated sites; non-statutory designated sites and ancient semi-natural and ancient replanted woodlands within the designated search areas of the site.

Level of designation	Designation	Name	Distance & direction from site
International	SPA	-	-
	Ramsar	-	-
	SAC	-	-
National	SSSI	Bradfield Woods	c.1,817m south
		Thorpe Morieux Woods	c.1,132m west
	NNR	Bradfield Woods	c.1,817m south
County	LNR	-	-
Local	CWS	-	-
	Ancient woodland	-	-

4.1.2 European Protected Species

According to the *Multi-Agency Geographic Information for the Countryside* website (www.magic.gov.uk), there have been no granted European Protected Species (EPS) licences within 2km of the site.

4.2 Habitats and plant species

4.2.1 Habitats

The site is mostly tussocky grassland with nettlebed vegetation on the western boundary and dese scrub along the eastern boundary. There are trees scattered across the site.

The grassland (*Target Note 1*) is dominated by *Agrostis stolonifera* (Creeping Bent) together with an abundance of the grasses *Dactylis glomerata* (Cock's-foot), *Lolium perenne* (Perennial Rye-grass) and *Poa annua* (Annual Meadow-grass) and the common forb *Ranunculus repens* (Creeping Buttercup). There are smaller amounts of the grass *Holcus lanatus* (Yorkshire-fog) and of the common forbs *Achillea millefolium* (Yarrow), *Bellis perennis* (Daisy), *Plantago lanceolata* (Ribwort Plantain), the ruderal *Malva sylvestris* (Common Mallow), and the tall semi-ruderals *Cirsium vulgare*

(Spear Thistle), *Rumex crispus* (Curled Dock), *Senecio jacobaea* (Common Ragwort) and *Urtica dioica* (Common Nettle).

The western boundary is nettlebed vegetation dominated by the tall semi-ruderal *Urtica dioica* (Common Nettle) with an abundance of *Anthriscus sylvestris* (Cow Parsley) (*Target Note 2*). Other species present in much smaller amounts include a mixture of shade-tolerant herbs and tall ruderal and semi-ruderals. Species include *Aegopodium podagraria* (Ground-elder), *Arum italicum* (Italian Lords-and-Ladies), *Galium aparine* (Cleavers), *Geum urbanum* (Wood Avens), *Glechoma hederacea* (Ground-ivy), *Pentaglottis sempervirens* (Green Alkanet), *Primula veris* (Cowslip) and *Rumex crispus* (Curled Dock).

On the eastern boundary there is dense scrub dominated by *Rubus fruticosus* agg. (Bramble) (*Target Note 3*). Towards the southern end is a small patch of the invasive, non-native *Lamium galeobdolon* ssp *argentatum* (Variegated Yellow Archangel) (*Target Note 5*).

The scattered trees (*Target Note 4*) are mostly *Acer pseudoplatanus* (Sycamore) with smaller amounts of *Castanea sativa* (Sweet Chestnut), *Corylus avellana* (Hazel), *Picea abies* (Norway Spruce), *Sambucus nigra* (Elder) and *Tilia × europaea* (Lime). The evergreen creeper *Hedera helix* (Ivy) is growing up most of the trees, varying in density over the trunks.

A Phase 1 Habitat Survey map showing the location of the various habitats is given in *Figure 3* (see *Section 6*).

4.2.2 *Plant species*

One non-native, invasive plant species listed on *Schedule 9* of the *Wildlife and Countryside Act 1981* (as amended) was recorded on the site. This is *Lamium galeobdolon* ssp *argentatum* (Variegated Yellow Archangel), which is located on the eastern boundary in one patch (*Target Note 5*).

No plant species listed on *Schedule 8* of the *Wildlife and Countryside Act 1981* (as amended) were recorded on the site.

Vascular plant species recorded from each habitat type (along with relative abundance) are given in *Appendix C*.





4.3 *Protected vertebrates*

4.3.1 *Bats*

Bat roost suitability of trees

The majority of trees on site have negligible bat roost suitability. However, nine mature and semi-mature trees have features that could be used by roosting bats such as broken limbs and crevices. These trees and potential bat access points are detailed in *Table 4.3.1.1*. The locations of the trees are shown on the Phase 1 Habitat Survey map (see *Figure 3* in *Section 6*).

Table 4.3.1.1. Summary of tree features and bat roost suitability. The trees are numbered on the Phase 1 Habitat Survey map (see Figure 3 in Section 6).

Target Note	Species	Photograph	Bat Roost Suitability
6 (T3 on bat activity plans)	<i>Acer pseudoplatanus</i> (Sycamore)		Covered in dense <i>Hedera helix</i> (Ivy) with a rot hole in the northern branch.  It has moderate bat roost suitability .
7	Three <i>Acer pseudoplatanus</i> (Sycamore) and two <i>Picea abies</i> (Norway Spruce)		All covered in dense <i>Hedera helix</i> (Ivy). They have low bat roost suitability .
8	Two <i>Acer pseudoplatanus</i> (Sycamore) and one <i>Picea abies</i> (Norway Spruce)		All covered in dense <i>Hedera helix</i> (Ivy). They have low bat roost suitability .

Commuting and foraging habitat

The mature and semi-mature trees provide good sheltered foraging habitat for bats. They also link to a network of hedges, tree-lines and strips of woodland that provide links into and from the wider landscape in all directions. In addition, Bradfield Woods is c.1,817m south of the site and Thorpe Morieux Woods is c.1,132m west of the site. Woodland provides high quality foraging habitat for a number of different species of bat.

Bats follow linear landscape features such as lines of trees, hedges, buildings and waterways in order to commute from their roost sites to their feeding grounds. Likewise they use these features to navigate between feeding areas and alternative roosts.

Bat activity surveys

No bats were observed emerging or re-entering tree *Target Note 6* during the dusk and pre-dawn surveys. Common pipistrelles, brown long-eared, noctule, *Myotis* and barbastelle bats were recorded commuting/ foraging on or near the site during on the surveys.

The raw data and observation plans from the surveys are given in *Appendix E*.

4.3.2 *Dormice*

There are multiple records for dormice within 2km (to the west of the site). However, there is no suitable habitat for dormice on site.

4.3.3 *Great crested newt*

According to aerial photographs (GoogleEarth™) and online Ordnance Survey 1:25,000 maps there are 14 ponds within 500m of the site. These are as follows:

- three are north-east of the site (c.240m, c.245m & c.470m);
- four are east of the site (c.195m, c.205m, c.275m & c.295m);
- one is south-east of the site (c.355m);
- two are south-west of the site (c.70m & c.105m); and
- four are west of the site (c.140m, c.435m, c.450m & c.465m).

The locations of these ponds are shown in *Figure 4* in *Section 6*.

The majority of the site is tussocky grassland, which is suitable terrestrial habitat for great crested newt. Also, there is nettled vegetation along the western boundary, dense scrub along the eastern boundary, and the bases of the trees, all of which are suitable terrestrial habitat for amphibians, including great crested newt.

There are multiple records of great crested newt within 500m of the site (to the south-east). However, these are separated from the site by multiple gardens and roads. Also, based on aerial photos, it looks like there is suitable terrestrial habitat nearer to the ponds than the site.

4.3.4 *Badger*

No evidence of badger was found during the survey.

4.3.5 *Birds*

All the trees, bushes and scrub on the site have the potential to support nesting birds during the breeding season.

There are many bird species on the UK and Local BAP (or in the RSPB *Birds of Conservation Concern*) that could be using this site for nesting and foraging, including house sparrows and starlings.

4.3.6 *Widespread species of reptile*

The majority of the site is tussocky grassland, which is suitable foraging habitat for reptiles, as is the nettlebed vegetation along the western boundary. The dense scrub along the eastern boundary is suitable foraging and hibernation habitat, as are the bases of the trees (see *Photos 1-6* in *Section 7*). In addition, there are three log piles around the edge of the carpark that provide suitable hibernation habitat.

5 ***INTERPRETATION AND EVALUATION***

5.1 ***Constraints on the survey***

5.1.1 *Constraints on survey data*

The initial site visit was undertaken in January, outside the optimum survey season for protected species and plants. However, it is possible to assess the habitats present and their suitability for protected species. It should also be noted that, January is not an appropriate time of year to detect some non-native invasive species.

5.1.2 *Constraints on the mitigation, compensation and enhancement measures*

None. There is a limit to the number of enhancement measures that is reasonable on a site this size.

5.2 ***Survey report expiry***

This survey data is valid for a maximum of 12 months. Bats frequently move around and adopt new roosting sites, therefore if more than 12 months elapses it may be advisable to conduct further survey work to obtain up-to-date information to advise work, thereby ensuring protected species compliance.

Survey data supporting EPS licence applications must be up-to-date *i.e.* have been conducted within the current or most recent optimal survey season (May to August for bats). Therefore, if surveys show bats are present and licensable work is delayed until, during or after the next survey season, updated survey(s) will be required to support an application.

Given the mobility of bats, it is recommended that a walkover of the site to update the survey information is undertaken prior to the development commencing, if this does not occur before the end of October 2022.

5.3 ***Legal context***

Habitat has been identified on site that is suitable for protected species. Different species are afforded different levels of protection; as detailed in *Appendix A*.

The site is not designated for its wildlife interest at an international, national or local scale.

5.4 ***Potential impacts of the proposed development***

5.4.1 *Desk study*

According to the *Multi-Agency Geographic Information for the Countryside* website (www.magic.gov.uk), the site is neither designated nor immediately adjacent to any designated areas of nature conservation. However, there are three nationally designated sites within 2km of the site.

None of these will be directly affected by this small-scale development and all links will be maintained.

According to the *Multi-Agency Geographic Information for the Countryside* website (www.magic.gov.uk), there have been no European Protected Species (EPS) licences granted within 2km of the site.

5.4.2 Habitats and plants

The habitats and plant species observed on site are widespread and common and as such have no conservation importance from a botanical point of view. The exception is the mature and semi-mature trees that would take many decades to replace. These are of high ecological value and should be retained and protected (see *Section 5.6*).

One non-native, invasive plant species that is listed on *Schedule 9* of the *Wildlife and Countryside Act 1981* (as amended) was recorded on the site. This is *Lamiastrum galeobdolon* ssp *argentatum* (Variegated Yellow Archangel), which is located towards the southern end of the eastern boundary (*Target Note 5*).

It primarily spreads via rooting stolons (runners). Stolon (runner) fragments only require a small fragment with a single node (growing point) to grow. It also roots from stem fragments. Therefore, it can create new colonies elsewhere if broken and moved in contaminated soil. If undisturbed it may spread 1-2m in one growing season (by natural runners). Each plant can produce up to 800 seeds, but they are typically not viable in the UK. There are various options for its removal including excavation and herbicide application.

It is an offence under the *Wildlife and Countryside Act 1981* to cause any species listed on *Schedule 9* to spread in the wild. Therefore, this will be removed to avoid spreading to the remainder of the site or off-site during site works (see *Section 5.6.5*).

5.4.3 Bats

Bat roost suitability of trees

The majority of the trees on site were identified as having negligible bat roost suitability. However, seven mature trees have features with bat roost suitability. Of these, one has moderate bat roost suitability and six have low bat roost suitability. These are detailed in *Table 4.3.1.2* and are labelled on *Figure 3* in *Section 6*.

All retained trees should be protected (where appropriate) during construction (see *Section 5.6*).

Foraging and commuting habitat

There is good quality sheltered foraging habitat for bats on and adjacent to the site. Therefore, it is likely that bats are using the site for foraging and/or commuting. Retaining and enhancing

connectivity around the edges of the site will help minimise any potential impact to bat populations in the local area. This is particularly important given barbastelles were recorded during the surveys.

Changes in lighting can affect foraging and roosting bats. Therefore, no works should take place in the hours of darkness or under artificial lighting. In addition, no lighting should be directed onto retained or planted vegetation (particularly trees), and security lights should operate on a timer, to avoid any negative impact on bats.

Any lighting installed should avoid spillage of greater than 0.1 lux (typical moonlight/ cloudy sky) onto retained vegetation, particularly the woodland. This is because brown long-eared bats are particularly sensitive to light.

5.4.4 *Dormice*

There is no suitable habitat for dormice on site. Therefore, no impacts are anticipated on dormice in the area and no further surveys are proposed.

5.4.5 *Great crested newt*

There is suitable terrestrial habitat for amphibians, including great crested newt, on the site. However, there are no ponds on the site and all ponds nearby are separated from the site by roads or multiple gardens. Therefore, no impacts are anticipated on great crested newts in the area. If great crested newts are subsequently identified, further surveys will be required.

5.4.6 *Badger*

Areas within 30m of development activities are usually searched for setts (where access is possible) as former guidelines suggest badgers and their setts could be disturbed by work using heavy machinery within 30m of a badger sett, light machinery within 20m, and light work (such as digging) within 10m.

As no badger setts were found on site, development works are free to proceed without further regard to this species, although if a badger sett is subsequently discovered within 30m of the proposed works then it may require a licence from Natural England to proceed. Guidance to what may be classed as disturbance to a badger (when occupying a sett) can be found at:

<https://www.gov.uk/guidance/badgers-protection-surveys-and-licences>.

5.4.7 *Birds*

All trees and bushes provide suitable habitat for nesting birds. Any affected vegetation with the potential to support nesting birds should be cut to near ground level (approximately 30cm) outside the bird breeding season (which is late February to August inclusive). The destruction of active bird nests is prohibited under the *Wildlife and Countryside Act 1981* (as amended). If this is not possible, and vegetation has to be removed during the nesting season, then it should be inspected (by an ecologist) for nests immediately prior to removal of the vegetation.

If any active nests are found during works, a 5m buffer zone should be established around them and be temporarily fenced off to prevent plant or personnel disturbing the nest until the end of the breeding bird season (or until the nest is no longer in use).

5.4.8 *Widespread species of reptile*

Suitable foraging and hibernating habitat for widespread reptile species such as slow-worms is present on site. Therefore, artificial refugia surveys were carried out. No reptiles were recorded on the site during the surveys.

5.5 **Further survey**

5.5.1 *Bats*

No further surveys are proposed.

If any of the other trees with bat roost suitability are subsequently to be removed, or otherwise affected by the development, they will require dusk emergence and/or pre-dawn re-entry surveys during the bat active season (primarily between May and August) to establish whether bats are using them. This gives sufficient information to either confirm that bats are not using them or provide the basis of the information that would be required for a European Protected Species (EPS) licence.

5.6 **Outline mitigation & enhancement measures**

5.6.1 *General*

In July 2021, the Government published the revised National Planning Policy Framework (Ministry of Housing, Communities and Local Government, 2019). The document sets out the government's planning policies for England and how these are expected to be applied. This replaces a previous version which was published in 2019. It states: "*at the heart of the Framework is a presumption in favour of sustainable development (paragraph 11).*"

It also states "*opportunities to incorporate biodiversity in and around developments should be encouraged*" as part of the consideration for "*presumption in favour of sustainable development*".

The updated National Planning Policy Framework (NPPF) also states (paragraph 170) that: "*Planning Policies and decisions should contribute to and enhance the natural and local environment by... minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.*"

The updated Planning Policy Guidance (PPG) for the Natural Environment, updated in July 2019 states (paragraph 020) that: "*Net gain in planning describes an approach to development that leaves the natural environment in a measurably better state than it was beforehand.*"

The updated PPG provides examples of how biodiversity net gain can be achieved. Measures suggested include “creating new habitats” and “enhancing existing habitats”.

It is proposed that the enhancements to provide net gain will be in the form of removing the *Schedule 9* species *Lamium galeobdolon* ssp *argentatum* (Variegated Yellow Archangel), planting to enhance the landscaping for biodiversity, new bat roost provision, lighting restrictions (for both bats and other wildlife), new bird nesting provision, new reptile habitat and new insect hotels and/ or towers. These enhancements are detailed in the following sections.

All draft proposed mitigation and enhancement measures are subject to supplied plans.

5.6.2 Habitats

Heras fencing or similar should be used to protect the roots of the mature trees during construction. The guidance provided in BS 5837 *Trees in relation to Construction* provides further advice on minimising the impact to retained trees on a development site.

5.6.3 Schedule 9 species

To comply with the law, the *Schedule 9* species *Lamium galeobdolon* ssp *argentatum* (Variegated Yellow Archangel) should be controlled and eradicated so not to cause the plant to spread on this or other sites as a result of earth moving, soil/rubble removal or other operations.

Two main options exist; mechanical removal and chemical treatment. The options depend on the timescale of the works. If the timescale permits it then the plant will be treated with herbicide. This will be completed by appropriately qualified contractors prior to any earth-moving operations.

If there is a short timescale, then the plant and soil containing stolons will be scraped down to a minimum of 50cm. In addition, 2-3m of soil around the visible area will be removed. Any soil which contains this species is classed as controlled waste and must be disposed of appropriately. It will be disposed of in one of the following ways:

- in landfill as controlled waste;
- buried on site at a depth of 2m; or
- used to form a bund on site, where it will be treated with herbicide or buried.

5.6.4 Planting

New hedges will be planted around the edges of the site. These will consist of a mixture of native species such as *Acer campestre* (Field Maple), *Carpinus betulus* (Hornbeam), *Cornus sanguinea* (Dogwood), *Corylus avellana* (Hazel), *Crataegus monogyna* (Hawthorn), *Fagus sylvatica* (Beech), *Fraxinus excelsior* (Ash), *Prunus spinosa* (Blackthorn), *Quercus robur* (Pedunculate Oak), *Viburnum lantana* (Wayfaring-tree) and *Viburnum opulus* (Guelder-rose). These species will provide a mixture of leaf shapes and colours through the seasons. In addition, the hedges will contain *Ilex aquifolium* (Holly) and *Taxus baccata* (Yew) to provide an evergreen component for the winter

months, and to provide a contrast to the colours of the other plants during the spring, summer and autumn.

All new hedges will be under-sown with Emorsgate seed mix EH1 Hedgerow mixture (or equivalent). This will provide cover for wildlife such as hedgehogs as well as providing an attractive feature while the new hedges become established.

Areas of amenity grassland (verges and lawns) will be sown with a species-rich seed mix for lawns such as Emorsgate seed mix EL1 and EG1 (or equivalent). This will increase the plant diversity on site.

The seed mix EL1 will be sown mainly around the edges of lawns and on verges, where it can be mown less frequently without interfering with the amenity value of the grassland. The seed mix EG1, as a purely grass mix, will be sown in the centre of the grassland.

Details of the species present in the proposed seed mixes are given in *Appendix D*.

Plants that attract insects are generally helpful and trees, shrubs and flowering plants can provide cover for wildlife. Therefore, to enhance the ecological value of the site, the landscaping will incorporate a mixture of native and non-native species of value to wildlife. This mixture will be planted to encourage a diversity of insects, which in turn will attract different species. Flowers that bloom throughout the year, including both annuals and herbaceous perennials, are beneficial. Night-flowering blossoms attract night-flying insects, which in turn provide prey for bats. Examples of suitable plant species that could be planted to encourage wildlife include those in *Tables 5.6.4.1.* and *5.6.4.2*. Approximate flowering periods are listed in the tables.

Table 5.6.4.1. Native and non-native species that could be incorporated into the landscaping.

Species	Common Name	Approximate flowering period
<i>Achillea millefolium</i>	Yarrow	Early summer
<i>Aubretia</i> species	Aubretia	Spring to early summer
<i>Berberis darwinii</i>	Darwin's Barberry	Spring
<i>Iberis sempervirens</i>	Candytuft	Summer to autumn
<i>Centaurea montana</i>	Cornflower	Spring to summer
<i>Centaurea scabiosa</i>	Knapweed	Summer to autumn
<i>Centranthus ruber</i>	Red valerian	Summer to autumn
<i>Cornus sanguinea</i>	Dogwood	Summer
<i>Dianthus barbatus</i>	Sweet William	Summer
<i>Echinacea</i> species	Echinacea	Summer to autumn
<i>Erysimum</i> species	Wallflowers	Spring to early summer
<i>Glebionis segetum</i>	Corn marigold	Spring to summer
<i>Hebe</i> species	Hebes	Summer to autumn
<i>Hedera helix</i>	Ivy	Autumn
<i>Hesperis matronalis</i>	Dame's-violet	Spring to summer
<i>Hyacinthoides non-scripta</i>	English Bluebell	Spring

<i>Hylotelephium spectabile</i>	Ice plant 'Pink lady'	Early autumn
<i>Hypericum</i> species	St John's wort	Spring
<i>Ilex aquifolium</i>	Holly	Spring to summer
<i>Jasminum officinale</i>	Common White Jasmine	Summer to autumn
<i>Lavandula angustifolia</i>	Garden Lavender	Summer
<i>Leucanthemum vulgare</i>	Ox-eye daisy	Summer
<i>Limnanthes douglasii</i>	Poached egg plant	Summer
<i>Lonicera caprifolium</i>	Perfoliate Honeysuckle	Summer
<i>Lonicera etrusca</i>	Italian Honeysuckle	Summer to autumn
<i>Lonicera japonica</i>	Japanese Honeysuckle	Spring
<i>Lonicera periclymenum</i>	Honeysuckle	Summer to autumn
<i>Lunaria annua</i>	Honesty	Spring
<i>Malus domestica</i>	Apple	Spring
<i>Malus sylvestris</i>	Crab Apple	Spring
<i>Malva</i> species	Mallow	Summer to autumn
<i>Matthiola longipetala</i>	Night-scented stock	Summer
<i>Myosotis sylvatica</i>	Wood forget-me-not	Spring
<i>Nicotiana</i> species	Tobacco plant	Summer
<i>Oenothera</i> species	Evening primroses	Summer to autumn
<i>Papaver rhoeas</i>	Corn poppy	Summer
<i>Phacelia</i> species	Phacelia	Summer to autumn
<i>Primula vulgaris</i>	Primrose	Spring
<i>Rosa</i> species	Rose	Summer
<i>Rubus fruticosus</i> agg.	Bramble	Spring to summer
<i>Saponaria officinalis</i>	Soapwort	Summer
<i>Saxifraga fortunei</i>	Cherry pie	Summer to autumn
<i>Scabiosa</i> species	Scabious	Summer
<i>Silene dioica</i>	Red campion	Spring
<i>Silene noctiflora</i>	Night-scented Catchfly	Summer to autumn
<i>Silene vulgaris</i>	Bladder Campion	Summer
<i>Verbena</i> species	Vervain	Summer to autumn
<i>Viburnum lantana</i>	Wayfaring-tree	Spring to summer
<i>Viburnum opulus</i>	Guelder-rose	Summer

Table 5.6.4.2. Examples of suitable garden herbs that could be planted in and around the site to encourage wildlife.

Species	Common Name	Approximate flowering period
<i>Angelica</i> species	Angelica	Summer to autumn
<i>Borago officinalis</i>	Borage	Spring to early autumn
<i>Calendula officinalis</i>	English marigolds	Summer to autumn
<i>Foeniculum vulgare</i>	Fennel	Summer to early autumn
<i>Hesperis matronalis</i>	Dame's-violet, often sold as Sweet Rocket	Spring to summer

<i>Hyssopus officinalis</i>	Hyssop	Summer to early autumn
<i>Matthiola bicornis</i>	Night-scented Stock	Spring to autumn
<i>Melissa officinalis</i>	Lemon balm	Summer
<i>Monarda species</i>	Bergamot	Summer to early autumn
<i>Nicotiana species</i>	Tobacco-plant	Spring to autumn
<i>Oenothera species</i>	Evening-primroses	Summer
<i>Origanum vulgare</i>	Marjoram	Summer
<i>Rosmarinus officinalis</i>	Rosemary	Spring
<i>Saponaria officinalis</i>	Soapwort	Summer to autumn
<i>Silene noctiflora</i>	Night-scented Catchfly	Summer to autumn
<i>Silene vulgaris</i>	Bladder Champion	Spring to summer
<i>Tanacetum parthenium</i>	Feverfew	Summer to early autumn
<i>Thymus species</i>	Thyme	Summer

5.6.5 *Amphibians, reptiles & hedgehogs*

Any fencing will have 15cm x 15cm gaps beneath to allow wildlife such as reptiles, amphibians and hedgehogs to access the landscaping. This could be achieved by removing all or part of the baseboard/ gravelboard.

5.6.6 *Bats*

New bat roost locations

The new buildings will be enhanced for bats using at least one integrates bat box per building (*e.g.* Habibat™ Bat Box or Istock Enclosed Bat Box), which provides a cavity that is incorporated into the external build structure to offer roosting space for bats.

Alternatively, hanging tiles fixed to offset battens with 30mm gaps for bats to roost behind will be used on the new buildings. Access to these areas will be provided by a bat access tile. If a protective liner is required behind the hanging tiles this must be traditional black bitumen type 1F felt with a hessian matrix. A breathable membrane must NOT be used.

Lighting

Changes in lighting can affect foraging and roosting bats. Therefore, no works should take place in the hours of darkness or under artificial lighting. In addition, no lighting should be directed onto the new roost exit points (see *Section 5.6.6*) and planted and retained vegetation (particularly the trees and hedges) and any lighting installed should avoid spillage of greater than 0.1 lux near to or directly onto the new roost entrances and vegetation so that light disturbance is not a problem. This is because lighting can impact bat populations directly by disturbing roosts and reducing their foraging area, or indirectly by severing commuting routes from roosts. Therefore, the following (modified from *Bats and lighting in the UK* (ILP 2018)) should be undertaken:

- **Aim of light** The light should be aimed to illuminate only the immediate area required by using as sharp a downward angle as possible. This lit area must avoid being directed at, or close to, any retained vegetation. A shield or hood can be used to control or restrict the area to be lit.

Avoid illuminating at a wider angle as this will be more disturbing to foraging and commuting bats as well as people and other wildlife.

For any security lighting, the following should also apply:

- **Power** It is rarely necessary to use a lamp of greater than 2000 lumens (150W) in security lights. The use of a higher power is not as effective for the intended function and will be more disturbing for bats.
- **Movement sensors** Many security lights are fitted with movement sensors which, if well installed and aimed, will reduce the amount of time a light is on each night. This is more easily achieved in a system where the light unit and the movement sensor are able to be separately aimed.
- **Timers** If the light is fitted with a timer this should be adjusted to the minimum to reduce the amount of ‘lit time’.
- **Alternatives** The requirement for security lighting in each instance should be carefully considered and only used where absolutely necessary to deter crime.

The use of non-UV LED lighting (preferably using warm spectrum wavelengths) is strongly recommended to avoid the most deleterious impacts of lighting on biodiversity and bats in particular.

5.6.7 Birds

Mitigation




All trees and bushes provide suitable habitat for nesting birds. Any affected vegetation with the potential to support nesting birds should be cut to near ground level (approximately 30cm) outside the bird breeding season (which is late February to August inclusive). All demolition works should take place outside the breeding bird season (which is late February to August inclusive). If this is not possible, and buildings have to be removed during the nesting season, the building should be checked for nests (by an ecologist) immediately prior to works. The destruction of active bird nests is prohibited under the *Wildlife and Countryside Act 1981* (as amended). If this is not possible, and vegetation has to be removed during the nesting season, then it should be inspected (by an ecologist) for nests immediately prior to removal of the vegetation.



If any active nests are found during works, a 5m buffer zone should be established around them and be temporarily fenced off to prevent plant or personnel disturbing the nest until the end of the breeding bird season (or until the nest is no longer in use).

Enhancement & compensation

The loss of potential nesting sites will be compensated for through the provision of new nest boxes. In addition, in line with planning policy, the site will be enhanced for birds. To maximise the number of species of bird attracted, several different types of bird boxes will be placed in various locations within the development site. It is not advisable to place many boxes with identical dimensions, because individuals of the same species would not tolerate each other’s presence, especially in built-up areas with limited food resources. The proposed bird boxes are summarised in *Table 5.6.7.1*.

Table.5.6.7.1. Bird boxes to be erected within the development site with additional details on positioning to increase chances of occupancy.

Type (example)	Typical species	No.	Height	Additional information
Vivara Pro Seville 32mm Woodstone Nest Box 	Blue tits, great tits	1	2-4m	<ul style="list-style-type: none"> Position on a building or tree, angled north-east (away from prevailing winds) and tilt forward slightly. Chances of occupation can be increased by positioning boxes near vegetation.
Vivara Pro Seville 28mm Woodstone Nest Box 	Blue tits, coal tits	1	2-4m	<ul style="list-style-type: none"> Position on a building or tree, angled north-east (away from prevailing winds) and tilt forward slightly. Chances of occupation can be increased by positioning boxes near vegetation.
Vivara Pro WoodStone House Sparrow Nest Box 	House sparrows	2	≥ 2m	<ul style="list-style-type: none"> Either incorporate into the build structure or mount on sturdy building. Do not fix onto fences or garden sheds due to its weight. Position out of direct sunlight (below eaves on the north elevation), away from windows and in a straight line. Should be in an open area so that it is less accessible to predators and birds are not obstructed as they leave the nest. Avoid mounting in close proximity to other integrated bird (or bat boxes) <i>i.e.</i> on the same elevation/ wall.

<p>Vivara Pro WoodStone House Martin Nest</p> 	<p>House martins</p>	<p>2</p>	<p>≥ 5m</p>	<ul style="list-style-type: none"> ● Position out of direct sunlight (below eaves on the north elevation), away from windows and in a straight line. ● Should be in an open area so that it is less accessible to predators and birds are not obstructed as they leave the nest.
<p>Ibstock Eco-habitat</p> 	<p>Swifts</p>	<p>2</p>	<p>≥ 5m</p>	<ul style="list-style-type: none"> ● Either incorporate into the build structure or mounted on a building. ● Position out of direct sunlight (below eaves on the north elevation), away from windows and in a straight line. ● Should be in an open area so that it is less accessible to predators and birds are not obstructed as they leave the nest.

5.6.8 *Widespread species of reptile*






The retained boundaries will be enhanced for reptiles through the retention of rough grassland at the base of the new boundary hedges and refugia provided through the creation of log piles and turf piles.

5.6.9 *Invertebrates*

At least two insect boxes should be installed in the garden (one per garden). This will be in a sunny location close to vegetation.

Bee-friendly and insect friendly plants should be located nearby so that the bees and insects using the boxes have food. Lavender, honeysuckle and buddleia are all pollinator-friendly plants. The boxes suggested in *Table 5.6.9.1* (especially the BeePot planter) have been chosen so that they form an attractive feature as part of the landscaping. Solitary bees are non-aggressive and as such are suitable for gardens with pets and children.

Table 5.6.9.1. Examples of insect boxes that could be erected on site.

Type	Species	No.	Height	Additional information
	Solitary bees	2	>1m from the ground	The BeePot should be positioned in a warm sunny spot, preferably on a south-facing wall, with no vegetation in front of the holes
	Butterflies, solitary bees, lacewings and ladybirds	2	>1m from the ground	The different sections of the Insect Tower have been designed to provide a habitat for a variety of insect species. Suitable for mounting on buildings, trees or fences.
	Solitary bees and a range of other insects	2	Between 0.75m and 1.5m above ground	The selected canes and the holes are the optimum size for solitary bees but other insects may overwinter in the nester.
	A wide range of insects	2	Between 0.75m and 1.5m above ground	Adding natural materials such as drilled canes, hollow stems or bark in the triangular spaces will encourage more insects to the hotel.
	A wide range of insects	2	>1m from the ground	Best placed near vegetation. Provides plenty of nooks and crannies for insects such as ladybirds, earwigs and lacewings.

5.7 Requirement for Natural England licences

5.7.1 European Protected Species (EPS) licences

A bat European Protected Species (EPS) licence or Bat Mitigation Class Licence (formerly Bat Low Impact Class Licence, if qualifying) site registration from Natural England is not currently necessary before work commences.

This permits activities that may otherwise be offences under the *Conservation of Habitats & Species Regulations 2017*, such as the destruction of roost sites.

Evidence is required from emergence/ re-entry surveys during the bat active season between May and September in order to gather enough information about bat populations (including species, numbers and status of roost sites) to support a bat licence application.

If great crested newts are subsequently found further survey work will be required and an EPS licence will be needed.

Survey data supporting licence applications must be up-to-date *i.e.* have been conducted within the current or most recent optimal survey season (May to September for bats and April to October for dormice). Therefore, if surveys show protected species are present, and any licensable work is delayed until, during or after the next survey season, updated survey(s) will be required to support an application.

Natural England takes a between 30-60 working days to process licence applications following receipt of all the relevant documentation. This includes an application form and a Method Statement. The latter includes a detailed mitigation strategy to eliminate or reduce impacts.

It is not possible to apply for a licence until full planning permission has been granted and any conditions relating to wildlife fulfilled, although Local Planning Authorities usually request the information prior to determining a planning application request. Additional time will be required where any revisions to a proposed mitigation strategy are necessary to obtain the licence.

5.7.2 *Protection of Badgers Act (1992) licences*

As no setts have been identified within (or close to) the site boundary, a licence is currently not required.

6 **FIGURES**

Figure 1. Aerial photographs showing the location of the site.

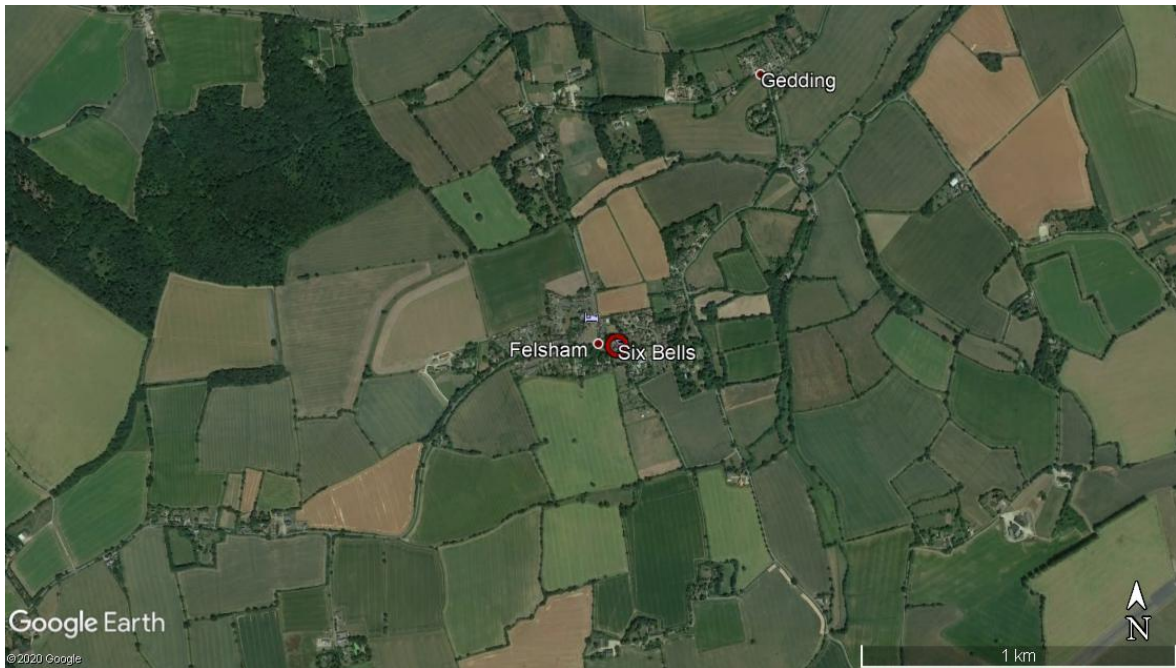


Figure 2. Ordnance Survey map showing the location of the site (as indicated by the red arrow).



Reproduced with permission of Ordnance Survey under licence no. 100049977.

Figure 3. Phase 1 Habitat Survey map.

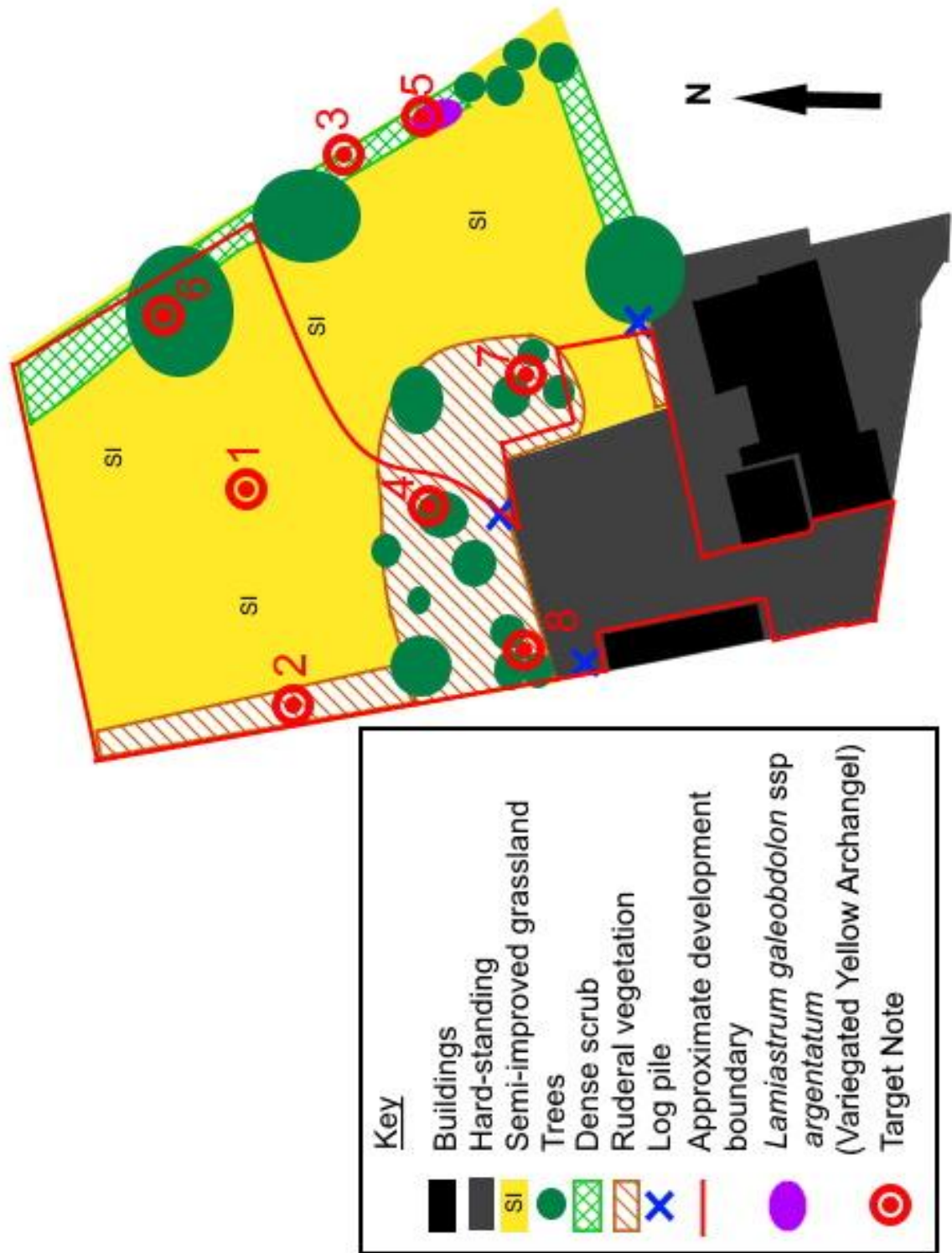


Figure 4. Aerial photograph showing the location of ponds within 250m and 500m of the site boundary.

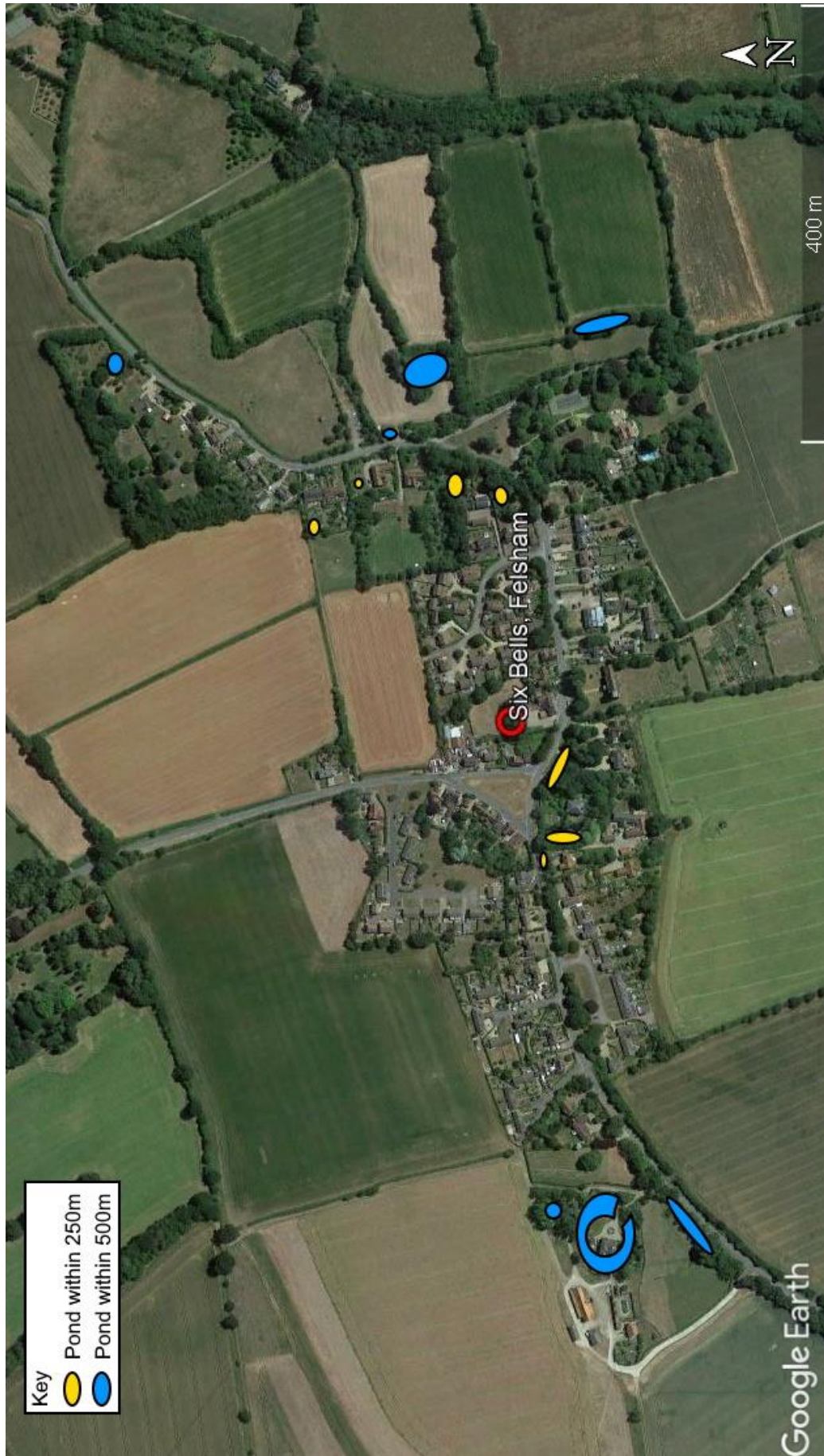
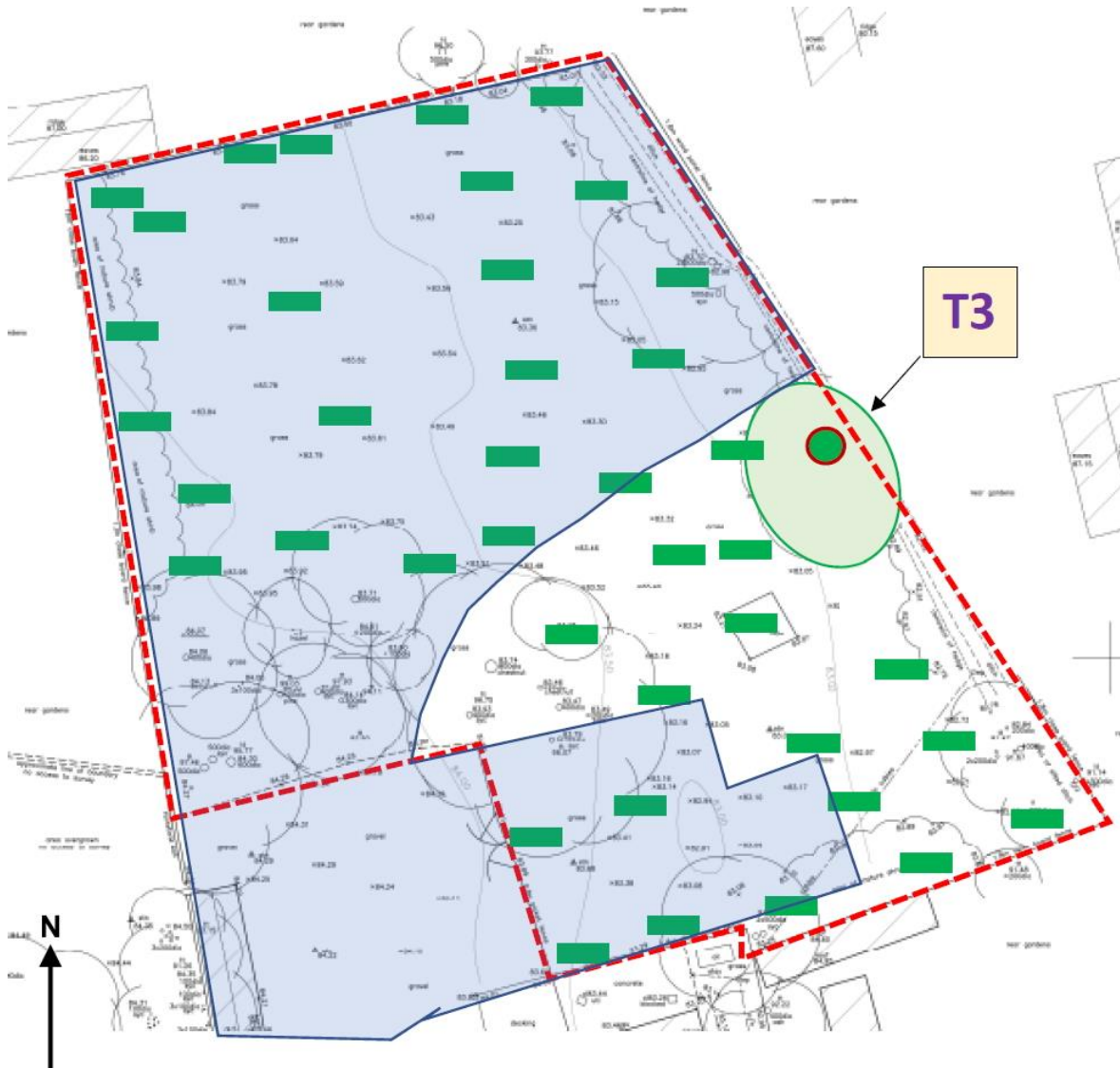






Figure 5. Location of artificial refugia during the reptile surveys.



	Survey area/grassland habitat		Approximate location of reptile refugia
	Tree T3 (Sycamore)		Approximately site boundary

7 **PHOTOGRAPHS**

Photo 1. View across the site showing the tussocky grassland (Target Note 1), facing north.



Photo 2. Nettlebed vegetation along the western boundary (Target Note 2).



Photo 3. Dense scrub and scattered trees along the east boundary (Target Notes 3 & 4), facing north.



Photo 4. Scattered trees near the carpark at the south-east corner of the development site, with nettled vegetation below, facing west.



*Photo 5. *Lamium galeobdolon* ssp *argentatum* (Variegated Yellow Archangel) along the eastern boundary of the site (Target Note 5).*



Photo 6. Example of one of the log piles on site.



Photo 7. Carpark facing towards the road (south) with the rear of the Six Bells pub on the left and an outbuilding on the right.



Photo 8. Front of the Six Bells pub.



Photo 9. Church Road, facing east.



Photo 10. St Peter's Church, which is on the opposite side of Church Road.



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9 APPENDIX A: PROTECTED SPECIES LEGISLATION

9.1 General

This section briefly describes the legal protection afforded to the protected species identified in this report. It is for information only and is not intended to be comprehensive or to replace specialised legal advice. It is not intended to replace the text of the legislation, but summarises the salient points.

9.2 Bats

All species of British bat are listed on *Schedule 5* of the *Wildlife and Countryside Act 1981* (as amended), and receive full protection under *Section 9*. Protection was extended by the *Countryside and Rights of Way Act 2000* (the CRow Act). This legislation makes it an offence to:

- intentionally kill, injure or take a bat;
- possess or control a bat;
- intentionally or recklessly damage, destroy or obstruct access to a bat roost; and
- intentionally or recklessly disturb a bat whilst it occupies a bat roost.

Bats are also European protected species listed on *Schedule 2* of the *Conservation of Habitats & Species Regulations 2017* which gives them full protection under *Regulation 43*. This legislation makes it an offence to:

- deliberately capture, injure or kill a bat;
- deliberately disturb a bat (in such a way as to be likely to significantly affect: (i) the ability of a significant group of bats to survive, breed or rear/nurture their young; or (ii) the local distribution or abundance of the species concerned);
- damage or destroy a breeding site or resting place of a bat; and
- possess, control, transport, sell, exchange a bat, or offer a bat for sale or exchange.

All bat roosting sites receive legal protection even when bats are not present (bats tend to reuse the same roost).

Several species of bat are included as a Priority Species in the UK Biodiversity Action Plan (UKBAP - JNCC (2003)) and also as species of principal importance for the conservation of biological diversity in England under *Section 74* of the CRow Act.

All species of British bat are also protected under *Schedule 6* of the *Wildlife and Countryside Act 1981* (as amended). This protection relates specifically to trapping and direct pursuit of the species.

9.3 Dormice

Dormouse (*Muscardinus avellanarius*) is listed on *Schedule 5* of the *Wildlife and Countryside Act 1981* (as amended), and receives full protection under *Section 9*. This species is also listed as a European Protected Species on *Schedule 2* of the *Conservation of Habitats & Species*

Regulations 2017, which gives it full protection under *Regulation 43*. Protection was extended by the *Countryside and Rights of Way Act 2000* (the CRow Act).

Under the above legislation it is an offence to:

- kill, injure or take an individual of such a species;
- possess any part of such species either alive or dead;
- intentionally or recklessly damage, destroy or obstruct access to any place or structure used by such species for shelter, rest, protection or breeding;
- intentionally or recklessly disturb such a species whilst using any place of shelter or protection;
- or
- sell or attempt to sell any such species.

9.4 Great crested newt

Great crested newt (*Triturus cristatus*) is listed on *Schedule 5* of the *Wildlife and Countryside Act 1981* (as amended), and receives full protection under *Section 9*. This species is also listed as a European Protected Species on *Schedule 2* of the *Conservation of Habitats & Species Regulations 2017*, which gives it full protection under *Regulation 43*. Protection was extended by the *Countryside and Rights of Way Act 2000* (the CRow Act).

Under the above legislation it is an offence to:

- kill, injure or take an individual of such a species;
- possess any part of such species either alive or dead;
- intentionally or recklessly damage, destroy or obstruct access to any place or structure used by such species for shelter, rest, protection or breeding;
- intentionally or recklessly disturb such a species whilst using any place of shelter or protection;
- or
- sell or attempt to sell any such species.

The great crested newt is included as a Priority Species in the UK Biodiversity Action Plan (UKBAP) and also as a species of principal importance for the conservation of biological diversity in England under *Section 74* of the CRow Act.

9.5 Badger

Badger (*Meles meles*) is protected in Britain under the *Protection of Badgers Act 1992* (as amended) and *Schedule 6* of the *Wildlife and Countryside Act 1981* (as amended).

The legislation affords protection to badgers and badger setts, and makes it a criminal offence to:

- wilfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so;
- interfere with a sett by damaging or destroying it;
- to obstruct access to, or any entrance of, a badger sett; or
- to disturb a badger when it is occupying a sett.

Guidance to what may be classed as disturbance to a badger (when occupying a sett) can be found at: <https://www.gov.uk/guidance/badgers-protection-surveys-and-licences>

9.6 *Birds*

9.6.1 *Birds - general protection*

All species of bird are protected under *Section 1* of the *Wildlife and Countryside Act 1981* (as amended). The protection was extended by the CRow Act.

The legislation makes it an offence to intentionally:

- kill, injure or take any wild bird;
- take, damage or destroy the nest of any wild bird while that nest is in use or being built; or
- take or destroy an egg of any wild bird.

9.6.2 *Birds - specially protected species*

Certain species of bird are listed on *Schedule 1* of the *Wildlife and Countryside Act 1981* (as amended) and receive protection under *Sections 1(4)* and *1(5)* of the Act. The protection was extended by the CRow Act. The legislation confers special penalties where the above mentioned offences are committed for any such bird and also make it an offence to intentionally or recklessly:

- disturb any such bird, whilst building its nest or it is in or near a nest containing dependant young; or
- disturb the dependant young of such a bird.

9.7 *Widespread species of reptile*

Common lizard (*Zootoca vivipara*), grass snake (*Natrix natrix*), slow-worm (*Anguis fragilis*), and adder (*Vipera berus*) are listed under *Schedule 5* of the *Wildlife and Countryside Act 1981* (as amended), in respect of *Section 9(5)* and part of *Section 9(1)*. This protection was extended by the CRow Act.

Under the above legislation it is an offence to:

- intentionally or deliberately kill or injure any individual of such a species; or
- sell or attempt to sell any part of the species alive or dead.

9.8 *European Protected Species Licences*

Where it is necessary to carry out an action that could result in an offence under the *Conservation of Habitats & Species Regulations 2017* it is possible to apply for a European Protected Species (EPS) licence from Natural England. Licences are only issued where Natural England are satisfied that three derogation tests are met. These are that the activity is for **imperative reasons of overriding public interest**, that there must be **no satisfactory alternative** and that **favourable conservation status of the species must be maintained**.

Consideration of these three derogation tests was previously left to Natural England as part of their deliberations on whether to grant a licence for the development activity after a planning consent has been issued. However, the regulations now require that **all** public bodies, *i.e.* **Local Planning Authorities** (LPAs), have regard to the requirements of the European Habitats Directive when carrying out their functions. As a result, LPAs **must** address the three derogation tests when considering a planning application that could impact upon any European Protected Species (EPS).

9.9 *National planning context*

9.9.1 *General*

Surveys should be completed in line with Natural England's *Standing Advice for Local Authorities* (<http://www.naturalengland.org.uk/ourwork/planningdevelopment/spatialplanning/standingadvice/default.aspx>), which states:

- Natural England will not comment on applications that are submitted without the relevant protected species surveys if there are no other issues (*i.e.* in relation to SSSIs or landscape).
- Natural England will not comment on scoping surveys that recommend further surveys where these have not been undertaken and submitted with the scoping reports.

In addition to the above, *Section 40* of the *Natural Environment and Rural Communities Act (2006)* imposes a new duty on all public authorities to have regard for biodiversity.

9.9.2 *National Planning Policy Framework (NPPF)*

In July 2021, the Government published the revised National Planning Policy Framework. The document sets out the government's planning policies for England and how these are expected to be applied. This replaces a previous version which was published in 2019. It states: "*at the heart of the Framework is a presumption in favour of sustainable development (paragraph 11).*"

Achieving sustainable development means that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives):

- an economic objective;
- a social objective; and
- an environmental objective.

The environmental objective is to "*contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy*".

Planning policies and decisions should contribute to and enhance the natural and local environment by "*protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan)*"

and “*minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures*”.

If significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused.

Development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted.

Development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists.

It states that “*development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity*”.

It should be noted that the “*presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site*”.

The NPPF also encourages “*minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures*” and aims to “*promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity*”. This applies to non-statutory designated sites including Sites of Importance for Nature Conservation (SINCs) and equivalent county wildlife sites.

Early engagement with all necessary stakeholders, including expert bodies, is encouraged by the NPPF.

10 APPENDIX B: TARGET NOTES

Target Note 1. Tussocky grassland with a sward dominated by *Agrostis stolonifera* (Creeping Bent) together with an abundance of the grasses *Dactylis glomerata* (Cock's-foot), *Lolium perenne* (Perennial Rye-grass) and *Poa annua* (Annual Meadow-grass) and the common forb *Ranunculus repens* (Creeping Buttercup). There are smaller amounts of the grass *Holcus lanatus* (Yorkshire-fog) and of the common forbs *Achillea millefolium* (Yarrow), *Bellis perennis* (Daisy), *Plantago lanceolata* (Ribwort Plantain), the ruderal *Malva sylvestris* (Common Mallow), and the tall semi-ruderals *Cirsium vulgare* (Spear Thistle), *Rumex crispus* (Curled Dock), *Senecio jacobaea* (Common Ragwort) and *Urtica dioica* (Common Nettle). It is suitable foraging habitat for widespread species of reptile such as slow-worms. It is suitable terrestrial habitat for amphibians such as great crested newts.

Target Note 2. Nettlebed vegetation dominated by the tall semi-ruderal *Urtica dioica* (Common Nettle) with an abundance of *Anthriscus sylvestris* (Cow Parsley). Other species present in much smaller amounts include a mixture of shade-tolerant herbs and tall ruderal and semi-ruderals. Species include *Aegopodium podagraria* (Ground-elder), *Arum italicum* (Italian Lords-and-Ladies), *Galium aparine* (Cleavers), *Geum urbanum* (Wood Avens), *Glechoma hederacea* (Ground-ivy), *Pentaglottis sempervirens* (Green Alkanet), *Primula veris* (Cowslip) and *Rumex crispus* (Curled Dock). It is suitable foraging habitat for widespread species of reptile such as slow-worms. It is suitable terrestrial habitat for amphibians such as great crested newts.

Target Note 3. Dense scrub dominated by *Rubus fruticosus* agg. (Bramble). It is suitable foraging and hibernation habitat for widespread species of reptile such as slow-worms. It is suitable terrestrial habitat for amphibians such as great crested newts.

Target Note 4. Scattered trees consisting of mostly *Acer pseudoplatanus* (Sycamore) with smaller amounts of *Castanea sativa* (Sweet Chestnut), *Corylus avellana* (Hazel), *Picea abies* (Norway Spruce), *Sambucus nigra* (Elder) and *Tilia europaea* (Lime). The evergreen creeper *Hedera helix* (Ivy) is growing up most of the trees, varying in density over the trunks.

Target Note 5. A patch of the non-native, invasive plant *Lamiastrum galeobdolon* ssp *argentatum* (Variegated Yellow Archangel). This species listed on *Schedule 9* of the *Wildlife and Countryside Act 1981* (as amended).

Target Note 6. A mature *Acer pseudoplatanus* (Sycamore) tree covered in dense *Hedera helix* (Ivy). It has moderate bat roost suitability.

Target Note 7. A group of five trees comprising three *Acer pseudoplatanus* (Sycamore) and two *Picea abies* (Norway Spruce) all covered in dense *Hedera helix* (Ivy). They have low bat roost suitability.

Target Note 8. A group of three trees comprising two *Acer pseudoplatanus* (Sycamore) and one *Picea abies* (Norway Spruce) all covered in dense *Hedera helix* (Ivy). They have low bat roost suitability.

11 **APPENDIX C: PLANT SPECIES LISTS**

Species	TN 1	TN2	TN3	TN 4
Woody species				
<i>Acer pseudoplatanus</i> (Sycamore)	-	D	-	-
<i>Castanea sativa</i> (Sweet Chestnut)	-	O	-	-
<i>Corylus avellana</i> (Hazel)	-	R	-	-
<i>Hedera helix</i> (Ivy)	-	A	-	-
<i>Picea abies</i> (Norway Spruce)	-	O	-	-
<i>Rubus fruticosus</i> agg. (Bramble)	-		-	D
<i>Sambucus nigra</i> (Elder)	-	F	-	-
<i>Tilia × europaea</i> (Lime)	-	R	-	-
Herbs				
<i>Achillea millefolium</i> (Yarrow)	O	-	-	-
<i>Aegopodium podagraria</i> (Ground-elder)	-	-	R	-
<i>Agrostis stolonifera</i> (Creeping Bent)	D	-	-	-
<i>Anthriscus sylvestris</i> (Cow Parsley)	-	-	F	-
<i>Arum italicum</i> (Italian Lords-and-Ladies)	-	-	R	-
<i>Bellis perennis</i> (Daisy)	R	-	-	-
<i>Cirsium vulgare</i> (Spear Thistle)	R	-	-	-
<i>Dactylis glomerata</i> (Cock's-foot)	F	-	-	-
<i>Galium aparine</i> (Cleavers)	-	-	O	-
<i>Geum urbanum</i> (Wood Avens)	-	-	R	-
<i>Glechoma hederacea</i> (Ground-ivy)	-	-	O	-
<i>Holcus lanatus</i> (Yorkshire-fog)	O	-	-	-
<i>Lamium aurantiacum</i> ssp <i>argenteum</i> (Variegated Yellow Archangel)	-	-	-	R
<i>Lolium perenne</i> (Perennial Rye-grass)	F	-	-	-
<i>Malva sylvestris</i> (Common Mallow)	R	-	-	-
<i>Pentaglottis sempervirens</i> (Green Alkanet)	-	-	R	-
<i>Plantago lanceolata</i> (Ribwort Plantain)	R	-	-	-
<i>Poa annua</i> (Annual Meadow-grass)	A	-	-	-
<i>Primula veris</i> (Cowslip)	-	-	R	-
<i>Ranunculus repens</i> (Creeping Buttercup)	F	-	-	-
<i>Rumex crispus</i> (Curled Dock)	R	-	R	-
<i>Senecio jacobaea</i> (Common Ragwort)	R	-	-	-
<i>Urtica dioica</i> (Common Nettle)	R	-	D	-
D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare				

12 **APPENDIX D: SEED MIX COMPOSITION**

EH1	
Species	Common Name
Wild Flowers	
<i>Alliaria petiolate</i>	Garlic Mustard
<i>Arctium minus</i>	Lesser Burdock
<i>Centaurea nigra</i>	Common Knapweed
<i>Chaerophyllum temulum</i>	Rough Chervil
<i>Galium album</i>	Hedge Bedstraw
<i>Geum urbanum</i>	Wood Avens
<i>Lathyrus sylvestris</i>	Narrow-leaved Everlasting-pea
<i>Leucanthemum vulgare</i>	Oxeye Daisy
<i>Primula veris</i>	Cowslip
<i>Prunella vulgaris</i>	Selfheal
<i>Saponaria officinalis</i>	Soapwort
<i>Silene dioica</i>	Red Campion
<i>Silene latifolia</i>	White Campion
<i>Silene vulgaris</i>	Bladder Campion
<i>Torilis japonica</i>	Upright Hedge-parsley
Grasses	
<i>Agrostis capillaris</i>	Common Bent
<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass
<i>Brachypodium sylvaticum</i>	False Brome
<i>Cynosurus cristatus</i>	Crested Dogtail
<i>Deschampsia cespitosa</i>	Tufted Hair-grass
<i>Festuca rubra</i>	Slender-creeping Red-fescue
<i>Poa nemoralis</i>	Wood Meadow-grass
EL1	
Species	Common Name
Flowering Species	
<i>Galium verum</i>	Lady's Bedstraw
<i>Leontodon hispidus</i>	Rough Hawkbit
<i>Leucanthemum vulgare</i>	Oxeye Daisy
<i>Lotus corniculatus</i>	Birdsfoot Trefoil
<i>Primula veris</i>	Cowslip
<i>Prunella vulgaris</i>	Selfheal
<i>Ranunculus acris</i>	Meadow Buttercup
<i>Trifolium pratense</i>	Wild Red Clover
Grasses	
<i>Agrostis capillaris</i>	Common Bent

<i>Cynosurus cristatus</i>	Crested Dogtail
<i>Festuca rubra</i>	Slender-creeping Red-fescue
<i>Phleum bertolonii</i>	Smaller Cat's-tail
EG1	
Species	Common Name
<i>Agrostis capillaris</i>	Common Bent
<i>Cynosurus cristatus</i>	Crested Dogtail
<i>Festuca rubra</i>	Slender-creeping Red-fescue
<i>Phleum bertolonii</i>	Smaller Cat's-tail
<i>Poa pratensis</i>	Smooth-stalked Meadow-grass

13 APPENDIX E: RAW DATA AND PLANS FROM THE BAT SURVEYS

13.1 Dusk emergence survey of tree Target Note 6 on the 26th August 2021

Project name/ No: Six Bells, Felsham – T3 Sycamore		Date: 26.08.21	Surveyor: Odette Robson
Detector: EMTouch Pro2, Sionyx Aurora Night-vision camera; Canon XA11 Camcorder with Nightfox IR illuminators (x2).		Sunset: 20:01hrs	Start/end time: 19:45 – 21:45
Beau = 4	CC = 100%	Humidity = 76 – 80%	Temperature: 15-14°C
Moon/ Lighting: /			

<p>Dusk emergence #1</p> <p>T3 - Sycamore</p>	<p><u>Emergence Survey of Sycamore Tree T3.</u></p> <p>First bat was a pipistrelle (not echolocating) recorded at 8 minutes past sunset – a single pass from north-east to south, along the eastern site boundary. A single Myotis pass (HNS) at 48 minutes after sunset. Brief Barbastelle foraging (5 passes) at 53 minutes after sunset. Brown long-eared (4 x passes), close to T3, at 55minutes after sunset. Regular common pipistrelle foraging passes later in the survey, along the tree-line to the north</p> <p>No roosting recorded in T3.</p> <table border="1"> <tr> <td></td> <td>T3 - Sycamore</td> </tr> <tr> <td></td> <td>Surveyor</td> </tr> <tr> <td></td> <td>Key commuting route</td> </tr> <tr> <td></td> <td>Foraging area</td> </tr> <tr> <td></td> <td>Infra-red Camera</td> </tr> </table>		T3 - Sycamore		Surveyor		Key commuting route		Foraging area		Infra-red Camera
	T3 - Sycamore										
	Surveyor										
	Key commuting route										
	Foraging area										
	Infra-red Camera										

Time	Note	Bat species	No	Activity/direction
20.09	SNH	Pipistrelle spp.	1	Pass to SE along tree-line (Seen-not-heard)
20.36	/	Common pipistrelle	1	Single pass on tree-line (north to south)
20.49	HNS	Myotis (poss Natterers)	1	Single pass (heard-not-seen)
20.54	/	Barbastelle	1	Foraging on tree-line to north – 5 passes.
20.56	/	Brown long-eared	1	Quiet and close passes (x4) – close to T3
21.03	/	Common pipistrelle	1	Distant foraging - several passes (HNS)
21.05	/	Barbastelle	1	Single pass along tree-line: South to north
21.18	/	Common pipistrelle	1	Brief foraging (HNS)
21.20	/	Common pipistrelle	1	Constant distant foraging (NHS)

13.2 Pre-dawn re-entry survey of tree Target Note 6 on the 10th September 2021

Project name/ No: Six Bells, Felsham – T3 Sycamore		Date: 10.09.21	Surveyor: Odette Robson
Detector: EMTouch Pro2, Sionyx Aurora Night-vision camera; Canon XA11 Camcorder with Nightfox IR illuminators (x2).		Sunrise: 06:22hrs	Start/end time: 04:45 – 06:37
Beau = 2-3	CC = 100%	Humidity = 95%	Temperature: 16°C
Moon/ Lighting: /			

<p>Dawn re-entry #2</p>	<p><u>Re-entry Survey of Sycamore Tree T3.</u></p> <p>Regular common pipistrelle passes throughout the survey – with some prolonged foraging at the group of trees to the west of the site. Brief <i>Myotis</i> spp., brown long-eared and Noctule passes along the tree-line.</p> <p>No roosting recorded in T3.</p> <table border="1"> <tr> <td>●</td> <td>T3 - Sycamore</td> </tr> <tr> <td>○</td> <td>Surveyor</td> </tr> <tr> <td>➔</td> <td>Key commuting route</td> </tr> <tr> <td>○</td> <td>Foraging area</td> </tr> <tr> <td>➔</td> <td>Infra-red Camera</td> </tr> </table>	●	T3 - Sycamore	○	Surveyor	➔	Key commuting route	○	Foraging area	➔	Infra-red Camera
●	T3 - Sycamore										
○	Surveyor										
➔	Key commuting route										
○	Foraging area										
➔	Infra-red Camera										

Time	Note	Bat species	No	Activity/direction
04:48	HNS	Common pipistrelle	1	Sporadic pass (HNS)
04:50	HNS	Common pipistrelle	1	Regular foraging passes (HNS)
05:02	HNS	Noctule	1	Single high pass (HNS)
05:15	/	Brown long-eared	1	Foraging passes (x3).
05:18	S to N	<i>Myotis</i> spp., (possible Natterers)	1	Single pass at head-height: South to north.
05:28	HNS	Soprano pipistrelle	1	Brief pass (HNS)
05:30	/	Common pipistrelle	1	Brief pass along tree-line: South to north
05:32	HNS	Brown long-eared	1	Brief pass (HNS)
05:41	HNS	Common pipistrelle	1	Distant pass (NHS)
05:44	N to S	Common pipistrelle	1	Foraging pass along the tree-line – north to south
06:02	/	Noctule	1	High pass to the north