# GRAVEN HILL, D1 SITE, BICESTER

## Ecological Addendum 2022

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# 1 INTRODUCTION

## 1.1 Purpose and Scope of this Report

1.1.1 RPS was commissioned by Graven Hill Purchaser Ltd. to undertake an Ecological Appraisal (EA) of an area of land within the former D Site at Graven Hill, Ambrosden, Bicester.

1.1.2 To undertake an initial assessment of the potential ecological impact of the proposals, previous survey work undertaken on the Site was reviewed and a Phase 1 Habitat Survey and further protected species surveys were undertaken, including for great crested newt (GCN), a Preliminary Roost Assessment (PRA) for bats, bat emergence and re-entry surveys (buildings only) and a badger survey

1.1.3 Due to additional survey work being required for bats (emergence and re-entry surveys of trees and activity surveys), reptiles and an updated badger walkover after the submission of the EA, a separate addendum upon completion of the surveys was required. The results of the additional survey work are provided within this addendum, which should be read in conjunction with the original EA (RPS 2022).

1.1.4 Therefore, this addendum aims to:

- Identify and assess the impacts of the Proposed Development on any roosts present within trees;
- Identify key foraging and commuting areas for the bat assemblage present and using the Site;
- Identify the numbers and distribution of reptiles on the Site;
- Identify and assess the impacts of the Proposed Development on badgers (if present); and
- Make recommendations for avoidance, mitigation and compensation measures that should be addressed in the scheme design and provide appropriate biodiversity enhancements in line with national and local planning policy.

1.1.5 This report pertains to these results only; recommendations included within this report are the professional opinion of an experienced ecologist and therefore the view of RPS.

1.1.6 The surveys and desk-based assessments undertaken as part of this review and subsequent report including the Ecological Appraisal Notes are prepared in accordance with the British Standard for Biodiversity Code of Practice for Planning and Development (BS42020:2013).

## 1.2 Study Area

1.2.1 The Site is located within the former D Site at Graven Hill, Ambrosden, Bicester. The Site is approximately 31 ha in size. The National Grid coordinates for the centre of the Site are SP 59241 19785.

1.2.2 The Site comprised existing buildings, hardstanding, neutral semi-improved grassland and species-poor semi-improved grassland with areas scrubby woodland, waterbodies and dry ditches.

1.2.3 Aerial imaging available via Google Earth Pro was also reviewed to assess the Site in relation to its context in the wider landscape.

1.2.4 The surrounding landscape is predominantly agricultural with some scattered farm holdings and agricultural buildings. A solar farm site lies immediately to the south and the wider Graven Hill development lies to the north of the Site.

## 1.3 Development Proposals

1.3.1 The proposals for the Site involve demolishing the existing buildings for the redevelopment into a commercial distribution centre with associated infrastructure and landscaping. The majority of the terrestrial habitat on the Site will be lost to allow for the development.

## 1.4 Legislation and policy

1.4.1 Relevant legislation, policy guidance and both Local and National Biodiversity Action Plans (BAPs) are referred to throughout this report where appropriate. Their context and application are explained in the relevant sections of this report.

1.4.2 The relevant articles of legislation are:

- The Environment Act, 2021;
- The National Planning Policy Framework (NPPF, 2021);
- Adopted Cherwell Local Plan 2011-2031 (Part 1);
- The Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019;
- The Wildlife and Countryside Act 1981 (as amended);
- The Protection of Badgers Act 1992;
- The Countryside and Rights of Way Act 2000;
- The Natural Environment and Rural Communities Act 2006; and
- National / Local Biodiversity Action Plan for Oxfordshire.

1.4.3 A summary of legislation relevant to protected or other species identified as potential constraints in this report is provided in Appendix A.

# 2 METHODS

## 2.1 Reptile Survey

2.1.1 The reptile survey followed the recommended methodology described in the Herpetofauna Worker's Manual (JNCC, 2003) and Froglife's Surveying for Reptiles (Froglife, 2016). The surveys were undertaken by experienced ecologists and conducted in areas of the Site identified as containing the most favourable habitat for reptiles.

2.1.2 The reptile surveys were led by Katy Thomas ACIEEM, an RPS Senior Ecologist and assisted by Lucinda Clark and Gemma Trinder, both RPS Ecologists who are all experienced in undertaking reptile surveys.

2.1.3 An initial assessment to identify habitats with potential to support reptiles was undertaken during the Phase 1 Habitat Survey of the Site.

2.1.4 Reptiles are best surveyed from April (following hibernation) until June and then again in September. At this time of year, the sun is often shining but air temperatures are low, so reptiles spend a long time basking and are therefore more easily observed.

2.1.5 The reptile survey was conducted using artificial refugia made from roofing felt measuring 50 cm x 50 cm and 50 cm x 100 cm. These provide shelter and basking opportunities for reptiles, which can be recorded on or under the refugia in suitable weather conditions.

2.1.6 On 4th and 7th April 2022, a total of 220 reptile refugia were placed in areas identified as providing the greatest suitability for reptiles and which had optimal basking opportunities. The locations of the refugia are shown on Figure 3.1.

2.1.7 The refugia were left undisturbed for 10 days prior to the first survey being undertaken in order to allow them to bed down and to give them time for reptiles to find them. In order to conform to best practice guidelines, the refugia were inspected on seven separate survey visits and a visual search was undertaken when the refugia were being laid. The surveys were undertaken between the 20th April and 26th May 2022.

2.1.8 On each of the visits every refugia was inspected for reptiles basking on top and was then lifted to identify any reptiles beneath. The number, species, age class and where possible, sex of each reptile observed was recorded.

2.1.9 Visit times were selected to coincide with suitable weather conditions and times of day when refugia would be acting as heat traps which would attract reptiles to use them whilst basking. Periods of strong wind or heavy rain was avoided, and surveys were typically undertaken during periods of sunshine and when air temperatures were between 10°C and 18°C.

2.1.10 Froglife (1999) provides a basic index of relative abundance of reptiles based on peak survey counts (refer to Table 2.1 below). The figures in the table refer to the maximum number of adults seen by direct observation and/or on or under refuges by one person in one day.

**Table 2.1: Reptile population size class assessment**

| Species | Low population | Good population | Exceptional population |
|---|---|---|---|
| Adder | <5 | 5-10 | >10 |
| Grass snake | <5 | 5-10 | >10 |
| Common lizard | <5 | 5-20 | >20 |
| Slow worm | <5 | 5-20 | >20 |

## 2.2 Updated Bat Roost Assessment

2.2.1 Several trees and buildings on Site had previously been identified by Ecology Solutions Ltd. in 2018 and Waterman Group in 2019 as having potential to support roosting bats. A number of buildings and one tree (T492) were confirmed as bat roosts.

2.2.2 Emergence and re-entry surveys and hibernation surveys were undertaken on all buildings within the Site boundary September 2020 and September 2021, which identified seven buildings with

confirmed bat roosts, including day roosts for common pipistrelle, soprano pipistrelle and brown long-eared bats; night / feeding roosts for brown long-eared bats and a satellite roost for natterer's bats. One building was confirmed as a maternity roost for common pipistrelle and one building was confirmed as a hibernation roost for brown long-eared bats. No emergence or re-entry surveys were undertaken on the trees.

2.2.3 Due to the presence of a confirmed roost (tree T492) and time elapsed since the original surveys in 2019, an updated bat roost assessment was undertaken on all trees within the Site boundary to reaffirm their potential as a bat roost.

2.2.4 The update PRA was undertaken on the 4th April 2022 by Katy Thomas (Natural England Class 1 licence holder no. 2021-53781-CLS-CLS), an RPS Senior Ecologist experienced in undertaking bat roost assessments.

2.2.5 The assessment followed the guidelines published by the Bat Conservation Trust (BCT, 2016).

2.2.6 A ground-level inspection of the trees on Site was carried out. During the inspection, the ecologists looked for the following signs to indicate the presence of bats:

- Bat droppings;
- Insect wings (feeding stations);
- Oil (from fur) and urine stains;
- Scratch marks;
- Bat corpses; and
- Actual sightings of bats.

2.2.7 Any potential roost features or potential bat access points and roost places were also searched for and assessed. When suitable features were identified, they were inspected for signs indicating use or possible use by bats including tiny scratches, staining and flies around the entry points, bat droppings and feeding remains in, around and below entrances, distinctive smell of bats and the smoothing of surfaces around cavities.

2.2.8 Guidance from the Bat Conservation Trust Bat Survey: Good Practice Guidelines (BCT, 2016) on the features of buildings and trees which correlate with their use by bats was considered. Table 2.2 below and overleaf is taken from the above guidance and describes the category of potential value to roosting bats.

**Table 2.2: Guidelines for assessing the potential value of features and habitats to bats.**

| Suitability | Description of Roosting Habitats | Commuting and foraging habitats |
|---|---|---|
| Negligible | A structure or tree with 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 with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough features* to be used on a regular basis or by larger number of bats.<br>A tree of sufficient size and age to contain potential roost features but with none seen from the ground or features seen with only very limited roosting potential. | Habitat that could be used by small numbers of commuting bats such as gaps in a hedgerow or un-vegetated stream, but isolated.<br>Suitable but isolated habitat that could be used by small numbers of foraging bats, such as a lone tree (not in a parkland situation) or a patch of scrub. |
| Moderate | A structure or tree with one or more potential roost sites that could be used by bats due to their features* but unlikely to support a roost of high conservation status. | Continuous habitat connected to the wider landscape that could be used by bats for commuting and foraging, such as lines of trees and scrub or linked back gardens, grassland or water. |
| High | A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and | Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting and foraging bats, such as river valleys, streams, |

| Suitability | Description of Roosting Habitats | Commuting and foraging habitats |
|---|---|---|
| | potentially for longer periods of time due to their features*. | hedgerows, line of trees, woodland edge, broadleaved woodlands, tree-lined watercourses and grazed parkland.<br>Site is close to and connected to known roosts. |

*space/size, shelter, protection, conditions, and surrounding habitat.

2.2.9 Bat roost assessments of trees can be carried out at any time of year; however, summer surveys are more likely to reveal signs of bat activity.

## 2.3 Bat Emergence and Re-entry Surveys

2.3.1 The bat emergence and re-entry surveys were undertaken in accordance with the latest best practice guidelines and recommendations published by the Bat Conservation Trust in Bat Survey: Good Practice Guidelines (BCT, 2016).

2.3.2 As recommended by the BCT guidance, three dusk emergence or dawn re-entry surveys were undertaken on trees identified as having high potential and two surveys were undertaken on trees with moderate potential. Trees with low potential do not require emergence / re-entry surveys.

2.3.3 The dusk emergence surveys commenced 15 minutes before sunset and continued for at least 1.5 hours after sunset; dawn re-entry surveys commenced at least 1.5 hours before sunrise and finished 15 minutes after sunrise.

2.3.4 During each survey visit the buildings were continuously surveyed by a team of up to two experienced ecologists. Visual observations were made of where bats emerged / re-entered the trees and in what direction they were flying to / from.

2.3.5 Infra-red cameras, paired with static detectors, were positioned in multiple locations to ensure features suitable for supporting bats were covered in all locations.

2.3.6 Behavioural observations were also recorded for any bats encountered on Site or within the vicinity, including direction of flight and activity observed e.g. foraging and commuting.

2.3.7 Elekon Batlogger and Anabat bat detectors were used to detect echolocation calls which were subsequently analysed using BatExplorer and Kaleidoscope software to identify the species present. Camera data were analysed by a team of experienced ecologists using Windows Media Player.

2.3.8 The surveys were undertaken in appropriate conditions i.e. not during heavy rain, strong wind or if the air temperature dropped below 10°C.

2.3.9 The dates, times and weather conditions for the emergence / re-entry surveys are provided in Table 2.3 below.

**Table 2.3: Bat emergence / re-entry survey dates, times and weather conditions**

| Tree Number | Survey Date and Type | Sunset / Sunrise Time | Start Time | End Time | Weather |
|---|---|---|---|---|---|
| T6 | 12/05/22 emergence | 20:46 | 20:31 | 22:16 | Start: 12°C, BF 1, cloud 6/8, no rain<br>Finish 10°C, BF 1, cloud 5/8, no rain |
| T7 | 13/05/22 re-entry | 05:14 | 03:44 | 05:29 | Start: 10°C, BF 1, cloud 4/8, no rain<br>Finish 10°C, BF 1, cloud 5/8, no rain |
| T11 | 19/05/22 | 20:57 | 20:42 | 22:27 | Start: 19°C, BF 1, cloud 6/8, no rain<br>Finish 13°C, BF 1, cloud 6/8, no rain |
| T12 | | | | | |
| T3 | 25/05/22 | 21:05 | 20:50 | 22:35 | Start: 14°C, BF 3, cloud 5/8, no rain<br>Finish 12°C, BF 4, cloud 2/8, no rain |

| Tree Number | Survey Date and Type | Sunset / Sunrise Time | Start Time | End Time | Weather |
|---|---|---|---|---|---|
| T14 | 26/05/22 | 04:56 | 03:26 | 05:11 | Start: 10°C, BF 1, cloud 1/8, no rain<br>Finish 9°C, BF 1, cloud 1/8, no rain |
| T7 | 08/06/22 | 21:21 | 21:06 | 22:51 | Start: 14°C, BF 1, cloud 7/8, no rain<br>Finish 14°C, BF 1, cloud 7/8, no rain |
| T6 | 09/06/22 | 04:46 | 03:16 | 05:01 | Start: 11°C, no wind, cloud 7/8, no rain<br>Finish 10°C, no wind, cloud 7/8, no rain |
| T14 | 20/06/22 | 21:27 | 21:12 | 22:57 | Start: 16°C, BF 0, cloud 1/8, no rain<br>Finish 14°C, BF 0, cloud 1/8, no rain |
| T3 | 21/06/22 | 04:44 | 03:14 | 04:59 | Start: 8°C, BF 0, cloud 1/8, no rain<br>Finish 8°C, BF 1, cloud 2/8, no rain |
| T11 | 23/06/22 | 21:28 | 21:13 | 22:58 | Start: 19°C, BF 0, cloud 8/8, no rain<br>Finish 12°C, BF 1, cloud 8/8, no rain |
| T12 | | | | | |
| T7 | 28/06/22 | 21:27 | 21:12 | 22:57 | Start: 17°C, BF 1, cloud 8/8, no rain<br>Finish 13°C, BF 1, cloud 8/8, no rain |
| T6 | 13/07/22 | 21:19 | 21:04 | 22:49 | Start: 21°C, BF 1, cloud 3/8, no rain<br>Finish 19°C, BF 1, cloud 1/8, no rain |

## 2.4 Bat Activity Surveys

### Transect Surveys

2.4.1 Due to the loss of large areas of woodland along the southern boundary and the time elapsed since the original surveys, updated monthly transect and static activity surveys have been / will be undertaken between April and October 2022. The aim of the surveys is to determine the importance of these areas to the bat assemblage present and using the Site and complement the existing data from 2019. This information would be included within the Natural England EPS licence.

2.4.2 Bat static surveys have been / will also be undertaken within the Site boundary to gain additional information about bat activity. Static detector units were / will be deployed at four locations across the Site between April and October 2022 for a minimum of five nights per month.

2.4.3 Full details of the methodologies employed for the bat activity surveys will be included upon completion of the surveys in October 2022.

## 2.5 Updated Badger Survey

### Survey

2.5.1 The updated badger survey was undertaken on 6th July 2022 by Nikki Hulse, an RPS Ecologist, and included all areas within the project boundary and a 30 m buffer, where access was provided.

2.5.2 Badger surveys can be carried out at any time of year, as badgers do not hibernate. Winter surveys are often preferred as the vegetation levels are likely to be reduced, facilitating visibility of setts. However, levels of badger activity using other signs such as runs and foraging may be more easily understood when vegetation growth is present, and this also tends to make it easier to understand how recent and how frequent such activity might be.

2.5.3 The survey sought to identify and record all signs of badger activity based primarily on field signs. Evidence of badger activity can be identified in the following ways:

## Setts

2.5.4 A sett is defined as “any structure or place, which displays signs indicating current use by a badger”. Natural England guidance (Natural England, 2009) regarding “current use” takes into account the fact that badgers may use setts on an occasional basis and therefore, suggests that signs of activity recorded within weeks of proposed works schedules, rather than months or days, should be taken as an indication of current use. Signs that could indicate the absence of badgers should also be surveyed for, such as absence of signs of activity or debris in sett entrance ways.

2.5.5 Setts are identified based on their size, location and form. To establish relatively recent badger activity, and to confirm that the structure really is a sett, spoil heaps are inspected for badger hair or footprints. Activity is gauged by general demeanour, with fresh spoil and unobstructed holes. They are categorised as:

- Well used: being clear of debris or vegetation or obviously in regular use and may or may not have been excavated recently;
- Partially/occasionally used: not in regular use, with debris such as leaves and twigs in the entrance, or moss and/or other plants growing in or around the entrance. Partially used holes could be in regular use after a minimal amount of clearance; or
- Disused: not been in use for some time, with partially or completely blocked entrances which could not be re-used without a considerable amount of clearance effort. If the hole had been disused for some time, all that may be visible is a depression in the ground where the hole used to be and the remains of a spoil heap, which may be covered in moss or plants.

2.5.6 Setts are generally classified as one of four types:

- Main: normally the focal point sett of a group of badgers. Generally, always occupied, main .setts usually have several active holes with radiating tracks, latrines and other signs of activity. The actual number of holes can vary greatly, depending on social group size and soil conditions;
- Annexe: a secondary sett, close to the main sett. Will normally be connected to the sett with very obvious tracks. Annexes may not be occupied constantly, even when the main sett is very active;
- Subsidiary: occurring at a greater distance from the main sett and not as clearly linked to it as an annexe. These setts will fall clearly within the territory of a social group and may be seasonally used by badgers; or
- Outlier: less frequently used, these setts may be colonised by other species when not in use by badgers. Outliers may represent a temporary sett, or a habitation for migrating individuals, or those excluded from a social group.

## Exploratory Holes

2.5.7 A single entrance way excavation created by a badger, which was abandoned as it was for some reason considered unsuitable for occupation. The excavation is visibly short, and the end of the excavation is visible.

## Dung Pits

2.5.8 The normal method of excretion for badgers is to defecate into a small scrape or pit, which is left uncovered.

### Latrines

2.5.9 Collective names for a series of dung pits within an area. These are used by badger social groups to demarcate their territory and may be used for other behavioural purposes. Latrines are therefore an important part of badger social life.

### Track

2.5.10 A main arterial route frequently used by badgers, which may be clearly visible over a considerable distance.

### Runs

2.5.11 A less frequently used route, which may only be visible where it crosses some obstacle, such as a bank, a hedge or a fence. Badger hair can sometimes be collected along tracks where they have pushed under barbed wire fences.

### Foraging Area

2.5.12 An area which shows signs of foraging activity. Most often occurs as some form of “snuffle holes” and rooting up of turf or ground cover, overturning of dried cow manure, when in search of earthworms. Other foraging evidence may appear as holes left from digging out wasp or bees’ nests, or in arable areas, “rolling” of cereal crops.

### Prints

2.5.13 Can be detected where badgers have crossed areas of bare ground and are easily distinguishable from other mammal prints.

## 2.6 Limitations

### Survey

2.6.1 It should be noted that whilst every effort has been made to provide a comprehensive description of the Site, no investigation can ensure the complete characterisation and prediction of the natural environment.

2.6.2 Bats exhibit seasonal use of buildings and built structures and being so mobile may arrive and start using a site after it has been surveyed or be roosting somewhere else during the period it was surveyed. Additionally, bats can forage in different areas and preferentially commute along different routes in response to several changing physical and environmental factors. Therefore, it should be noted that this survey provides a snapshot of ecological constraints found to be present at the time and should not be relied upon as evidence of presence / absence for periods longer than one year.

2.6.3 The bat data presented in the tables detailing results of the bat surveys shows the number of contacts for different bat species. It is important to note that the number of contacts does not equate to number of individual bats, as several contacts can be generated by one bat flying past the surveyors several times. Instead, the number of contacts provides an index of bat activity, which can be used to identify areas of habitat of greater or lesser importance for bats.

2.6.4 Species identification by sonogram is limited to a certain extent by similarities in call structure parameters for certain species. All bats modulate their calls according to the habitats they are navigating and their behaviour. This imposes limitations on reliable identification of bats to species level for species of the same genus, and specifically for *Plecotus, Myotis* and *Nyctalus* bats.

2.6.5 Due to the location of the Site and known range of *Plecotus* bats, every *Plecotus* bat recorded was assumed to be brown long-eared bat. *Nyctalus* species (noctule and Leisler's bat) were separated where possible but grouped where call parameters overlapped and prevented reliable identification to species.

## Accurate Lifespan of Ecological Data

2.6.6 The majority of ecological data remain valid for only short periods due to the inherently transient nature of the subject. The survey results contained in this report are considered accurate for up to one year, assuming no significant changes to the site conditions. A verification walkover could be required within this time to identify if the Site has changed significantly.

# 3 RESULTS

## 3.1 Reptile Surveys

3.1.1 The majority of the Site was not suitable for reptiles (regularly managed grassland through cutting), although the ditches with ruderal vegetation banks were considered suitable.

3.1.2 A low population of common lizard and slow worm have previously been recorded on Site during surveys undertaken in 2018 and 2019. The grassland had remained relatively unchanged since these reptile surveys were undertaken i.e. regularly managed grassland through cutting.

3.1.3 A total of seven survey visits were undertaken between 20th April and 26th May 2022 as detailed within Table 3.1 below. The results of the reptile surveys are shown on Figure 3.1.

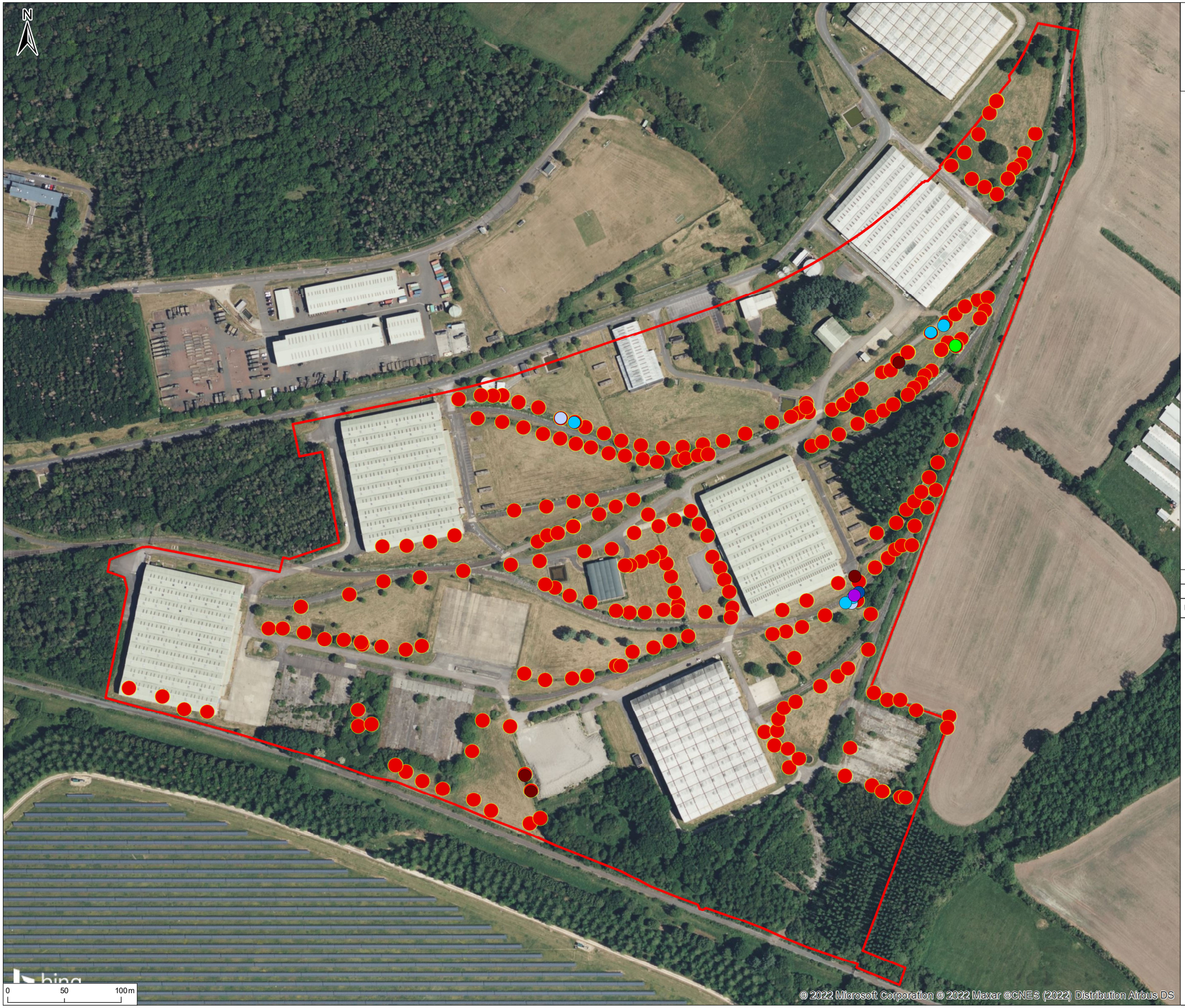
**Table 3.1: Reptile survey results**

| Visit Number | Date | Weather | Species recorded |
|---|---|---|---|
| 1 | 20/04/22 | 15°C, cloud 1/8, BF 3, dry | 1 x common lizard |
| 2 | 05/05/22 | 16°C, cloud 3/8, BF 1, dry | None |
| 3 | 13/05/22 | 18°C, cloud 1/8, BF 2, dry | 2 x common lizards |
| 4 | 18/05/22 | 21°C, cloud 7/8, BF 2, dry | 5 x common lizards |
| 5 | 20/05/22 | 16°C, cloud 4/8, BF 2, dry | 1 x common lizard |
| 6 | 23/05/22 | 16°C, cloud 4/8, BF 2, dry | None |
| 7 | 26/05/22 | 18°C, cloud 5/8, BF 4, dry | 5 x common lizards |

3.1.4 A peak count of five common lizards were recorded on Site. Following the population class size assessment, the Site was therefore considered to support a 'good' population of common lizard.

3.1.5 The common lizards were recorded mainly within the areas of grassland alongside the bare ground of the former railway lines in the north and east of the Site. A single common lizard was regularly recorded at one location in the south of the Site.

**Figure 3.1: Reptile survey results**



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## Legend

- Application boundary
- Reptile mat locations

Common lizard

- 20/04/2022 (1)
- 13/05/2022 (2)
- 18/05/2022 (5)
- 20/05/2022 (1)
- 23/05/2022 (1)
- 26/05/2022 (5)

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## 3.2 Updated Bat Roost Assessment

3.2.1 One tree (T492, now known as T6) had been previously identified as a day roost for common pipistrelle during emergence surveys undertaken in 2019 (Waterman Group, 2020).

3.2.2 Due to the presence of a confirmed roost and time elapsed since the original surveys, an updated bat roost assessment was undertaken on all trees within the Site boundary to reaffirm their potential as a bat roost.

3.2.3 The assessment identified two trees with high potential, four trees with moderate potential and 15 trees with low potential to support roosting bats. The remainder of the trees were considered to have negligible potential to support roosting bats.

3.2.4 Five trees, T3, T6 (previously confirmed roost T492), T7, T11 and T12 were considered to have hibernation potential.

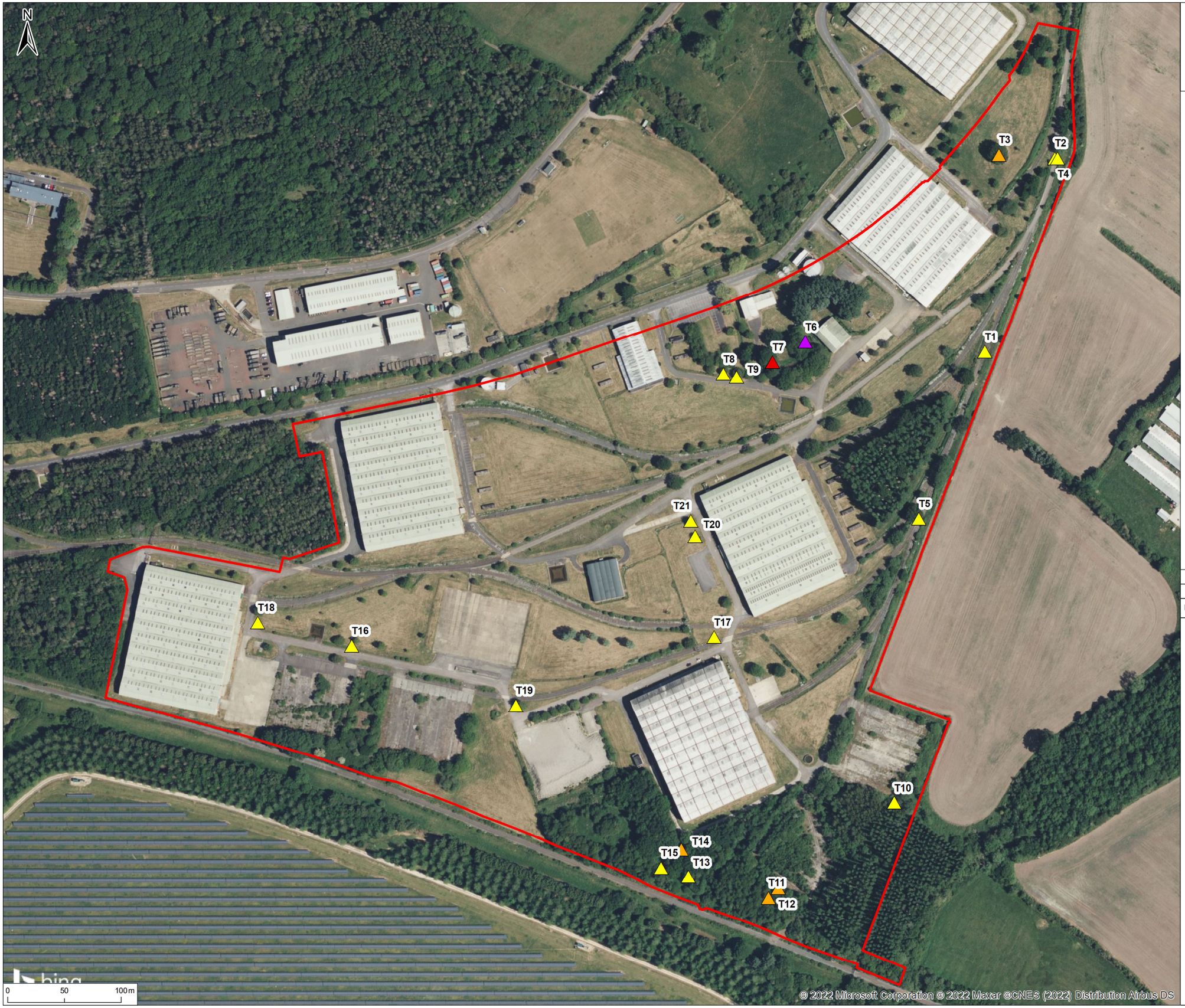
3.2.5 A description of the trees assessed is provided in Table 3.2 below. The locations of all trees assessed are shown on Figure 3.2.

**Table 3.2: Updated bat roost assessment results**

| Tree ref. | Species | Features | Description | Roost potential | Further action required |
|---|---|---|---|---|---|
| 1 | Silver birch | Ivy | Approximately 8 m high. Growing within area of scrub adjacent to railway line and hardstanding. Crooked form with severe deadwood and ivy. | Low | Supervised soft-fell |
| 2 | Willow | Deadwood, lifted bark, cavities | Approximately 9 m high. Located between railway and ditch. Dense canopy. Historic pruning wounds with some decay on southern elevation. Cluttered. | Low | Supervised soft-fell |
| 3 | Oak | Split, deadwood | Large mature oak, approximately 15 m high with linear fault below fork junction (appeared shallow) and minor deadwood in canopy | Moderate (inc. Hibernation potential) | Emergence / re-entry surveys |
| 4 | Willow | Deadwood, lifted bark, cavities | Similar features to T2, adjacent. | Low | Supervised soft-fell |
| 5 | Oak | Ivy | Approximately 8 m high. Growing adjacent to railway line. Branches into 3 main trunks at 1 m. Ivy becoming established on one trunk | Low | Supervised soft-fell |
| 6 (known roost) | Oak | Pruning cuts, deadwood, tear outs | Veteran oak located in area of mown grass. Two large limbs recently torn out and lying-in situ at base with some evidence of recent chainsaw activity to them. Historic pruning wounds on trunk with varying degrees of wound wood development. Minor deadwood in canopy, some with decay. Confirmed common pipistrelle roost in 2019. | High (inc. hibernation potential) | Emergence / re-entry surveys |
| 7 | Oak | Pruning cuts, deadwood, tear outs | Veteran oak approximately 23 m high. Tawny owl box on NW side with grey squirrel occupancy. Ivy present to 7 m on trunk. Torn limb wounds in lower canopy and some dogleg branch formations from canopy reduction works. | High (inc. hibernation potential) | Emergence / re-entry surveys |
| 8 | Red horse chestnut | Cracked / lifted bark | Located in mown grass on edge of wooded area. Slight lifting of bark across trunk / main stem | Low | Supervised soft-fell |
| 9 | Red horse chestnut | Cracked / lifted bark | Same as T8, adjacent. | Low | Supervised soft-fell |

| Tree ref. | Species | Features | Description | Roost potential | Further action required |
|---|---|---|---|---|---|
| 10 | Silver birch | Ivy | Semi-mature birch with ivy cover | Low | Supervised soft-fell |
| 11 | Poplar | Woodpecker hole / cavity | One of two poplar on edge of woodland with multiple woodpecker holes | Moderate (inc. hibernation potential) | Emergence / re-entry surveys |
| 12 | Poplar | Woodpecker hole / cavity | One of two poplar on edge of woodland with multiple woodpecker holes | Moderate (inc. hibernation potential) | Emergence / re-entry surveys |
| 13 | Oak | Cavity | Mature oak with bat box – inspect prior to removal. | Low | Supervised soft-fell |
| 14 | Oak | Crack, lifted bark | Mature oak within woodland compartment, located at the top of a ditch. Cracked ground at base from drought. Historic pruning wounds to lower trunk and canopy with varying degrees of occlusion. | Moderate | Emergence / re-entry surveys |
| 15 | Oak | Deadwood, cracked bark | Some small cracks and crevices across trunk – most appear shallow | Low | Supervised soft-fell |
| 16 | Red horse chestnut | Crack, lifted bark | Slight lifting of bark across trunk / main stem | Low | Supervised soft-fell |
| 17 | Red horse chestnut | Crack, lifted bark, cavity | Slight lifting of bark across trunk / main stem. Small cavity, appears shallow. | Low | Supervised soft-fell |
| 18 | Red horse chestnut | Crack, lifted bark | Slight lifting of bark across trunk / main stem | Low | Supervised soft-fell |
| 19 | Red horse chestnut | Crack, lifted bark | Slight lifting of bark across trunk / main stem | Low | Supervised soft-fell |
| 20 | Red horse chestnut | Crack, lifted bark | Slight lifting of bark across trunk / main stem | Low | Supervised soft-fell |
| 21 | Red horse chestnut | Crack, lifted bark | Slight lifting of bark across trunk / main stem | Low | Supervised soft-fell |

**Figure 3.2: Bat roost assessment - trees**






Notes
1. This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.
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## Legend

- Application boundary

Tree bat potential

- Confirmed roost
- High Potential Tree
- Moderate Potential Tree
- Low Potential Tree

| Rev | Description | By | CB | Date |
|---|---|---|---|---|
| | | | | |
| | | | | |

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Project: Graven Hill, D Site, Bicester

Title: Bat Roost Assessment - Trees

| Status | Drawn By | PM/Checked By |
|---|---|---|
| ISSUE | AC | KT |
| **Project Number** | **Scale @ A3** | **Date Created** |
| ECO01318 | 1:3,200 | JUL 2022 |

Figure Number: **3.2**

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## 3.3 Bat Emergence / Re-entry Surveys

3.3.1 Bat emergence and re-entry surveys were undertaken on six trees (T3, T6, T7, T11, T12 and T14) within the Site boundary between May and July 2022.

3.3.2 No bats were seen to emerge / re-enter any features during the surveys. Low levels of bat activity were recorded during the surveys; with common and soprano pipistrelle recorded most frequently. Fewer passes from *Myotis* sp., noctule *Nyctalus noctula* and brown long-eared bats *Plecotus auritus* were also recorded.

## 3.4 Bat Activity Surveys

3.4.1 Updated surveys for bat activity across the Site are being undertaken between April and October 2022, the results for which will be provided upon completion of the surveys.

## 3.5 Updated Badger Survey (Confidential)

Due to the sensitive nature of badger data these results are confidential. Those with a legitimate need for the information may request it from RPS.

**Figure 3.3: CONFIDENTIAL Badger survey results**

# 4 EVALUATION AND POTENTIAL IMPACTS

## 4.1 Reptiles

4.1.1 The reptile survey identified the presence of a good-sized population of common lizard. The common lizards were recorded mainly within the areas of grassland alongside the bare ground of the former railway lines in the north and east of the Site. A single common lizard was regularly recorded at one location in the south of the Site.

4.1.2 Therefore, further mitigation measures will be required prior to and during construction to ensure that no reptiles are harmed. Details on mitigation measures for reptiles are included within Section 5 of this report.

## 4.2 Bats

4.2.1 Due to the presence of a confirmed roost and time elapsed since the original surveys, an updated bat roost assessment was undertaken on all trees within the Site boundary to reaffirm their potential as a bat roost.

4.2.2 The assessment identified two trees with high potential, four trees with moderate potential and 15 trees with low potential to support roosting bats. The remainder of the trees were considered to have negligible potential to support roosting bats. T6 (previously T492) was identified as a day roost for low numbers of common pipistrelle in 2019 (Waterman Group, 2020).

4.2.3 Five trees, T3, T6, T7, T11 and T12, were also considered to have hibernation potential. No hibernation surveys have been undertaken on any trees within the Site boundary.

4.2.4 Bat emergence and re-entry surveys were undertaken on six trees (T3, T6, T7, T11, T12 and T14) within the Site boundary between May and July 2022, however no bats were recorded as emerging or re-entering these features.

4.2.5 In accordance with Wray *et al.* (2010), the common pipistrelle roost associated with T6 is considered to be of Local importance.

4.2.6 Full details of the potential impacts of the proposed development on bat activity will be provided as an update to this addendum, upon completion of the surveys in October 2022.

## 4.3 Badgers (Confidential)

Due to the sensitive nature of badger data the information provided in this section is confidential. Those with a legitimate need for the information may request it from RPS.

# 5 MITIGATION AND ENHANCEMENT

## 5.1 Reptiles

5.1.1 Suitable mitigation measures will be undertaken prior to and during demolition and clearance works to ensure the protection of any individual reptiles present. The areas of grassland will be continuously managed prior to the demolition as a very short sward to ensure that it remains unsuitable for reptiles.

5.1.2 A controlled approach will then be undertaken to Site clearance in the areas where potential habitat is to be lost such as any areas of rough grassland and scrub in order to displace any reptiles present into retained areas of contiguous habitat within the Site and wider area. This would require the following:

- The vegetation cover will be reduced to a minimum height of 150 mm. This would ideally take place at a time avoiding the bird breeding season (typically between March and August inclusive) or otherwise be preceded by a check of suitable habitat for active nests immediately prior to commencement of works by a suitably qualified ecologist;
- Where potential for reptiles to be present remains, a minimum period of 5 days with daytime temperatures of >12°C should then be allowed to elapse prior to the second stage of vegetation clearance;
- The second stage would involve clearance of all suitable vegetation to ground level (i.e. 14°C) at a suitable time of year when reptiles are likely to be active (mid-March to early October inclusive). At this time any potential hibernacula or refugia encountered should be carefully dismantled by hand. This stage of clearance should be undertaken under the supervision of a suitably qualified ecologist who would capture and relocate any reptiles encountered to areas of retained habitat in the mitigation area;
- Where potential for reptiles to be present still remains, a further 5 days with daytime temperatures of >12°C should then be allowed to elapse to enable any remaining reptiles to disperse from the area of works, prior to carrying out a destructive search; and
- Following clearance of vegetation to ground level and removal of any refugia by hand, no suitable reptile habitat would remain, and it is expected that any remaining reptiles would disperse from the area of works into adjacent habitat on their own accord.

5.1.3 In order to be certain that no reptiles are present within the area of works, where any potential for reptiles to be present remains a destructive search should be carried out.

5.1.4 In the event that the destructive search is delayed, vegetation should be maintained at ground level until the destructive search is carried out. Similarly, following the destructive search, the land should be maintained as unsuitable for the recolonisation of reptiles prior to and throughout the construction works.

### Destructive Search

5.1.5 A targeted destructive search would be undertaken on any parts of the Site considered to contain features of value as reptile refugia, which may include particularly dense grass tussocks, scrub and the small section of hedgerows that is to be removed.

5.1.6 Areas would be hand searched for reptiles by an ecologist and any found would be translocated to the ecological mitigation area. When the features had been searched, they would be carefully removed under the watching brief of an ecologist who would check for reptiles present below ground as the soil is removed.

5.1.7 A small excavator will be used to carefully lift turfs and shake out the roots and soil of the tussocky grass so that the ecologist can search for any additional reptiles which may be present below the surface.

5.1.8 The destructive search should be undertaken systematically across the Site to ensure that the excavator does not track across any areas of reptile habitat before they are removed.

5.1.9 This will render the Site unsuitable for reptiles. Once the habitat had been removed the Site should be maintained in that condition to prevent suitable reptile habitat from reoccurring.

## 5.2 Bats

### Bat Roosts

5.2.1 The updated bat roost assessment undertaken in 2022 identified two trees with high potential, four trees with moderate potential and 15 trees with low potential to support roosting bats. The remainder of the trees were considered to have negligible potential to support roosting bats. T6 (previously T492) was identified as a day roost for low numbers of common pipistrelle in 2019 (Waterman Group, 2020).

5.2.2 Due to the presence of a historic roost in T6, it will be included on the Natural England European Protected Species (EPS) bat licence which is being applied for prior to demolition of the buildings on the Site.

5.2.3 Five trees, T3, T6, T7, T11 and T12 were also considered to have hibernation potential. To confirm the presence / likely absence of hibernating bats and to ensure an offence is not committed, hibernation surveys on all five trees will be undertaken between January and February 2023 prior to the trees being felled. Should any hibernating bats be found, the tree(s) will be left in situ until spring 2023 and details concerning the roost will be submitted as a modification of the Natural England EPS licence and method statement.

5.2.4 No further survey work is required for trees identified as having low suitability. Any trees that are to be removed will require a 'soft fell' methodology to be employed. This can be undertaken at any time of year during suitable weather conditions, but a bat licenced ecologist must be present to oversee the works. If any features are accessible from the ground/aerial inspection the bat licenced ecologist will first check any potential roost features (PRFs)/cavities for signs of bat use (using a high-powered torch/endoscope). If no signs of bat use are identified a soft felling technique can be undertaken on the tree.

5.2.5 Soft felling a tree entails felling the tree in sections, with the following precautions: cutting above or below (rather than directly through) a potential roost feature; lowering cut sections gently to ground level by rope; and, cut sections are then to be left on Site, with any potential roost feature entrances left unobstructed, for 48 hours prior to chipping or removal from Site.

5.2.6 It should be noted that full Planning Permission (or Planning Permission with all nature conservation conditions discharged) will be required prior to an application for a licence.

### Bat Activity

5.2.7 Bat activity surveys are ongoing. Full details of the recommended mitigation and enhancement measures will be provided as a update to this addendum, upon completion of the surveys in October 2022.

## 5.3 Badgers (Confidential)

Due to the sensitive nature of badger data the information provided in this section is confidential. Those with a legitimate need for the information may request it from RPS.

## 5.4 Enhancement Opportunities

5.4.1 In addition to the mitigation measures outlined above, enhancement measures could also include:

- The provision of bird boxes located within retained vegetation and on mature trees. Boxes would comprise various designs suitable for common species recorded on the Site;
- Invertebrate boxes in various habitats, including near retained boundary features, adjacent to waterbodies and within retained woodland;
- The provision of additional bat boxes on existing mature trees (up to three boxes per tree) facing in different directions to offer suitable roosting conditions all year round; and
- Amphibian / reptile hibernacula located in retained or newly created habitat in the south of the Site.

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# APPENDICES

# Appendix A: Relevant Legislation

## Reptiles

All common UK reptile species (adder *Vipera berus*, grass snake *Natrix helvetica*, common lizard *Zootoca vivipara* and slow worm *Anguis fragilis*) are protected through part of Section 9(1 and 5) of the Wildlife & Countryside Act 1981 (as amended). This prohibits:

- Intentional or reckless injuring or killing;
- Selling, offering or exposing for sale, or having in possession or transporting for the purpose of sale, any live or dead wild animal or any part of, or anything derived from, such an animal; or
- Publishing or causing to be published any advertisement likely to be understood as conveying buying or selling, or intending to buy or sell, any of those things.

## Bats

All British bat species are fully protected under Schedule 5 of the Wildlife and Countryside Act 1981, as updated by the Countryside and Rights of Way Act 2000. All British bats are also included on Schedule 2 of The Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019 as European Protected Species. It is an offence to:

- intentionally or recklessly kill, injure or capture bats;
- deliberately or recklessly disturb bats (whether in a roost or not); and
- damage, destroy or obstruct access to bat roosts

A roost is defined as 'any structure or place which [a bat] uses for shelter or protection'. As bats tend to reuse the same roosts, legal opinion is that a roost is protected whether or not bats are present at the time of survey.

A licence will therefore be required by those who carry out any operation that would otherwise result in offences being committed.

The following bat species are listed as being of principal importance for the conservation of biodiversity in England, (commonly referred to as UKBAP Priority species): barbastelle *Barbastella barbastellus*, Bechstein's *Myotis bechsteinii*, noctule *Nyctalus noctula*, soprano *pipistrelle Pipistrellus pygmaeus*, brown long-eared *Plecotus auritus*, greater horseshoe *Rhinolophus ferrumequinum* and lesser horseshoe *Rhinolophus hipposideros*.

## Badger

Badgers *Meles meles* are protected under the Protection of Badgers Act 1992. This act is based on the need to protect badgers from baiting and deliberate harm or injury. The act makes it an offence to:

- Wilfully kill, injure, take, possess or cruelly ill-treat a badger, or attempt to do so; and
- Intentionally or recklessly interfere with a sett. Sett interference includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access routes.

A sett is defined as "any structure or place that displays signs indicating current use by a badger".