

# Ecological Assessment

## Middle Lypiatt



December 2020

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## EXECUTIVE SUMMARY

<p><b>Introduction</b></p>	<ul style="list-style-type: none"> <li>• The site was located at Middle Lypiatt, approximately 800m east of Stroud in the county of Gloucestershire.</li> <li>• Development proposals include the extension of building B1, the conversion of building B3 into accommodation, the creation of a garage to the east, and the reinstatement of the historic access through the avenue of tree north-east of the site.</li> <li>• This Ecological Assessment has been written to assess the potential ecological impacts from the development proposals.</li> </ul>
<p><b>Surveys undertaken</b></p>	<ul style="list-style-type: none"> <li>• This Ecological Assessment includes a UKHab Survey which was extended to include surveys for bats comprising a structures inspection, three bat emergence surveys, bat activity surveys (May – September 2020) and a tree ground level assessment for bats.</li> </ul>
<p><b>Ecological constraints</b></p>	<ul style="list-style-type: none"> <li>• The structures inspection identified all three structures as holding high potential for roosting bats.</li> <li>• Four trees were assessed to provide potential for bats; however, these are being retained within the development.</li> <li>• A maximum of two common pipistrelle bats were recorded emerging from the eastern elevation of B1.</li> <li>• The tree lined avenue was assessed to provide moderate foraging potential for bats including greater and lesser horseshoe bats.</li> <li>• Five swallow nests were identified within B3 and the trees were assessed to provide nesting habitat for birds.</li> </ul>
<p><b>Recommendations</b></p>	<ul style="list-style-type: none"> <li>• A low impact bat licence will be required regarding the destruction of bat roosts.</li> <li>• No artificial lighting should be used within the tree lined avenue for the reinstatement of the historic driveway.</li> <li>• Any required external artificial lighting at the site must be installed on a system which will ensure that lights are turned off when not in use. A suitable system is use of PIR lighting which will only turn on when movement detected. Lighting should be designed to reduce light spill onto the main house onsite which was assessed to provide bat roosts for common pipistrelle bats.</li> <li>• A Traditional Orchard will be created to the west of the site and a circle of walnut trees will be planted in the field to the north of the site.</li> <li>• Ecological provisions were recommended to compensate for the loss of swallow nests and to provide an enhancement onsite for bats</li> </ul>
<p><b>Conclusions</b></p>	<ul style="list-style-type: none"> <li>• If the recommendations within this report are adhered to, the development can ensure that bats can continue to use the site post-construction and the site can be enhanced for roosting birds and bats.</li> </ul>

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## 1.0 INTRODUCTION

Ethos Environmental Planning (Ethos) have undertaken this Ecological Assessment (EA) of the land at Middle Lypiatt, Stroud – hereafter referred to as the “site” and shown in Figure 1. The total area surveyed was 1.6 hectares and included several structures, grassland, ornamental garden, scattered trees, and a tree-lined avenue. The report was produced to inform the planning process regarding the construction of an extension, conversion of an outbuilding and the reinstatement of an historic driveway.

### 1.1 Aims and Objectives

The overall assessment has been informed by guidelines provided in the ‘*CIEEM guidelines for ecological report writing 2<sup>nd</sup> Edition, 2017*’. Further guidance in relation to surveys for protected species is detailed in the relevant sections within this report. The primary aim of the EA is to provide a robust evaluation of the potential impacts of the proposed scheme on ecological features that may be affected; with due regard to relevant local planning policy and legislation.

The EA has the following objectives:

- to identify the existing habitats on site;
- to identify the potential for protected species;
- to establish baseline ecological conditions and determine the importance of ecological features present within the specified area;
- to identify if any further surveys are required with regards to protected habitats or species;
- to identify key ecological constraints to the project and make recommendations for design options to avoid significant effects on important ecological features/resources;
- to identify the mitigation and compensation measures to ensure there is no negative impact on habitats and protected species during construction and in operation;
- to establish any requirements for protected species licensing; and
- to identify ecological enhancement opportunities to seek a net gain in biodiversity.

### 1.2 Structure of the Report

The following sections are included within this report:

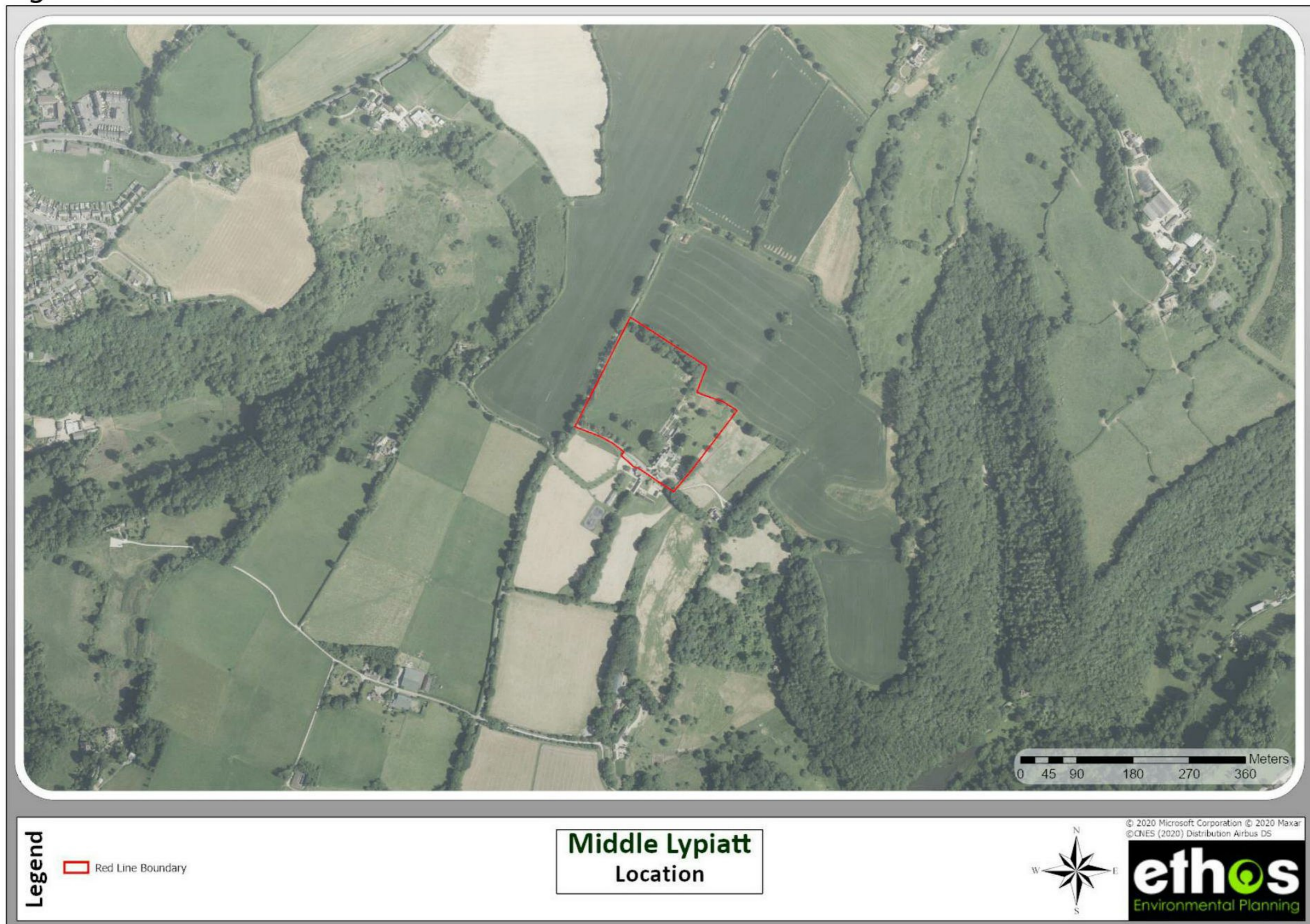
- Legislative and planning context;
- Methodology;
- Background data review;
- Phase 1 habitat survey;
- Protected species assessment;
- Discussion;
- Recommendations; and,
- Conclusions.

### 1.3 Site Location

The site was located at Middle Lypiatt, approximately 800m east of Stroud, in the county of Gloucestershire (Central Grid Reference SO 87726 04680).

The site was located within a landscape dominated by agricultural land, comprised a mix of arable and permanent pasture. There were extensive wooded valleys to the south and north of the site and an extensive network of hedgerows. The site was located approximately 500m north of the Toadsmoor Valley which consisted of arboreal and riparian habitats.

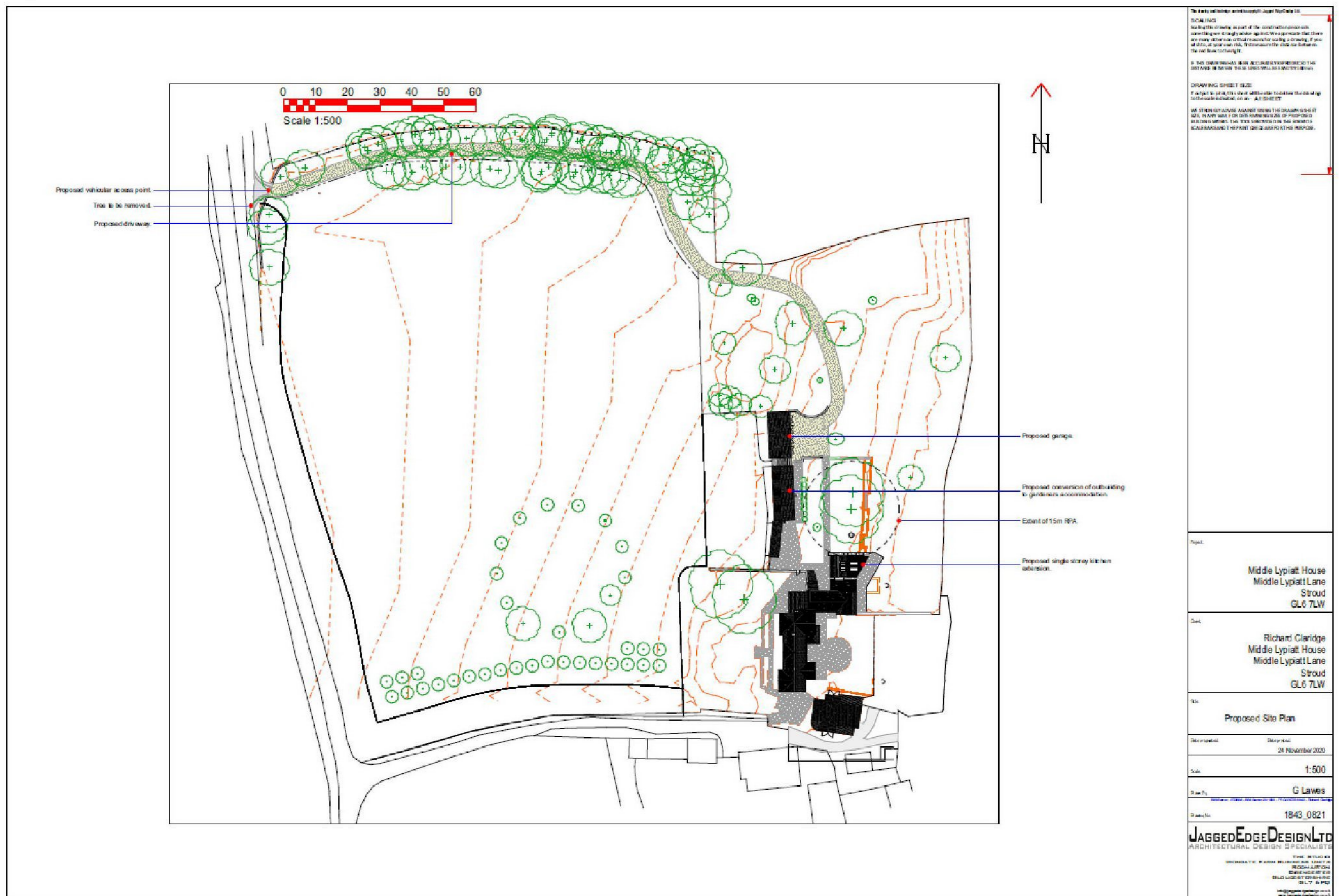
Figure 1 Site Location



## 1.4 Development Proposals

The development proposals include reinstating an historic access drive, the creation of a four-bay garage, the conversion of an outbuilding into living accommodation and the extension of the Garden Cottage. The drawings related to the development proposals were provided within Table 1 below and were displayed within Figure 2 below.

Figure 2 Site Plan



## 2.0 LEGISLATIVE AND POLICY CONTEXT

This section provides a summary of the legislative and planning context which has been used to inform the ecological assessment and subsequent recommendations made in this report. Appendix 1 sets out further details in relation to the most relevant legislation and policy.

### 2.1 Summary of Legislation

**The Habitats Directive** (together with the Birds Directive) forms the cornerstone of Europe's nature conservation policy. It is built around two pillars: the Natura 2000 network of protected sites and the strict system of species protection. All in all, the directive protects over 1,000 animals and plant species and over 200 "habitat types" (e.g. special types of forests, meadows, wetlands, etc.), which are of European importance. The habitats Directive and parts of the Birds Directive are transposed into legislation by the **Conservation of Species and Habitat Regulations 2017 (as amended)**.

Since the UK has left the EU, these regulations have been amended (in operation terms) to retain the legal powers of the regulations to the UK. Natural England has reiterated that as the UK leaves the EU:

- The UK government is committed to maintaining environmental standards, and will continue to uphold international obligations;
- All European protected sites and species retain the same level of protection once the UK leaves the European Union;
- The environmental assessment regimes that inform planning decisions (SEA/EIA/HRA) continue to apply post EU exit;
- All permits and licences issued by UK regulatory bodies continue to apply;
- The legal framework for enforcing environmental regulations through regulatory bodies and the courts is unaffected by leaving the EU and continues to apply.

**The Wildlife and Countryside Act 1981** (as amended) is a key piece of national legislation which implements the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and implements the species protection obligations of Council Directive 2009/147/EC (formerly 79/409/EEC) on the Conservation of Wild Birds (EC Birds Directive) in Great Britain.

Badgers and their setts are protected under the **Protection of Badgers Act 1992** as amended by the Hunting Act 2004.

The **Natural Environment and Rural Communities Act 2006** (the NERC act) places a duty on all public authorities, including local planning authorities, to consider biodiversity in their work. Local planning authorities are to ensure that there is no net loss of biodiversity on a site, no net loss in habitat connectivity and aims to enhance biodiversity.



The **Hedgerows Regulations 1997** protect ‘important hedgerows’ from being removed (uprooted or destroyed). Hedgerows are protected if they are at least 30 years old and meet at least one of the criteria listed in part II of schedule 1.

Specific legislation related to different species such as bats, birds and reptiles is outlined in Appendix 2.

## 2.2 Policy

The **National Planning Policy Framework (NPPF)** aims to minimise impacts on biodiversity and provide net gains in biodiversity where possible, contributing to the Government’s commitment to halt the overall decline in biodiversity, including the establishment of coherent ecological networks more resilient to current and future pressures.

The historic UK Biodiversity Action Plan (UK BAP) set out a programme for conserving the UK’s biodiversity. It led to the production of 436 action plans between 1995 and 1999 to help many of the UK’s most threatened species and habitats to recover. A review of the UK BAP Priority list in 2007 identified 1,150 species and 65 habitats that met the UK BAP criteria. Since, as a result of new drivers and requirements the **UK Post-2010 Biodiversity Frameworks (2012)** has replaced the UK BAP Action Plan. The BAP process has been devolved to local level with each county deciding its own way forward.

### 2.2.1 National Planning Policy Framework 2019

The **National Planning Policy Framework (NPPF)** aims to minimise impacts on biodiversity and deliver net gains in biodiversity contributing to the Government’s commitment to halt the overall decline in biodiversity, including the establishment of coherent ecological networks more resilient to current and future pressures.

NPPF 2019 sets out principles for conserving and enhancing the local environment. Key policies are that local plans should allocate land with least environmental or amenity value and take a strategic approach to maintaining and strengthening networks of habitats and green infrastructure (paragraph 169).

*‘When determining planning applications, local planning authorities should apply the following principles:*

a) 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;

*b) 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. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;*

c) 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; and  
d) 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.

The above approach encapsulates the 'mitigation hierarchy' described in British Standard BS 42020:2013, which involves the following step-wise process:

- **Avoidance** – avoiding *adverse* effects through good design;
- **Mitigation** – where it is *unavoidable*, mitigation measures should be employed to minimise adverse effects;
- **Compensation** – where residual effects remain after mitigation it may be necessary to provide *compensation* to offset any harm; and
- **Enhancement** – planning decisions often present the opportunity to deliver benefits for *biodiversity*, which can also be explored alongside the above measures to resolve potential adverse effects.

The measures for avoidance, mitigation, compensation and enhancement should be proportionate to the predicted degree of risk to biodiversity and to the nature and scale of the proposed development (BS 42020:2013, section 5.5)

### 2.2.2 Local Policy

Relevant policies taken from the Stroud District Local Plan (2015) are given below:

#### **Policy ES6 Providing for Biodiversity and Geodiversity**

##### **New Development and the Natural Environment**

All new development will be required to conserve and enhance the natural environment, including all sites of biodiversity or geodiversity value (whether or not they have statutory protection) and all legally protected or priority habitats and species. The Council will support development that enhances existing sites and features of nature conservation value (including wildlife corridors and geological exposures) that contribute to the priorities established through the Local Nature Partnership. Consideration of the ecological networks in the District that may be affected by development should take account of the Gloucestershire Nature Map, river systems and any locally agreed Nature Improvement Areas, which represent priority places for the conservation and enhancement of the natural environment. In this respect, all developments should also enable and not reduce species' ability to move through the environment in response to predicted climate change, and to prevent isolation of significant populations of species. The District will have a number of undesignated sites, which may nevertheless have rare species or valuable habitats. Where a site is indicated to have such an interest, the applicant should observe the precautionary principle and the Council will seek to ensure that the intrinsic value of the site for biodiversity and any community interest is

enhanced or, at least, maintained. Where an impact cannot be avoided or mitigated (including post-development management and monitoring), compensatory measures will be sought. The Council Our environment and surroundings Stroud District Local Plan may, in exceptional circumstances, allow for biodiversity offsets, to prevent loss of biodiversity at the District level.

### **Protected Species**

Development proposals that would adversely affect European Protected Species (EPS) or Nationally Protected Species will not be supported, unless appropriate safeguarding measures can be provided (which may include brownfield or previously developed land (PDL) that can support priority habitats and/or be of value to protected species).

The wider valuable natural environment includes not only these protected species and sites, but also local sites such as Key Wildlife Sites, Regionally Important Geological Sites and other features of nature conservation value, including:

- 1) priority species and habitats of conservation concern (those listed on the English List – section 41 of the Natural Environment and Rural Communities Act)
- 2) areas of habitat with restoration potential (particularly those identified on the Gloucestershire Nature Map or identified through other landscape scale projects and within any ‘Nature Improvement Area’ recognised by the Local Nature Partnership) and
- 3) features that provide an ecological function for wildlife (such as foraging, resting and breeding places) – particularly wildlife corridors of all scales, which provide ecological connectivity, allowing species to move through the landscape, and which support ecosystem functions. This includes functions that are defined by Regulation 39 of The Conservation of Habitats and Species Regulations 2010 (as amended), also known as the “Habitat Regulations”.

## **3.0 METHODOLOGY**

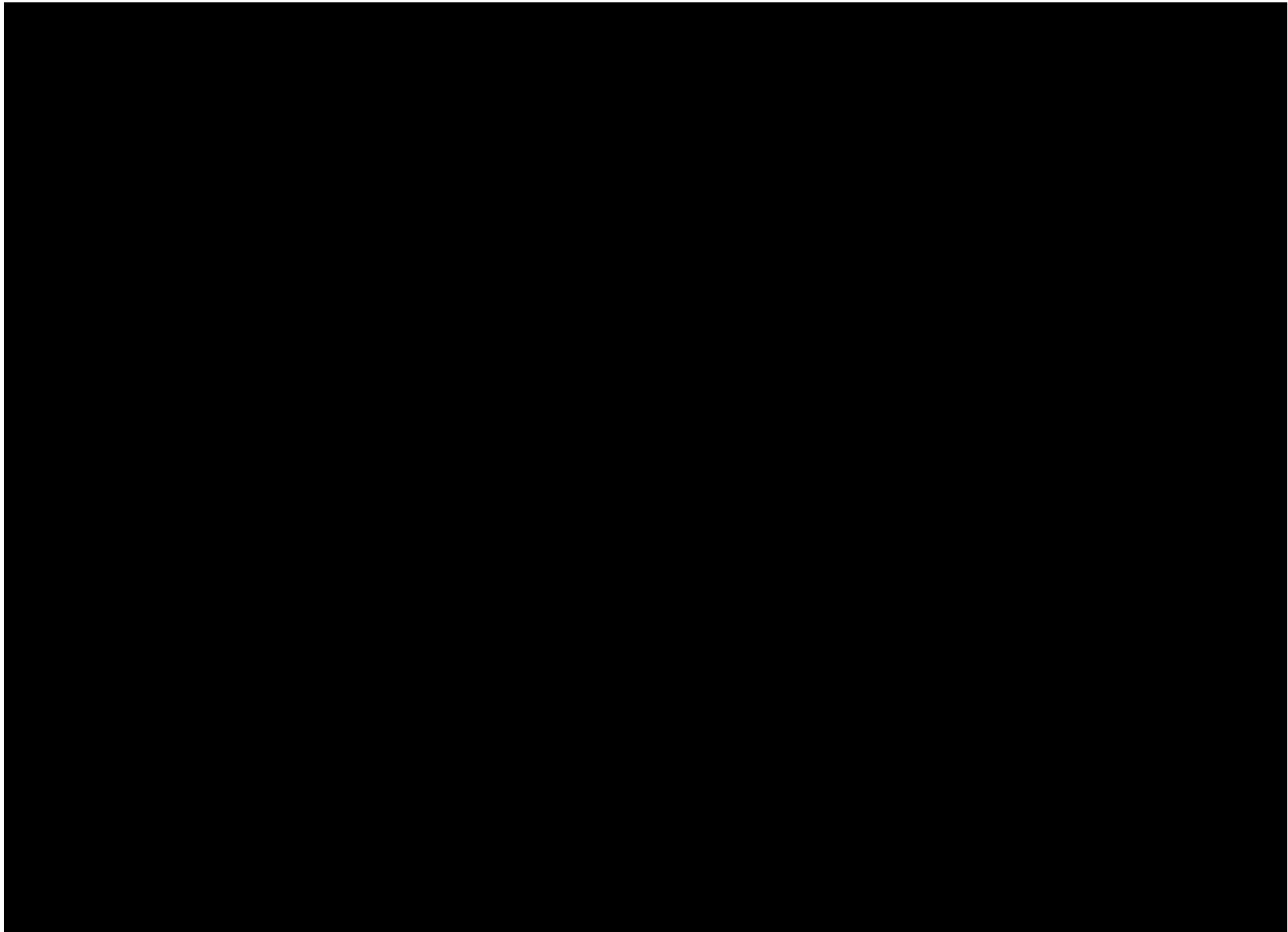
### **3.1 Background data search**

A background data search was received from Gloucestershire Centre for Environmental Records (GCER) on the 2<sup>nd</sup> October 2020. The search area included records of bats and great crested newts (GCN), local wildlife sites, and statutory sites within 1km of the site boundary.

### **3.2 UK Habitat Classification Survey**

The habitat survey has drawn on guidance provided in the *Handbook for Phase 1 Habitat Survey - a technique for environmental audit* (JNCC 2010). The classification and mapping of habitats has used the UK Habitat Classification (UKHab) as this links directly to the Net Gain Calculator and assessment. Every habitat feature is given a Primary Habitat code and, where necessary, more detail has been added with the use of Secondary Codes. UKHab has its own symbology which has been used when creating maps for the existing and proposed habitats.

A UKHab survey was undertaken on 16<sup>th</sup> December 2020. The survey incorporated detailed assessment of the land within the development boundary, including a description and mapping of all key features and habitat types. The survey was carried out to identify the range of habitats within the site and the predominant and notable species of flora.



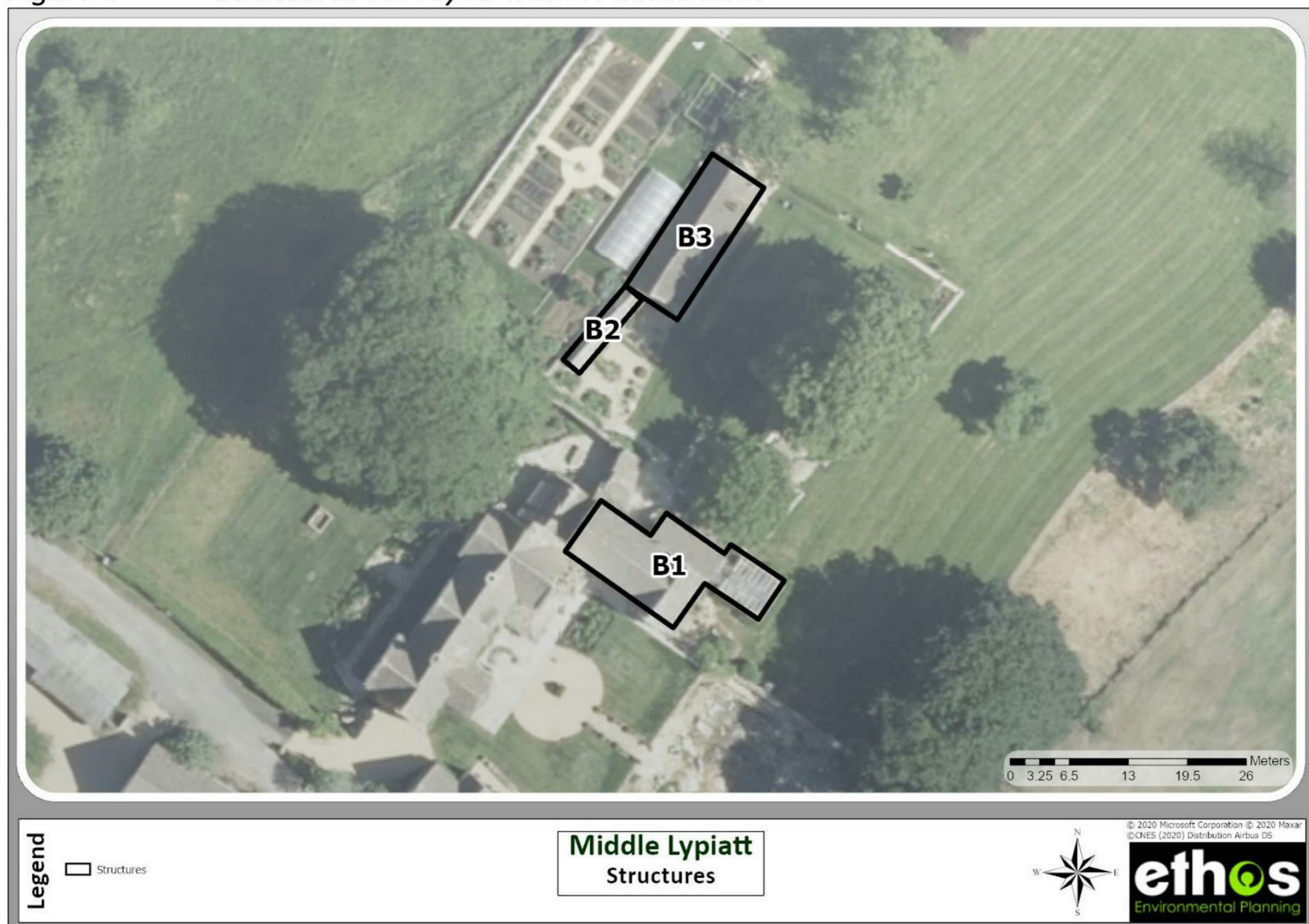
### Habitats

The habitats on site were assessed for their suitability to support foraging and commuting bats. The assessment looked at availability of suitable habitat and connectivity features in the wider landscape.

### Preliminary Roost Inspection

The preliminary structures assessment included: B1) the Garden Cottage, B2) a series of three outbuildings, and B3) outbuilding. The Main Middle Lypiatt House was located to the north and north-west of the Garden Cottage, see figure 3 below.

**Figure 3**      *Structures Surveyed within Assessment*



Physical external and internal inspection of the relevant buildings were undertaken by surveyor on 16<sup>th</sup> December 2020. Approximately three hours of search effort were expended.

The physical search includes a search for live animals and a search for other signs that give an indication of past or present occupancy as outlined below. In the case of bats, typical indicators include droppings (which are characteristic and can often be speciated or at least be indicative of species type), signs of staining, urine splashing, characteristic odours, and accumulations of discarded prey remains.

The search also included an endoscope search of any suitable features identified during the roost inspection. Equipment included a Rigid micro CA-350 Inspection Camera with micro 6mm extension, camera, laser measure, and binoculars.

#### Preliminary ground roost level assessment

All trees proposed for removal or which could be impacted by tree works and/or artificial lighting were subject to a ground-level roost assessment on 5<sup>th</sup> August 2020 to assess their roosting potential for bats. Surveyors used close-focusing binoculars and a high-powered torch to view areas inaccessible from the ground. The methodology draws upon guidance within Collins (2016) and the Bat Tree Habitat Key (2018).

Potential roosting features on trees were identified as any feature within a tree that could provide shelter for a roosting bat. These features result from the following three mechanisms.

- Disease and Decay;
- Damage; and,
- Associations.

Trees with no potential roost features were assessed as having 'negligible' potential for roosting bats and no further surveys were carried out. Trees with features suitable for roosting bats were assessed as having 'low', 'moderate' or 'high' potential for bats. Trees with 'low' potential for roosting bats were not subject to additional survey, in line with BCT survey Guidelines. Justification is provided, in the form of a detailed description and photographic evidence, to demonstrate how the classification of 'low potential' had been made. Recommendations will be made as necessary if any trees with low potential are to be impacted.

Trees assessed as moderate or high potential and considered likely to be impacted by the development (e.g. directly through removal or indirectly from light spill).

The definitions of 'negligible, low, moderate and high' used in this assessment are in accordance with those in BCT Survey Guidelines 2016:

- **Negligible:** Negligible habitat features on site likely to be used by roosting bats.
- **Low:** A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential
- **Moderate:** A structure or 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)
- **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 potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

### Static Surveys

Two Wildlife Acoustics Song Meter 4 (SM4) passive bat detectors were deployed in suitable locations on site (Figure 3) between April and September. This provided an assessment of the bat species composition on site and may provide data regarding areas of high activity. All calls recorded were analysed using Kaleidoscope Software.

**Figure 3** Bat Detector Locations



### Emergence Surveys

Three dusk emergence surveys were undertaken on 21<sup>st</sup> May, 11<sup>th</sup> June and 4<sup>th</sup> August 2020. The emergence surveys commenced 15 minutes before sunset and finished approximately an hour and a half after sunset.

Four surveyors were positioned to view all aspects of the structure during the surveys, located in positions to view all potential roosting features, as shown in Figure 4.

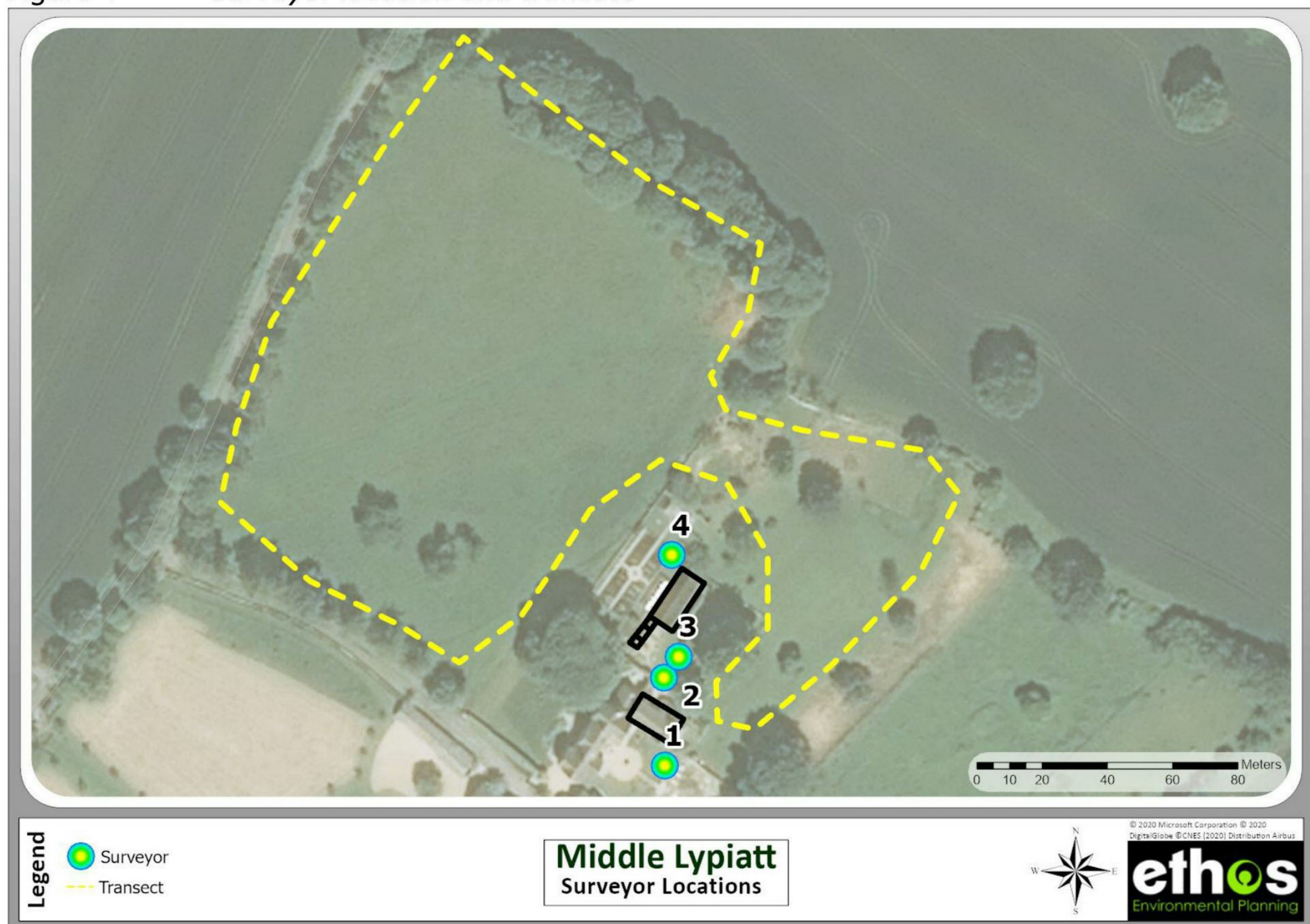
Echo Meter Touch (EMT) bat detectors were used for all the surveys. All calls recorded were analysed using the Echo Meter Touch app software. All calls recorded were cross referenced to a call reference collection library of known bat species to confirm species presence.

### Activity Surveys

One survey was undertaken per month from May until September, inclusive. The survey involved two surveyors walking a specific transect (Figure 4) for approximately two hours after sunset. The survey included the surveyor looking for areas of high activity and identifying key areas for foraging and commuting bats.

Echo Meter Touch (EMT) bat detectors were used for all the surveys. All calls recorded were analysed using the Echo Meter Touch app software. All calls recorded were cross referenced to a call reference collection library of known bat species to confirm species presence.

Figure 4 Surveyor location and transect



### 3.3.5 Birds

The bird survey included an assessment of the habitats on site for their potential to support breeding birds.

A search for breeding birds was also undertaken during the initial structure's assessment. This included a search for any evidence such as nests, droppings, roosting birds, and birds displaying nesting behaviours.



### **3.3.6 Reptiles**

The potential presence of reptiles on site was assessed considering the habitats present (availability of refugia and basking areas) and suitability of surrounding environment.

### **3.3.7 Amphibians**

The habitats on site were assessed for their potential to support amphibian species, including great crested newts (*Triturus cristatus*) (GCN). Surveys for GCN were informed by the *Great Crested Newt Conservation Handbook*, Froglife 2001.

The site was examined for suitable waterbodies and for breeding terrestrial habitat. Terrestrial habitats providing sufficiently structured vegetation in which amphibians may forage or hibernate over winter were also surveyed for. In addition to the on-site assessment, *Great Crested Newt Mitigation Guidelines* (English Nature, 2001) recommend that a desktop analysis of ponds within 500m of the site be undertaken, to identify any potential breeding ponds which may require further survey. Ponds within 500m of the site were mapped on GIS.

Two refugia checks were undertaken of the former pond located on site (Figure 6). These were undertaken on 6<sup>th</sup> May 2020 and 18<sup>th</sup> September 2020. The included a search for any evidence of amphibians within the proximity of the former pond.

### **3.3.8 Invertebrates**

Due to the many invertebrate taxonomic groups that exist, the often-large differences in invertebrate diversity between habitats and the many survey techniques available, invertebrate surveys are highly specific to individual sites. Therefore, an assessment of the potential site for invertebrates was undertaken, including the need for targeted surveys.

### 3.4 Personnel

The surveyors on site are included within Table 2. The survey team have worked together on numerous similar projects and have a complimentary range of skills and experience which are considered to have provided a robust ecological appraisal of the site.

*Table 2 Surveyors on site*

Ecologist	Position	Qualification/Licence	Experience
	Ecologist	BSc (Hons), Grad CIEEM Class 2 Bat Licence (NE) Class 1 dormouse licence (NE)	Martin has over three years' experience in ecological field survey and consultancy. Martin is responsible for undertaking comprehensive habitat assessments, protected species surveys and is a licensed bat worker.
	Senior Ecologist	BSc (Hons), Grad CIEEM Class 2 Bat Licence (NE) Class 1 GCN Licence (NE)	Matt is a highly experienced field surveyor with over 6 years ecological experience. Matt is competent in surveying for a wide variety of wildlife gained experience from both the commercial and voluntary sectors. He is currently working towards further species licenses.
	Senior Ecologist	MSc BSc (Hons), MCIEEM Class 1 GCN Licence (NE) Class 1 Hazel Dormouse Licence (NE)	Has over six years' experience in ecological field survey and consultancy. Steph is responsible for undertaking comprehensive habitat assessments, protected species surveys and is a licenced GCN and dormouse worker.
	Ecologist	Level 2 Certificate and Diploma in Work-based Environmental Conservation  Working towards a certificate of higher learning: Field Ecology - currently Level 2 Certificate and Diploma in Work-based Environmental Conservation  Class 1 Bat Licence (NE)  Hazel Dormouse Licence (NE)	Kane has over six years' experience in ecological field survey and consultancy. As an Ecologist with Ethos; Kane is responsible for undertaking comprehensive habitat assessments and protected species surveys.
	Ecologist	BA (Hons) Working towards master's in Applied Ecology at the University of Gloucestershire	Has over three years' experience in ecological field survey and consultancy and assists with habitat assessments, protected species surveys and data analysis.
	Assistant Ecologist	MSc, BA, Qualifying CIEEM	Sarah has one year of consultancy and biodiversity project management experience. Sarah's specialism is ornithology and now assists with ecological field survey and desk studies.

## **3.5 Limitations**

### **3.5.1 Bats**

A dawn re-entry survey was not undertaken as part of the three emergence surveys undertaken on site, which deviates from the BCT guidelines (Collins, 2016). As the roost's locations were assessed to be accurately identified during the three dusk emergence surveys, it was not considered necessary to undertake a dawn re-entry survey.

An activity survey was undertaken in April in unsuitable weather conditions (wind >10ms). Subsequently, no bats were recorded during this survey and the survey data has been removed from the overall assessment. However, five other surveys were undertaken between May and September in suitable conditions. Considering the scale of the development and the predicted limited impacts on foraging/commuting bats, the survey effort was assessed to be adequate to inform the assessment of bat foraging on site.

A section of loft void within B1 was not accessible due to safety concerns. However, this section could be viewed from the main section of the loft and was cluttered, full of cobwebs, and assessed to be unsuitable for bats.

There was slight precipitation during the final emergence survey on 4<sup>th</sup> August 2020 between 21:42 and 22:00. However, bats were observed foraging throughout this period. Subsequently, the light rain was not considered a significant limitation regarding the emergence survey.

One static detector SM4 FS 2 failed to record between 20<sup>th</sup> April 202 and 15<sup>th</sup> May 2020. Further static detector surveys were undertaken within the months of June, August and September. This survey effort was considered sufficient considering the scale of the development and was assessed to provide adequate survey data regarding the bat assemblage on site and the bats use of the site throughout their active season (April to October). As one of the May statics failed to record, the other static deployed in May (SM4 FS 5) could not be compared to similar data and was therefore removed from the overall analysis of the statics.

An Echo Metre Touch bat detector malfunctioned during the August survey and the surveyor used a heterodyne detector instead. Therefore, spatial data could not be collected from the survey and the August data was excluded from the activity heat map provided in figure 11.

### **3.5.2 UKHab survey**

The UKHab survey was undertaken in December which is outside of the optimal time to undertake botanical surveys (March to October). As the main habitat types identified were common and easily distinguishable, the timing of the survey was not considered to be a significant limitation to the survey. As the site was visited a number of times during the optimal season in 2020, any changes to the previous survey were noted.

## 4.0 BACKGROUND DATA REVIEW

Results of the background data search have been summarised below.

### 4.1 Notable Sites

Statutory designated sites within 1km are shown in Figure 5 and non-statutory designated sites within 1km are shown in Figure 6. There were 13 non-statutory designated sites within 1km of the site; 11 Local Wildlife Sites (LWS) and two Regionally Important Geological Site (RIGS).

Figure 5 Ancient Sem-Natural Woodland

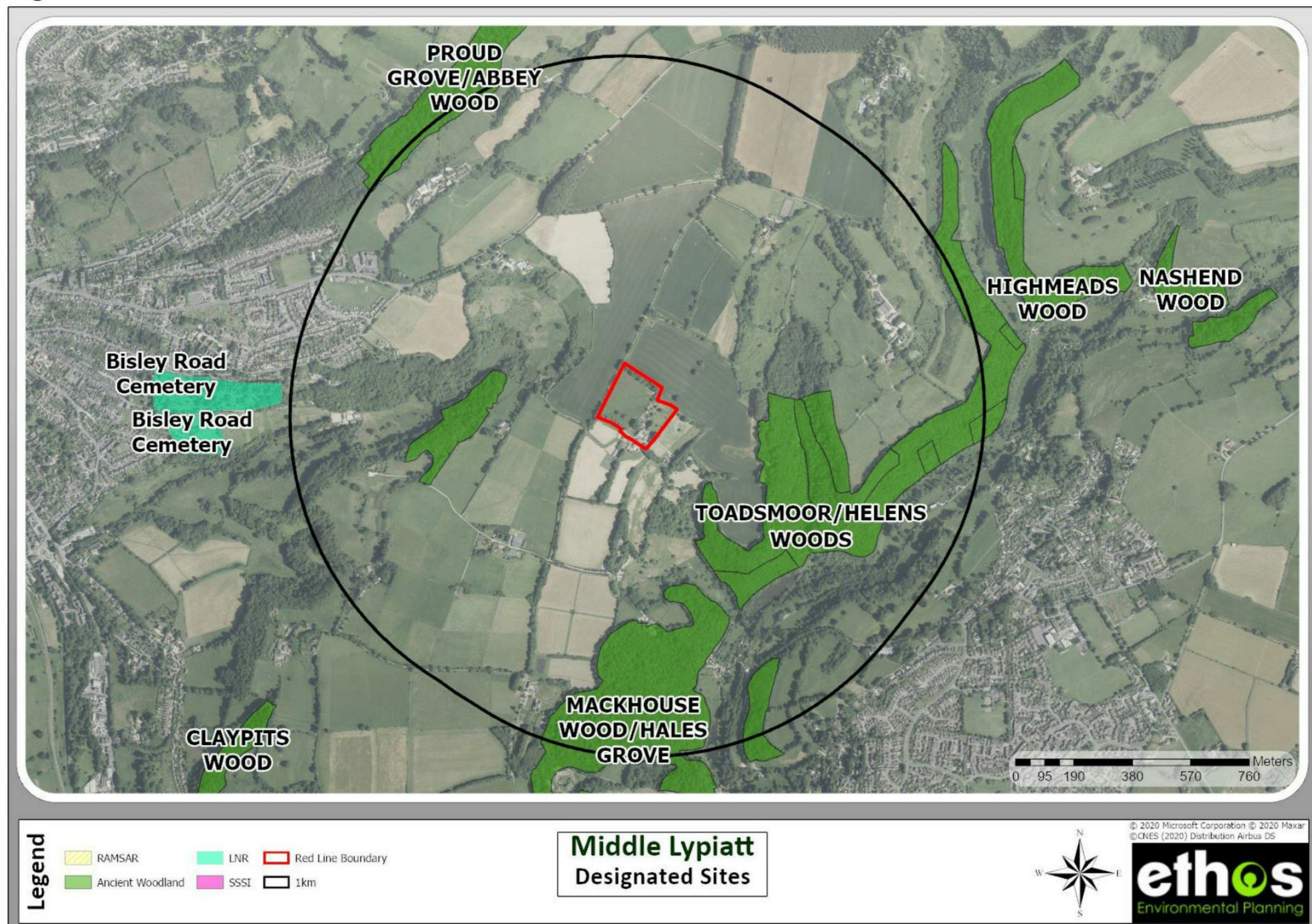


Figure 6 Non-statutory sites supplied by GCER

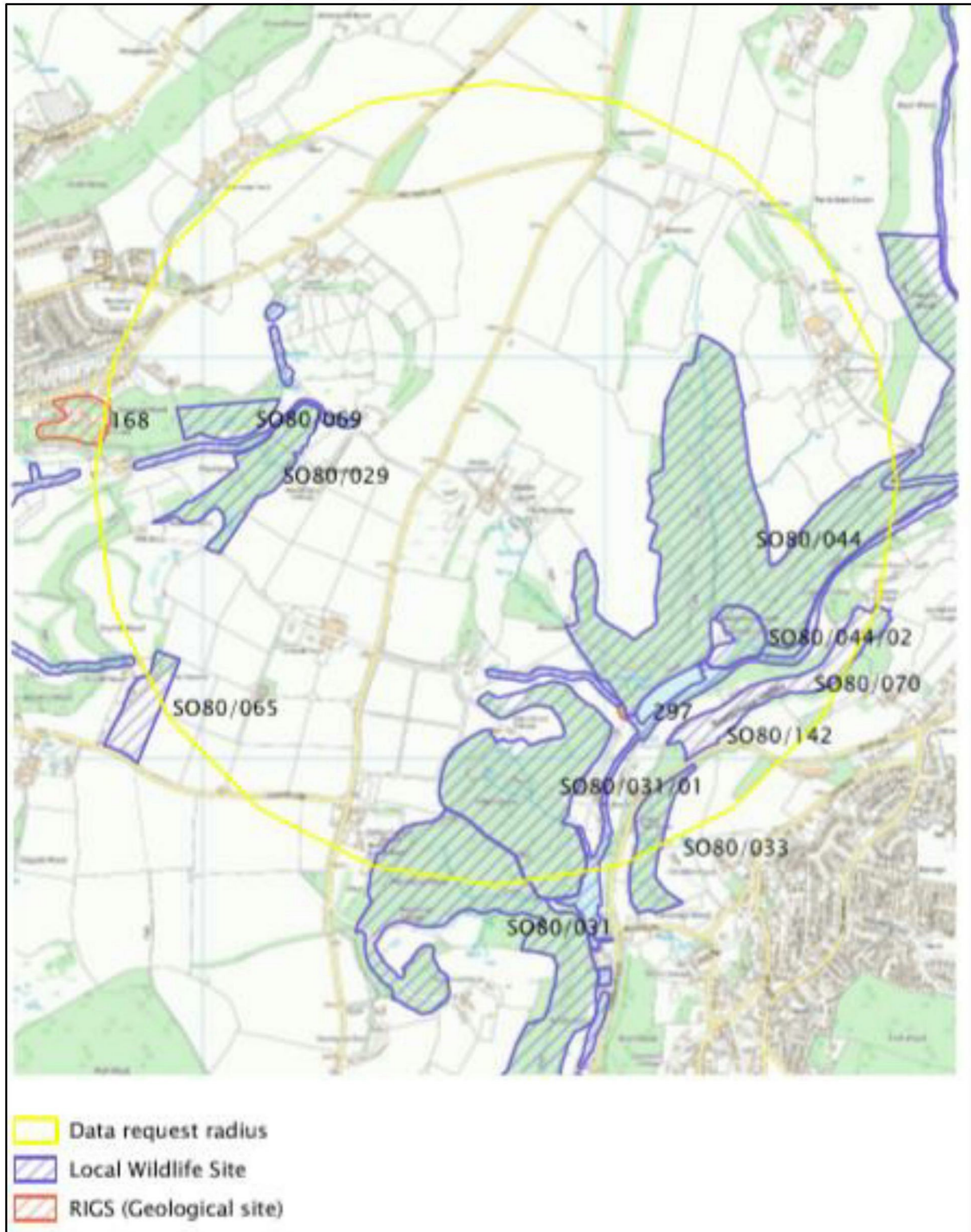


Table 3 Notable sites

Site name	Site ID	Status	Description
<b>River Frome Mainstream &amp; Tributaries LWS</b>	SO80/142	Local Wildlife Site	This LWS includes all the major tributaries, up to functional, mapped spring lines of the River Frome. It does not contain the often-adjacent Stroudwater Canal, which is mapped separately. Some parts of the corridor are gappy or culverted.
<b>Keepers Cottage LWS</b>	SO80/044/02	Local Wildlife Site	Marsh habitat technically part of the cottage garden.
<b>September Cottage Field LWS</b>	SO80/065	Local Wildlife Site	Calcareous Grassland.
<b>Parsonage Wood LWS</b>	SO80/033	Local Wildlife Site	Ancient semi-natural broad-leaved woodland site larger than 2 ha.
<b>Kytle and Toadsmoor Ponds</b>	297	RIGS	Toadsmoor Ponds section is a 4m section of a stream that runs down from Woodside.
<b>Conygre Quarry</b>	168	RIGS	Two disused quarries in rocks from the Jurassic period. Good exposures in upper quarry of Upper Freestone overlain by Upper Trigonina Grit Member. Exposures of Pea Grit in bottom quarry.
<b>The Horns Wood LWS</b>	SO80/029	Local Wildlife Site	Ancient semi-natural broad-leaved woodland site larger than 2 ha.
<b>The Horns Bank LWS</b>	SO80/069	Local Wildlife Site	Calcareous Grassland.
<b>Mackhouse &amp; Lawrence land Woods LWS</b>	SO80/031	Local Wildlife Site	Ancient semi-natural broad-leaved woodland site larger than 2 ha.
<b>Toadsmoor Valley Slopes LWS</b>	SO80/070	Local Wildlife Site	Calcareous Grassland
<b>Helen's Wood LWS</b>	SO80/044/01	Local Wildlife Site	Ancient semi-natural broad-leaved woodland site larger than 2 ha with marsh area and <i>Ena montana</i> (Mountain bulin).
<b>Toadsmoor Wood LWS</b>	SO80/044	Local Wildlife Site	Ancient semi-natural broad-leaved woodland site larger than 2 ha with marsh area and <i>Ena montana</i> (Mountain bulin).
<b>Hale's Grove</b>	SO80/031/01	Local Wildlife Site	Ancient semi-natural broad-leaved woodland site larger than 2 ha.

## 4.2 Species

### 4.2.1 Bats

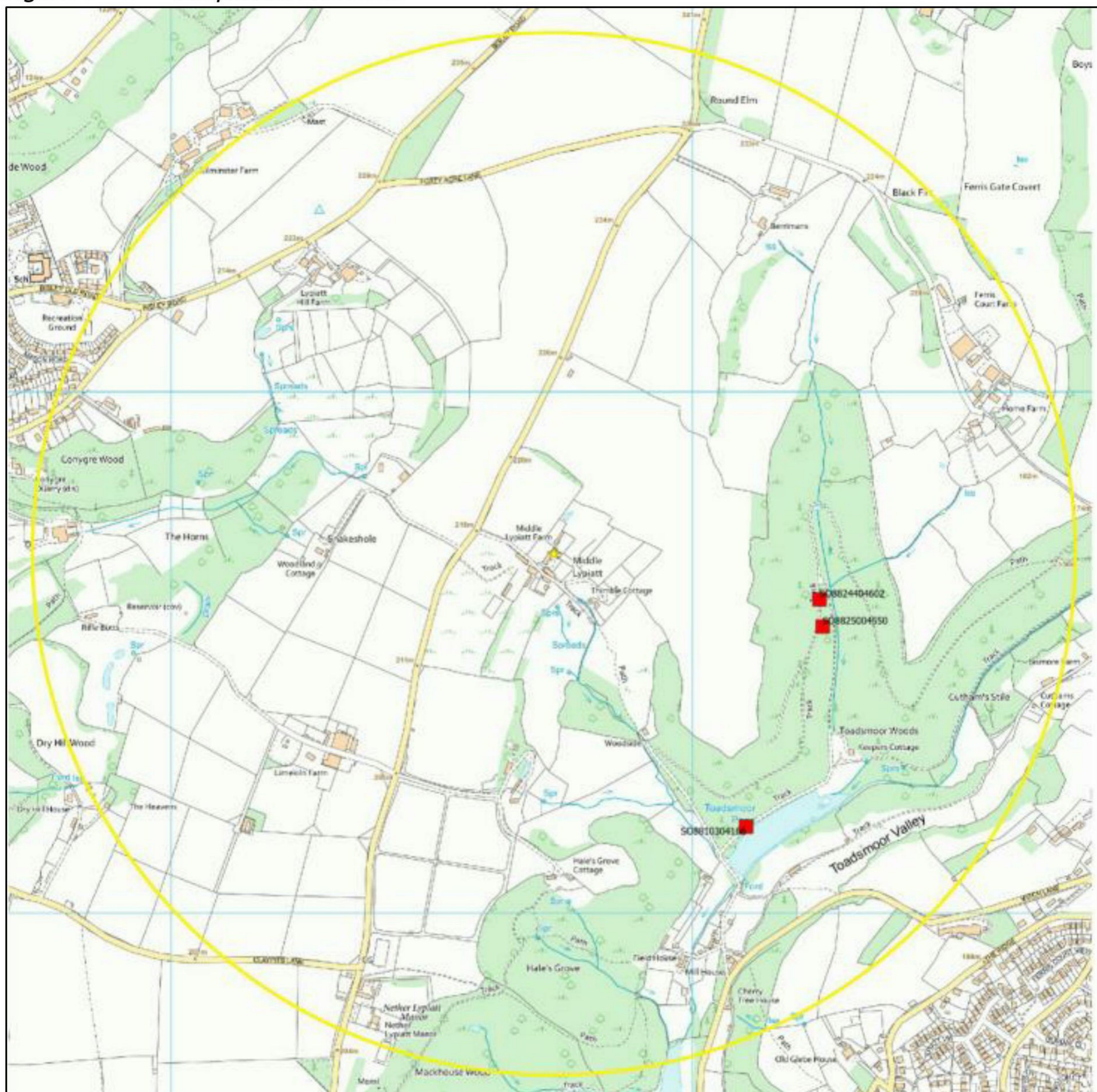
No records of bats were returned within the past ten years.

### 4.2.2 Great Crested Newts

Records of amphibians within the past ten years included two records of smooth newt (*Lissotriton vulgaris*), and two records of a common toad (*Bufo bufo*). These were all submitted within the Toadsmoor woods area; Displayed within figure 7 below.

There were no records of GCN within the data search.

Figure 7 Amphibian Records



## 5.0 UKHAB SURVEY

### 5.1 General Site Description

The site comprised a Manor House with associated buildings, amenity grassland and gardens. There was an avenue of trees located to the north east of the site which was well-connected to the double hedgerow along the road to the north west. There were several scattered trees onsite including mature and ornamental trees.

The site was bordered by arable land to the north west, a grassland bank to the south, and several farm buildings, amenity grassland, and arable to the south-west and the tree avenue borders a road to the north west.

### 5.2 Habitat Description

Figure 5 shows the key habitats using the UKHab classifications. The key features described within this section were:

- Neutral Grassland;
- Line of Trees;
- Amenity Grassland;
- Buildings;
- TN1 (dry pond); and
- Ruderal vegetation.

Figure 8 UKHabs Map





### 5.2.1 Line of trees and Ruderal Vegetation

There was an avenue of trees located in the north-east of the site, as shown in photo 1 and 2. The trees were dominated by mature sycamore with some beech and ash. The trees were bordered by permanent pasture to the west and arable land to the east. The habitats within the tree-lined avenue comprised ruderal vegetation with abundant common with scattered white dead nettle, ivy, cleavers, couch grass, hedge woundwort, wood spurge and herb Robert.



*Photo 1: Tree avenue*



*Photo 2: Ruderal vegetation*

### 5.2.2 Amenity grassland

The grounds of the manor were dominated by amenity grassland which was assessed to be intensively managed and cut regularly, as shown in Photos 3 and 4. Subsequently, the grassland was dominated by grasses with low numbers of herbs present and was assessed to be species-poor.



*Photo 3: Amenity grassland in the south*



*Photo 4: Amenity grassland*

### 5.2.3 Buildings

There were several buildings present on site including the manor house, several barns and workshops. The structures which will be impacted by the proposed development have been detailed within Section 6.5.

### 5.2.4 TN1 (Pond)

There was a dry pond located within the centre of the site, as shown in Photo 5. There was no pond liner present and no riparian vegetation. The dry pond was bordered by amenity grassland on all sides and comprised stone and bare earth with low levels of vegetation. Species present included ribwort plantain, fleabane, willowherb, creeping buttercup, rough hawkbit, smooth hawk beard, clover, teasel, butterfly bush, black medick, scarlet pimpernel, curly dock, ivy leaves toadflax, white campion, common nettle, oat grasses, timothy grass, common vetch and rye grass.



Photo 5: scrub south of track

### 5.2.5 Neutral Grassland

There was a field comprised of neutral grassland located to the west of the site. The field was sheep grazed with a short grassland sward and subsequent low species richness. Species were dominated by rye grass and red sheep fescue, with frequent red clover, dandelion, yarrow, and daisy.

### 5.2.6 Hedgerows

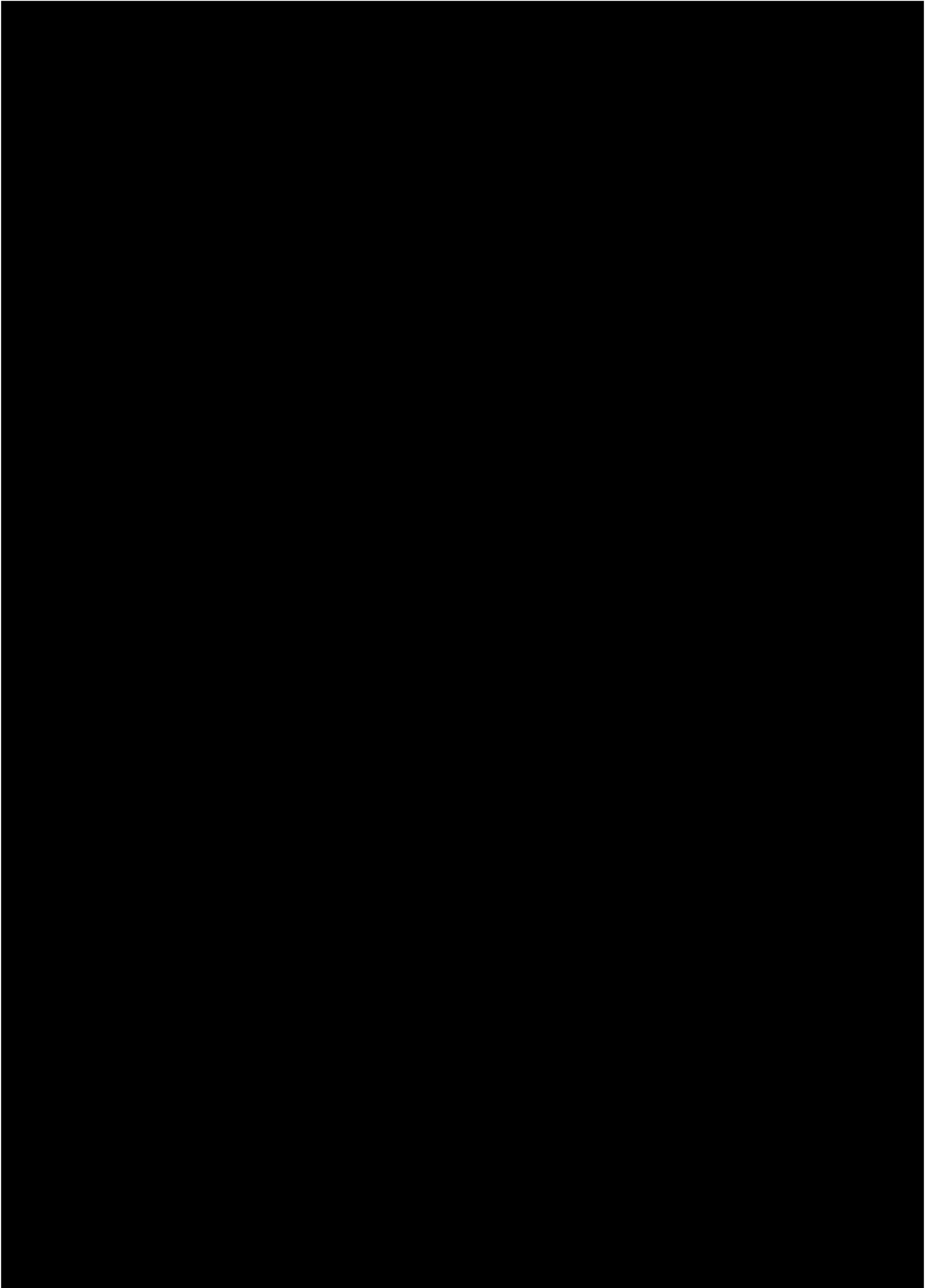
There were two hedgerows located on the western and southern boundaries of the site. The hedgerows were comprised of line of trees comprised of horse chestnut, sycamore, spruce, and scots pine. The hedgerow had no shrub layer, and the ground layer was comprised of sheep grazed grassland.



*Photo 6: Neutral grassland field*



*Photo 7: Hedgerow western boundary*



There was abundant woodland to the south and north of the site, which was connected to the site by a double hedgerow along the road to the north and a row of trees/hedgerow to the south-west. These habitats have the potential to support dormouse.

## 6.4 Bats

### 6.4.1 Habitats

The site contained an avenue of trees in the north-east and several mature trees which could provide foraging and roosting potential for bats. Much of the site consisted of amenity grassland, providing low potential habitats for bats.

The surrounding landscape comprised abundant semi-natural woodland, permanent grassland and an extensive network of hedgerows and woodland copses. The surrounding habitats contained arable land to the north and south and intensively grazed grassland to the north-east of the site. These habitats were considered likely to provide moderate to high potential for foraging/commuting bats.

### 6.4.2 Structures

The structures present on the proposed development site are shown in Figure 3. A summary of the structures design and a detailed assessment of any potential roosting features for bats has been provided within Table 2.

Figure 8 Buildings Map

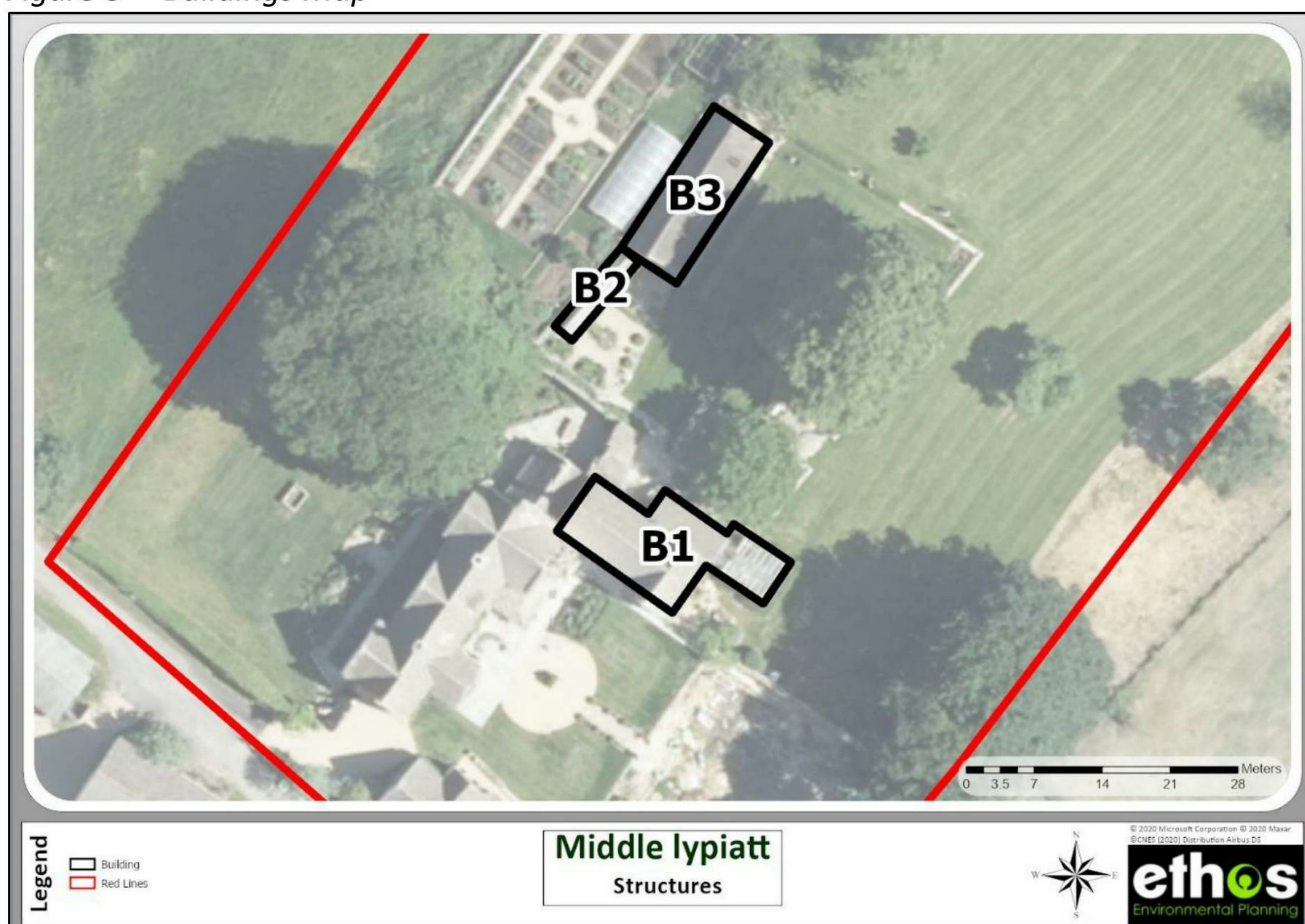










Table 4 Structures inspection

Structure and proposals	Description	Photo
<p><b>B1 Garden Cottage (Proposed extension)</b></p>	<p><b>External</b></p> <p>B1 adjoins the Middle Lypiatt House. The structure included a building with an open section to provide access for carriages and a larger living area with two storeys. There was also a conservatory to the south of the structure.</p> <p>The structure was of traditional construction comprising limestone and pitched Cotswold stone tiles. A dove loft was located within the southern elevation of the structure (Photo 7). There was no evidence of bats on the external features of the building. The building was assessed to be in a good structural condition.</p> <p><b>Internal</b></p> <p>The loft was 'T' shaped, with the small part of the T comprising a dove loft and the long section being a standard loft void which could not be accessed.</p> <p>The dimensions of the dove loft were 3m in height, 4.5m in width and 6m in length. There was one large window on the south-western gable, which made the loft light as a result. The loft comprised old timbers with gaps where beams met the walls, Bitumen felt sarking laid above the beams and batons onto Cotswold tiles. Lots of missing sarking exposed the tiles, providing potential access into the loft. There were several gaps between the gable-end and the roof with some light spill. No evidence of bats was identified in small section of loft.</p>	 <p>Photo 8: B1 south-western elevation</p>  <p>Photo 9: Dove loft</p>  <p>Photo 10: Loft void</p>

	<p>Large section of the 'T' was full of cobwebs with lots of rock wall insulation.</p> <p>It was assessed that B1 provided suitable conditions for roosting bats and several access points into the building. Therefore, the structure was assessed to hold <b>high potential</b> for roosting bats.</p>	
<p><b>B2 Outbuilding (not impacted within proposals)</b></p>	<p>B2 comprised an outbuilding divided into three section; 1) an outhouse, 2) storage, and 3) garden shed.</p> <p>Overall, the building was a single storey from floor to ridge beam, traditional build, limestone with Cotswold stone roof. Small gaps were present in the stonework as well as damaged tiles with gaps and lifting. The timberwork had gaps at the top.</p> <p>Section 1 is old fashioned drop toilet with bitumen felt between the timber and tiles. Approximately five old bat droppings were identified within this section.</p> <p>Section 2 was used for storage. Traditional construction, timber beams, bitumen felt and connected to section 3 by a gap in the internal wall. This section was assessed to have very low levels of light but limited potential access points for bats.</p> <p>Section 3 was used for garden machinery storage. There were skylights present within the structure and wooden beams with bitumen felt sarking with several gaps within the southern elevation.</p>	 <p><i>Photo 11: B2 in the left of the picture and gable of B3 on the right</i></p>  <p><i>Photo 12: Scattered bat droppings B2 section1</i></p>

	<p>Overall, it was assessed that the structure provided <b>high potential</b> for roosting bats</p>	 <p>Photo 13: B2 section 3</p>
<p><b>B3 Outbuilding (Convert to ancillary accommodation)</b></p>	<p><b>External</b> B3 was connected to the north-eastern gable of B2. The building was used for storage of tools and was assessed to be actively used on a regular basis.</p> <p>The building was of traditional construction, limestone build, with tight shingle pitched roof which was in a good structural condition. The fittings were wooden with flush lead flashing, and PVC guttering.</p> <p>The southern elevation included three dormer bay windows which were all tight and in good condition.</p> <p><b>Internal</b> The structure included an iron gate and the internal features were freely accessible for bats.</p> <p>The building contained modern timbers and bitumen felt sarking.</p> <p>There was a dividing wall within the structure creating two rooms. There was no loft void of the structure was a single void from floor to ridge beam.</p>	 <p>Photo 14: B3 southern elevation west</p>  <p>Photo 15: B3 southern elevation east</p>  <p>Photo 16: B3 internal</p>



	<p>There were five swallow nests located on the ridge beam of the structure.</p> <p>Approximately three droppings were identified on a workbench to the west of the structure.</p> <p>Although the external features of the structure were tight and in a good condition it was assessed that the internal features of the structure were freely accessible to bats and may provide roosting opportunities for low numbers of bats. Therefore, the structure was assessed to provide <b>high potential</b> for roosting bats.</p>	 <p><i>Photo 17: B3 eastern gable</i></p>
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### 6.4.3 Emergence and Re-entry Survey Results

The bat emergence and re-entry surveys have been summarised within this section, with detailed survey notes provided within Appendix 1. The environmental variables have been provided within Table 5, species nomenclature in Table 6 and surveyor positions within Figure 9.

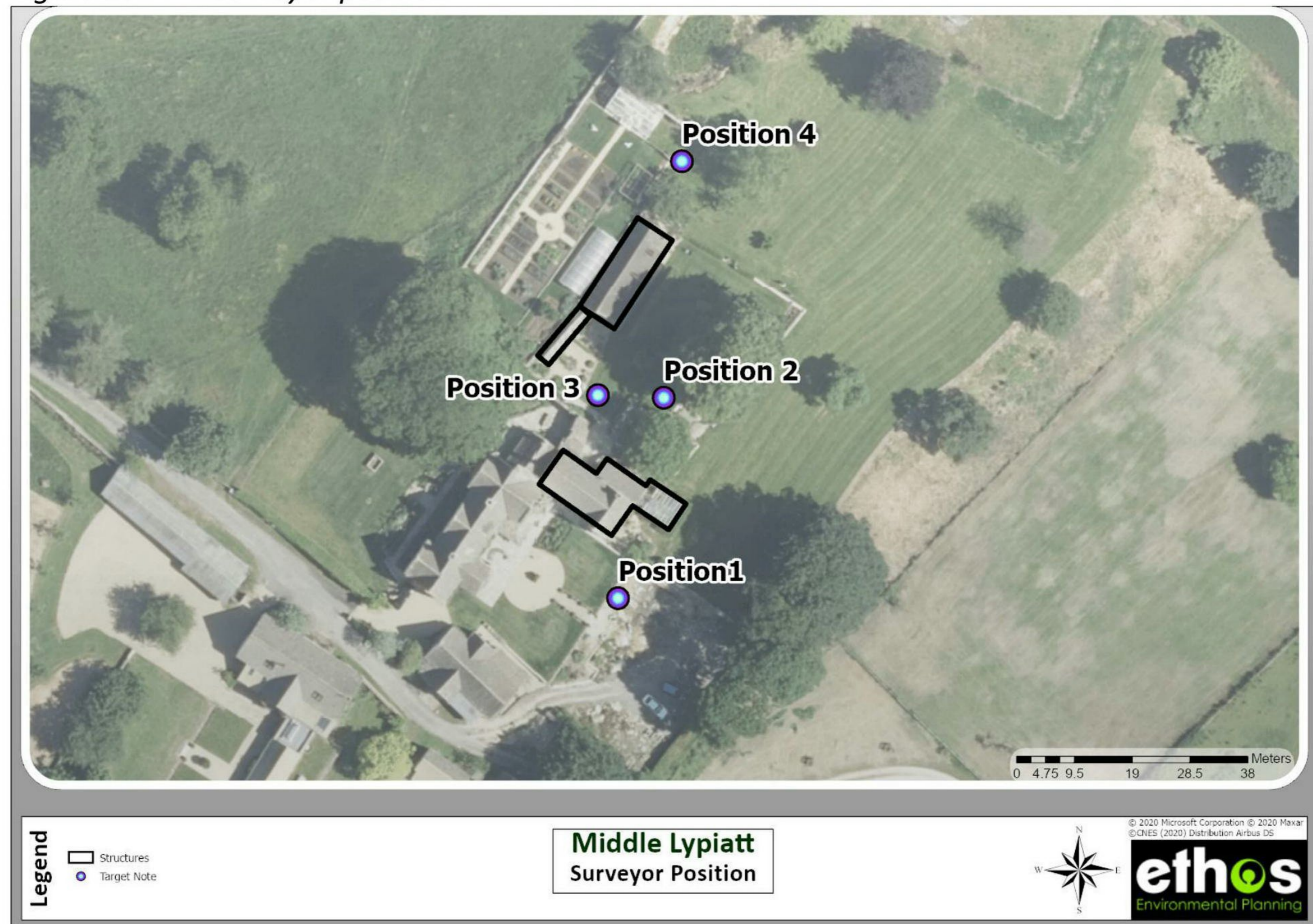
**Table 5** *Variables taken prior and post survey*

Date	Variable	Temp (°C)	Cloud (Oktas)	Average Wind speed (m/s)	Max. Wind speed (m/s)	Humidity (%)	Rain	Sunset/sunrise	Start Time	End time
Survey 1 21/05/2020	Survey Start	21	0	0	1.8	53	none	21:05	21:51	22:35
	Survey End	18	0	1	2.3	52	none			
Survey 2 11/06/2020	Survey Start	11.9	8	0.9	3.9	79.4	during survey	21:27	21:14	23:00
	Survey End	11.6	8	0.8	4.1	84.6	during survey			
Survey 3 4/08/2020	Survey Start	24.3	7	0.3	0.7	75.8	none	20:52	20:38	22:32
	Survey End	16.7	8	0	1.3	75.8	during survey			

Table 6 Relevant species codes

Species	Scientific name	Species code
Common Pipistrelle	<i>Pipistrellus pipistrellus</i>	CP
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	SP
Lesser horseshoe	<i>Rhinolophus hipposideros</i>	LESSER
Greater horseshoe	<i>Rhinolophus ferrumequinum</i>	GREATER
Barbastelle	<i>Barbastella barbastellus</i>	BARB
Nathusius's pipistrelle	<i>Pipistrellus nathusii</i>	NATT
Whiskered bat	<i>Myotis mystacinus</i>	WHISK
Daubenton's bat	<i>Myotis daubentonii</i>	DAUB
Noctule	<i>Nyctalus noctula</i>	NOC
Serotine	<i>Eptesicus serotinus</i>	SER
Brown long-eared bat	<i>Plecotus auritus</i>	BLE
Natterer's bat	<i>Myotis nattereri</i>	NATT

Figure 10 Surveyor position



**Survey 1: Emergence 21<sup>st</sup> May 2020**

Constant CP foraging onsite with NP recorded onsite. Also, a DAUB was recorded during the survey. One CP was recorded emerging from under the tiles of the northern gable of B1 at 21:22 (Photo 16). Two CP were recorded emerging from the main structure (Photo 17), which is not included within the proposals.

**Survey 2 Emergence 11<sup>th</sup> June 2020**

Low levels of activity recorded on site with species composition dominated by CP. One CP was recorded emerging from the cross section of the hip of B1 at 21:28 (Photo 16).

**Survey 3 Emergence 4<sup>th</sup> August 2020**

Constant CP foraging on site. Also passes from SER, DAUB and WHISK. Four bats were recorded emerging from the main house to the north of B1. No bats were recorded emerging from the any of the structures included within the proposals.

Figure 11 Bat emergence recorded over surveys

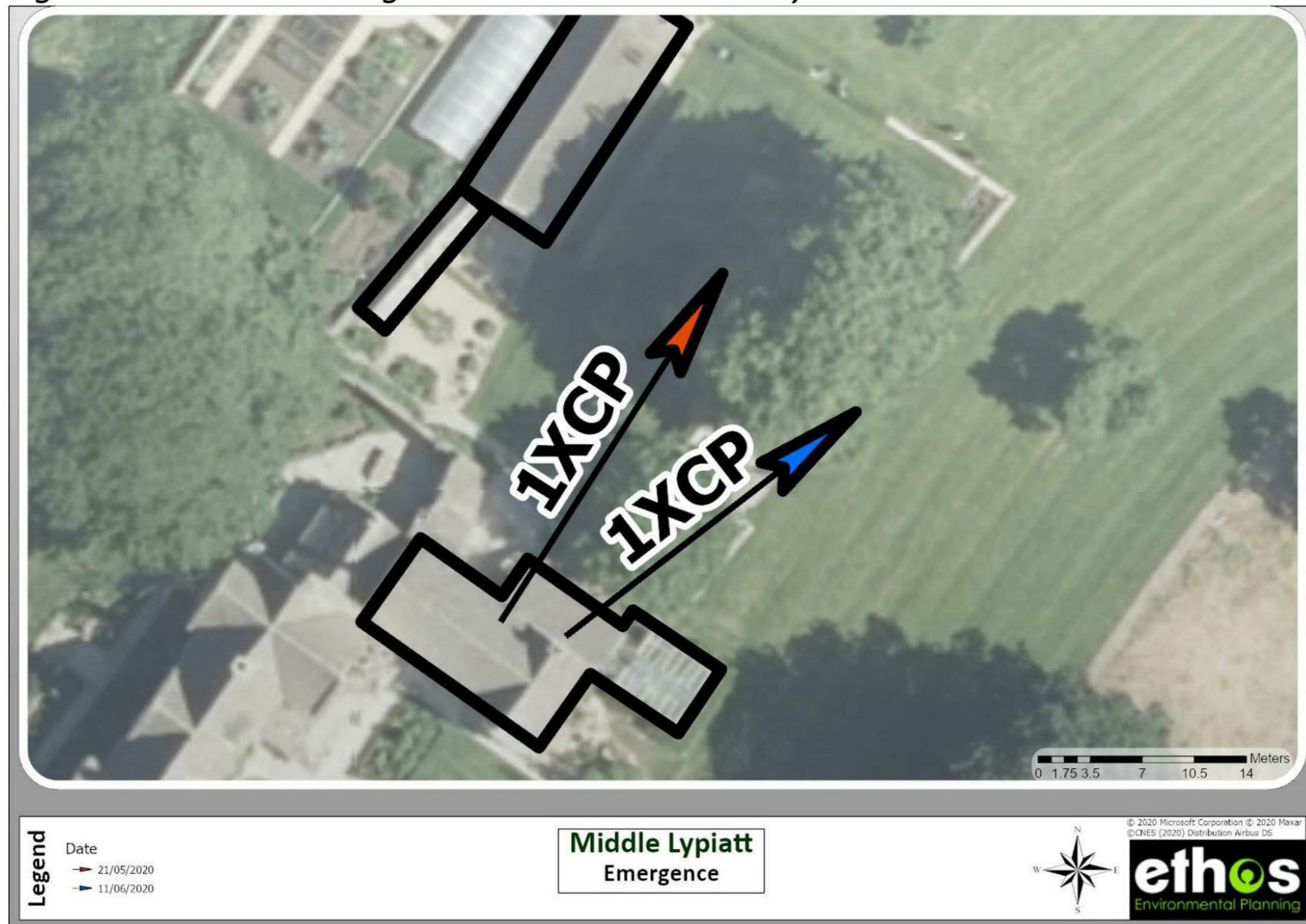


Photo 16: emergence locations B1



Photo 17: Emergence location of building west of B1 not impacted

### **Summary of emergence surveys**

- Two bats were recorded emerging across all the surveys.
- Both emergences were of single CPs from two different roosts, described below;
  - One CP emerged from the northern gable of B1 at 21:22 on 21<sup>st</sup> May.
  - One CP emerged from the cross gable on western pitch of B1 at 21:28 on 11<sup>th</sup> June.
- Eight species were recorded during the emergence surveys, namely CP, NOC, SER, BLE, NATT, NP, WHISK and DAUB.
- Activity was dominated by CP and NOC, with the remaining bats recorded infrequently.
- Low numbers of CP were recorded emerging from the main house north of the B1 during two emergence surveys.

#### **6.4.4 Activity Surveys**

A heat map of bat activity across the site is shown in Figure 11.

##### **21<sup>st</sup> May 2020**

Low activity throughout the survey, focused on trees and boundary features. Species composition dominated by CP with infrequent NOC passes.

##### **11<sup>th</sup> June 2020**

Low activity, CP foraging along woodland and over adjacent grassland with occasional NOC commuting across the site. Early CP seen on northern corner at sunset, which was flying through the trees onto site. Due to the early timing of the sighting, this suggests a potential roost nearby.

##### **15<sup>th</sup> July 2020**

Windy at the start of the survey, which calmed throughout the survey. The survey was dominated by CP and SP activity focussed on the south-western boundary adjacent to the current driveway. A single whiskered bat was recorded along the avenue of trees, in the north east of the site.

##### **4<sup>th</sup> August 2020**

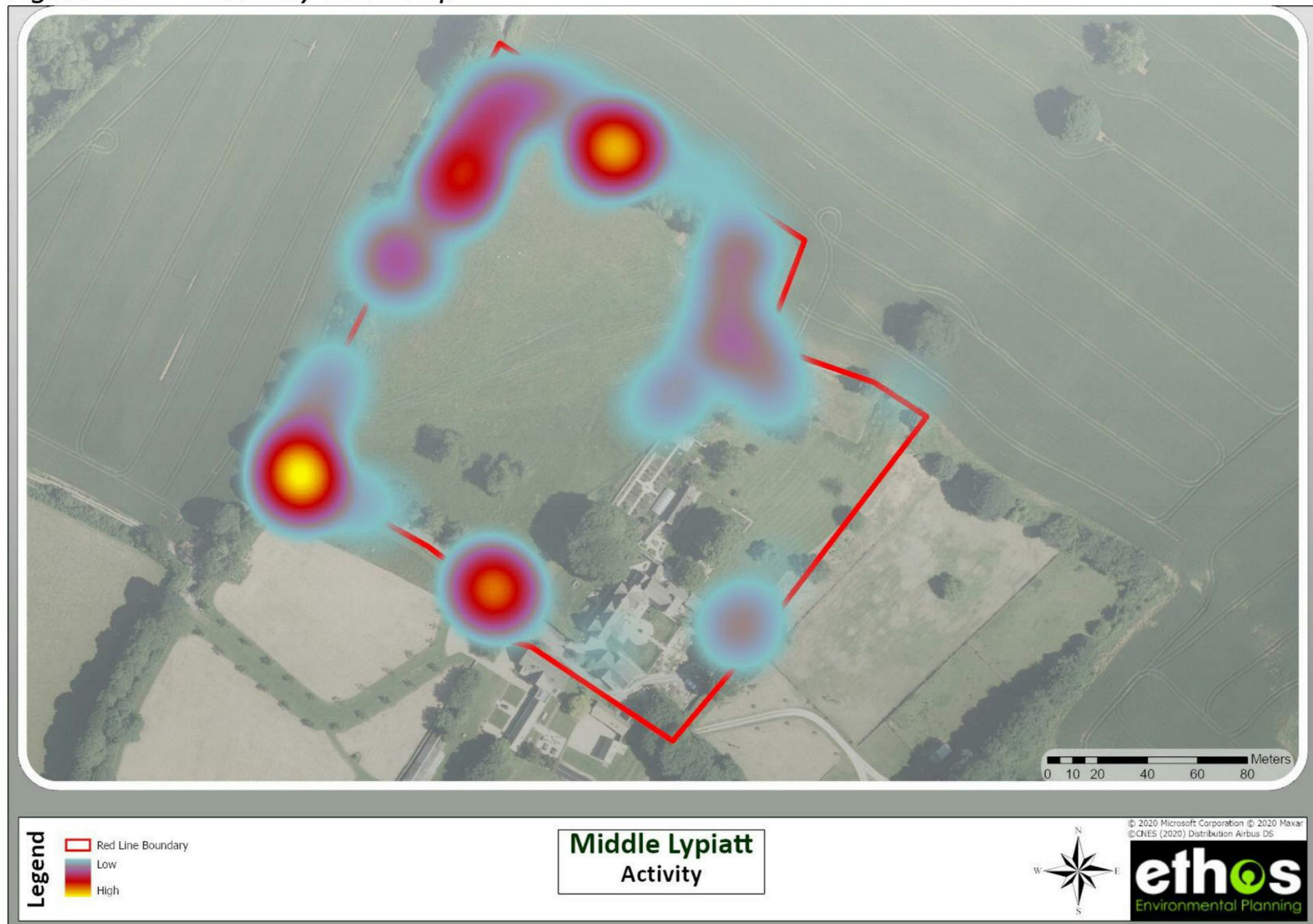
Low levels of activity, previous surveys with CP and SP bats foraging along the tree line and in the western corner of the site by the driveway. CP and WHISK foraging over amenity grassland to the north of the main house.

##### **3<sup>rd</sup> September 2020**

Frequent activity from CP throughout the survey, mainly foraging along the driveway, tree corridor, roadside tree line and garden area. Up to two bats seen at one time. Adult and juvenile bats recorded foraging along the driveway and garden area. Two adult bats were seen along

the north-west boundary, and a lot of social calls were heard. Later in the survey, a WHISK was seen along the tree corridor in the north east of the site.

Figure 12 Activity heat map



### Summary of Activity Surveys

- The activity surveys were dominated by CP and SP with occasional passes of NOC.
- Activity was focused on the road to the north-west of the site and the tree avenue in the north east of the site.
- WHISK passes were recorded during the August and September surveys.
- No Annex II bats were recorded such as LHS or GHS.

### 6.4.5 Static Monitoring

Static detectors were deployed in two locations during May, June, August and September, for a total of eight static recording periods. Figure 12 displays the species recorded onsite and the mean calls of each species over the entire survey period. Figure 12 displays a comparison of the two statics positions; position 1 was located within the proposed driveway and position 2 was located on the current driveway south of the site. The static data has been provided within Appendix 1.

Figure 13 Mean calls of all bats over entire survey period

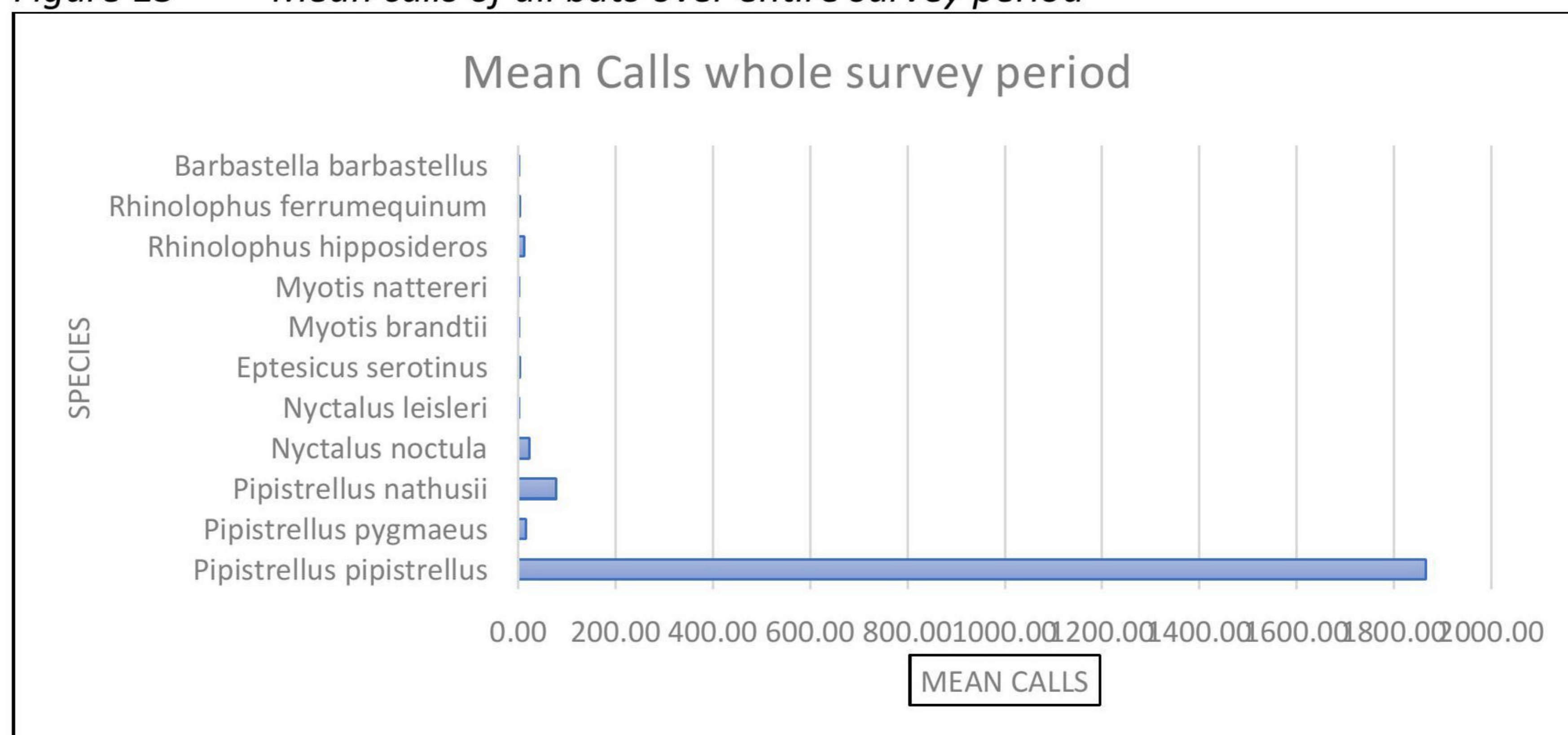
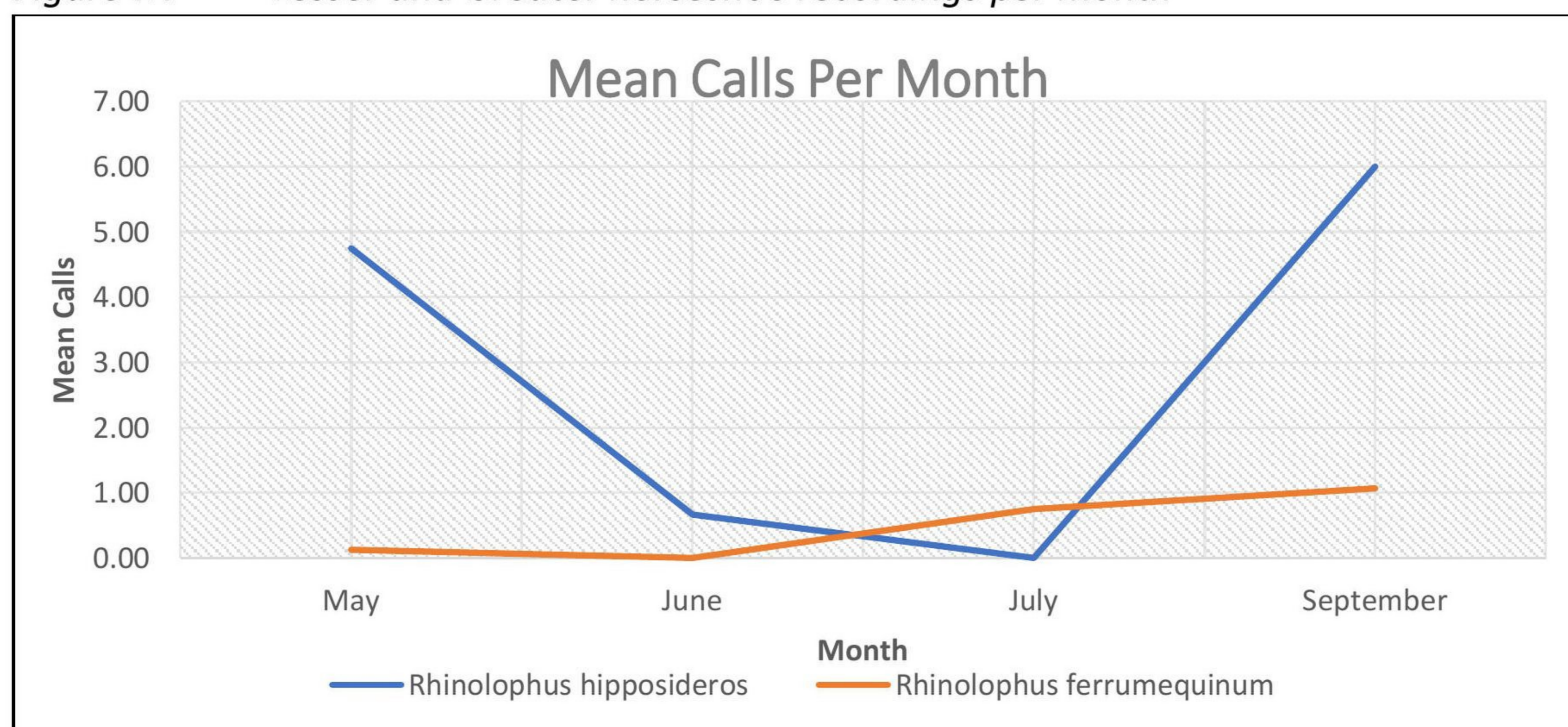


Figure 14 Lesser and Greater horseshoe recordings per month



### Summary

- There were eleven bats species identified on the static detectors.
- Three Annex II species were recorded, namely LHS, GHS and BARB.
- The bat calls were dominated by CP with 93.22% of the overall calls.
- Five calls were recorded of BARB over the entire survey period indicating that there were several passes and not indicative of prolonged foraging onsite.
- There were 12.22 mean calls of LHS over the entire survey period, which was the fifth most common bat recorded onsite.
- LHS and GHS were recorded at both static positions.
- GHS were recorded in low numbers (1.94 mean calls) over the entire survey period.
- GHS were not present during the months of May and June.
- There were 1095 mean calls recorded at static position 1, compared to 362 at static position (visualised in Figure 14).

Figure 15 Comparison of static detectors








### 6.4.6 Trees for Bats


The ground level roost assessment surveys identified four trees as having the potential to support bats, as shown in Figure 13. The remaining trees were assessed to contain negligible potential for roosting bats; the tree survey has been provided by Barton Hyett Associates and is detailed in Appendix 1.

Figure 16 Trees with potential to support roosting bats



Table 7 Trees with bat roosting potential

Tree Number	Species	Description	Potential	Photo
T1 – A2	Beech	Height 20m, mature, tear out on lower limb on lower edge of the branch, tear out on higher branch facing downwards, tear out on branch higher up on southern elevation. Dead limb on western elevation. Dead over hanging limb on eastern elevation. Although, there were multiple features they were assessed as being exposed and superficial providing low potential for rooting bats	Low	 <p>Photo 16: T1 -A2</p>
T2 – A2	Beech	Height 21m, mature. Small dead limb coming off western elevation, two pruning cuts on western elevation (unsure of depth). Three suitable features in total.	Low	 <p>Photo 17: Main stem T2 -A2</p>
T4 -A2	Lime	Height 21m, mature, crack on western branch, weld on eastern branch approximately 35 mm deep.	Low	 <p>Photo 18: T4 – A2</p>

Tree Number	Species	Description	Potential	Photo
G5 – B2	Ash	Mature ash. Pruning hole at approximately 10 metres height on northern elevation, large woodpecker hole on eastern elevation at 12 metres. Pruning cut on eastern fork facing up. Wound on southern elevation.	Moderate	 <p><i>Photo 19: G5 -B2 ash with features</i></p>

## 6.5 Birds

The habitats on site were dominated by amenity grassland and hardstanding, providing low potential foraging habitats for common and widespread species of bird. The tree avenue and the scattered trees on site were assessed to provide nesting and feeding habitats for birds as well as the structures on site.

A search for nesting birds was undertaken during the structure's inspection on 16<sup>th</sup> December 2020. The included a search for any evidence of nesting birds such as active nests, birds roosting within structures, birds displaying breeding behaviours, feeding remains, or droppings. Although the timing of the search was sub-optimal for identifying live nests, previously used nests could be identified. Subsequently, five swallow nests were identified on the ridge beam of B3. No other evidence of roosting/nesting birds was identified during the search.

## 6.6 Reptiles

The habitat on site comprised amenity grassland, hardstanding and structures which provide low/negligible potential for reptiles. The ruderal vegetation located within the avenue of trees was dominated by nettles with some grasses and a substrate of crushed limestone. It was assessed that the vegetation within the tree avenue provided some low potential habitat for reptiles and has the potential to support the dispersal of reptiles throughout the wider environment by providing a commuting corridor. However, the section was heavily shaded, provided limited basking spots and was bordered by sheep-grazed grassland, which would reduce the likelihood for reptiles to be present.

## 6.7 Amphibians

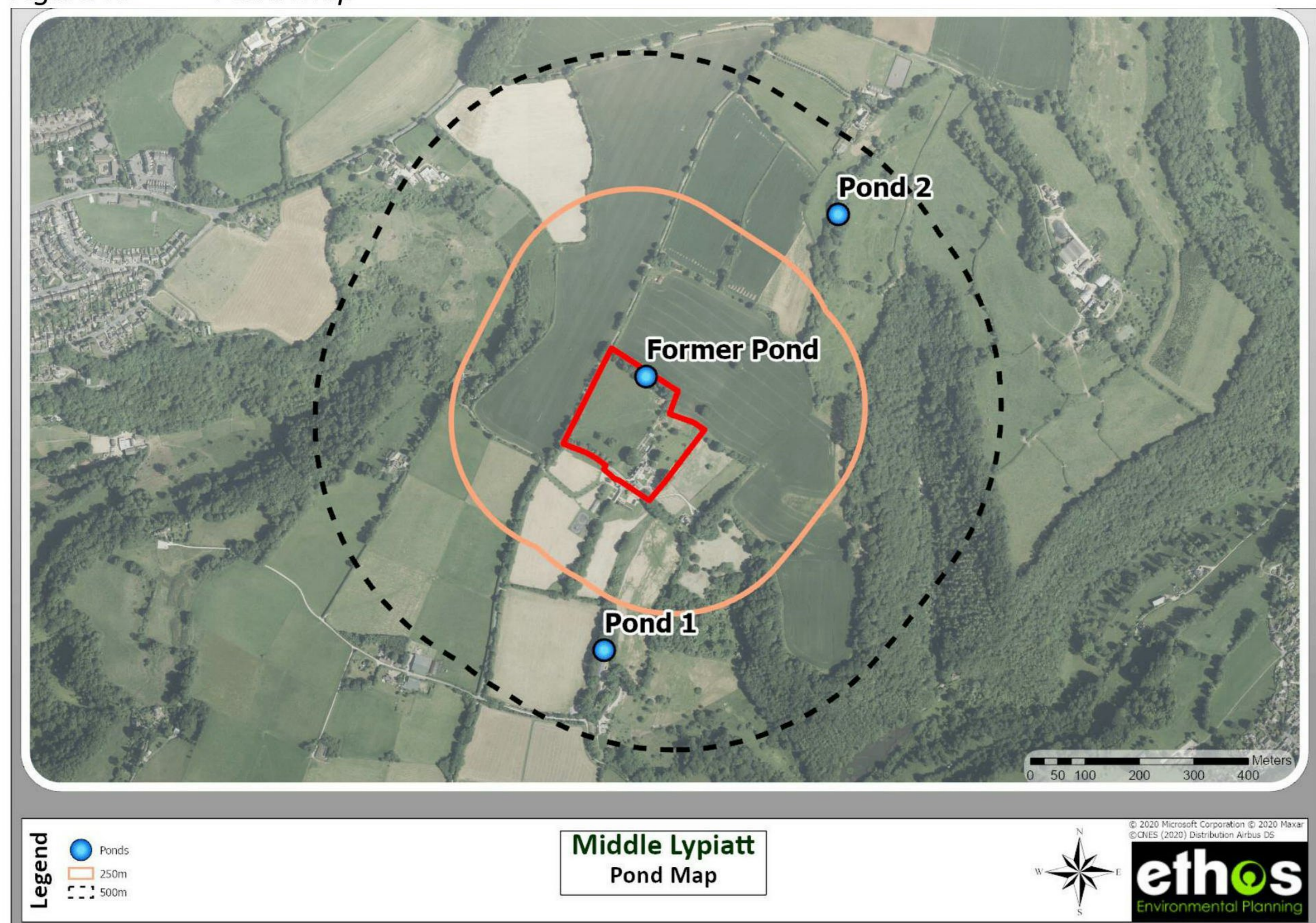
The habitat on site was dominated by regularly managed amenity grassland which provided low/negligible potential terrestrial habitat for amphibians such as GCN. The tree-lined avenue

contained ruderal vegetation and grasses which could provide suitable terrestrial habitat for amphibians. Although this section of habitat was fragmented from other suitable habitat by sheep-grazed grassland and arable farmland, there is suitable connecting habitat along the roadside via hedgerows.

There was a drained pond with the liner removed, which was located within the centre of the site (former pond, figure 16). The habitat survey did not identify any riparian species within the pond with abundant ruderal species present, suggesting that the pond may have been drained for an extended period. Two refugia searches of the former pond identified no evidence of amphibians and the pond was dry throughout the survey season. Therefore, it would not provide suitable breeding habitat for amphibians.

There were two ponds within 500m of the site. Both ponds were fragmented from the site. It was assessed that if GCN were present they would be restricted to the suitable habitats closer to the ponds, such as Toadsmoor woods 600m south of the site.

Figure 17 Pond Map



## 6.8 Invertebrates

The site comprised species-poor habitats which providing habitat suitability for common and widespread species of invertebrates. The key features were assessed to be the tree avenue and the mature trees onsite.

## 7.0 DISCUSSION

The development proposals include the creation of an extension to the north-east of B1, the conversion of B3 into accommodation, the creation of a garage to the east, and the reinstatement of the historic driveway through the avenue of trees in the north of the site.

### 7.1 Habitats

The proposals include the removal of sections of hardstanding and amenity grassland for the creation of the extension and the creation of a garage. It was assessed that these works would have a low/negligible impact on biodiversity due to the poor quality of the habitats.

The driveway will necessitate the removal of a category U beech tree at the entrance of the site. Additionally, Barton Hyett (2019) have recommended the removal of trees T21, T8, T9, and T10 because of poor tree quality and to enable access for historic driveway to the new garage. These driveway works will also necessitate the removal of the ruderal vegetation within the tree avenue but will retain the mature trees within the tree avenue.

Although, the habitats removed within the proposals were assessed to be species-poor, it was considered proportionate to compensate for the loss of trees and ruderal vegetation. This can be accomplished by creating a traditional orchard and by planting walnut trees within the field to the north of the Main Middle Lypiatt House.

It was recommended to restore the former pond on site, provide areas of grassland restoration, and to plant trees or an orchard to compensate for the loss of habitat and provide a potential net gain in term of biodiversity on site in line with emerging national legislation and local policy ES6.

## **7.2 Species**

### **7.2.1 NERC section 41**

The site was assessed to provide some low potential habitats for polecat. This included the tree avenue to the north-east of the site. Good working practices were recommended to avoid any impacts on nocturnal mammals such as polecat. Additionally, the habitat enhancements onsite such as reinstating the pond and the creation of an orchard within the field to the north of the site were assessed to provide an increase in habitat suitability for polecat.

It was assessed that the site provided negligible potential for harvest mouse, brown hare, and hedgehog

### **7.2.2 Badger**

The habitat assessment identified moderate habitat suitability for badger and the surrounding environment was assessed to provide optimal habitats for badgers. However, the extended phase 1 habitat identified no evidence of badger onsite and they were assessed to be absent from the site itself. However, recommendations were provided within this report regarding good working practices to avoid impacts on badgers.

### **7.2.3 Dormouse**

It was assessed that dormouse may be present within the wider environment. The key feature onsite was assessed to be the tree lined avenue. However, the tree avenue was dominated by mature sycamore with little vegetative understorey and limited species diversity to support dormouse throughout their life cycle. Additionally, the proposals only necessitate the removal of six trees with five of them being stand-alone mature trees which are not connected to the wider environment, thus providing negligible potential for dormouse. Overall, it was assessed that the site provided low/negligible potential for dormouse and that the proposals would not have a detrimental effect on dormouse within the wider area.


### **7.2.4 Reptiles**

The tree lined avenue to the north-east of the site was identified as providing some low potential habitat for reptiles. However, it was assessed that this section was fragmented from any other suitable reptile habitat. However, it was assessed to be proportional to undertake a two-stage vegetation clearance of the vegetation within the tree lined avenue. This will avoid impacts on reptiles within this section.

### 7.2.5 Bats

The bat surveys recorded two instances of common pipistrelle emerging from the north-eastern elevation of B1. The proposals include the creation of an extension to the north-east of B1 which will result in the potential destruction of both roosts. The roosts were assessed to be of low conservation significance, following guidance within Figure 4 of the Bat Mitigation Guidelines (Figure 18). Therefore, the works can proceed under a Low Impact CL21 licence from Natural England (NE). The licence enables the licensed ecologist to disturb and capture up to three common and widespread species and damage and destroy three low conservation status roosts, such as the roosts mentioned.

Figure 19 roost status taken from the bat mitigation guidelines

Low	<b>Roost status</b>	<b>Mitigation/compensation requirement (depending on impact)</b>
<b>Conservation significance</b> 	Feeding perches of common/rarer species	Flexibility over provision of bat-boxes, access to new buildings etc. No conditions about timing or monitoring
	Individual bats of common species	
	Small numbers of common species. Not a maternity site	
	Feeding perches of Annex II species	Provision of new roost facilities where possible. Need not be exactly like-for-like, but should be suitable, based on species' requirements. Minimal timing constraints or monitoring requirements
	Small numbers of rarer species. Not a maternity site	
	Hibernation sites for small numbers of common/rarer species	Timing constraints. More or less like-for-like replacement. Bats not to be left without a roost and must be given time to find the replacement. Monitoring for 2 years preferred.
	Maternity sites of common species	
	Maternity sites of rarer species	Timing constraints. Like-for-like replacement as a minimum. No destruction of former roost until replacement completed and usage demonstrated. Monitoring for at least 2 years.
	Significant hibernation sites for rarer/rarest species or all species assemblages	
	Sites meeting SSSI guidelines	Oppose interference with existing roosts or seek improved roost provision. Timing constraints. No destruction of former roost until replacement completed and significant usage demonstrated. Monitoring for as long as possible.
<b>High</b>	Maternity sites of rarest species	

Four bats were recorded emerging from the main house (north of B1) which is being retained within the proposals. Suitable lighting has been recommended within Section 8.2.2 to ensure no excessive light spill and that artificial lighting is directed away from any existing roosts. Additionally, good working practices were recommended to avoid light pollution during the development works.

The three low potential roost trees and the one moderate potential tree identified by the ground level roost assessment are being retained within the proposals. Recommendations will ensure that they are not subject to increased lighting levels as part of the proposals.

The results from the activity survey suggests that the northern boundary of the site is the key feature on site for foraging bats. Additionally, the static data indicated that there was a greater number of bat passes returned from the static position 1 within the tree avenue, compared with that of position 2 located to the south-west of the site. This suggests that there is greater bat activity within the tree lined avenue, and that the tree avenue could provide an important commuting and foraging resource for bats locally. Although the trees are being retained within the avenue, it has been recommended to ensure that there is no artificial lighting within this section. Also, it has been recommended to manage the grassland underneath the trees and either side of the tree avenue and to provide compensatory habitat regarding the loss of foraging habitat.

Lesser and greater horseshoe bats were recorded from both static positions in low numbers, with lesser horseshoe bats being detected across the entire survey period and greater horseshoes detected between the months of July to September. Lesser horseshoe bats were recorded across the site consistently throughout the survey period. As horseshoe bats are light-sensitive species, it has been recommended to install suitable lighting on the new garage and to prohibit any lighting within the tree avenue.

### **7.2.6 Birds**

It was assessed that the site provided low potential habitats for common and widespread species of bird. The key habitat included the mature trees onsite which provide a nesting habitat and a food source for birds. The majority of trees are being retained onsite. However, mitigation including the timing of works to avoid impacts on nesting birds was recommended within section 8.3.1

There were five swallow nests located on the ridge beam of B3. Mitigation will require the timing of works to avoid any impacts on swallows and will include the provision of compensatory roosts regarding the loss of nests.

The habitat proposals include the creation of an orchard, the implementation of beneficial grassland management, and the restoration of the pond which was assessed to provide an increase regarding onsite habitat suitability for birds.



### **7.2.7 Amphibians**

The background data search returned no records of GCN within the past 10 years. The site did not contain any suitable breeding habitat for amphibians such as GCN, and it was assessed that the site provided poor quality terrestrial habitat for GCN, with the exception of small areas of habitat within the tree-lined corridor in the north of the site. It was assessed that P1 was connected to the south-western section site by hedgerows and tree lined corridors. However, it was assessed that P1 was significantly fragmented from the tree lined avenue in the north-east of the site.

It has been recommended to restore the dry pond present within the centre of the site and to create refugia adjacent to the pond for hibernating amphibians. Log piles can be created through the retention of dead wood as part of the tree removal. The restoration of the pond would provide a significant enhancement on site for range of species including amphibians.

### **7.2.8 Invertebrates**

The habitat assessment identified that the site was comprised of species poor habitats providing habitat for common and widespread species of insect. It was assessed that the creation of an orchard, the restoration of the orchard, and the implementation of grassland management would provide a significant increase in terms of habitat suitability for a range of invertebrates and the species that feed upon them.

## 8.0 RECOMMENDATIONS

### 8.1 Habitats

#### 8.1.1 Tree Avenue

The development proposals will necessitate the removal of the vegetation within the tree avenue to reinstate the historic driveway. The following precautionary mitigation is recommended:

- All works within the tree avenue will be undertaken with hand tools with no access to heavy machinery to avoid any impacts on the existing tree roots.

The following habitat enhancement measures are recommended:

- The grassland either side of the new driveway will be cut annually with the clippings removed and composted.
- A two-metre strip will be retained to the south west of the tree avenue; this will be managed as above and will compensate for the loss of ruderal vegetation within the tree avenue.
- Sections of deadwood from the removed trees should be retained to provide habitat for insects, which in turn provide a food source for species such as bat.

#### 8.1.2 Tree Removal, Creation of Traditional Orchard.

Several trees were recommended to be removed by Barton Hyett, 2020. These recommendations include planting an orchard within the field to the west of the tree avenue to compensate for the loss of trees, provide an onsite enhancement, and to seek a gain in terms of biodiversity. The location of the orchard was provided within figure 2. A circle of standard walnut trees will be planted within the centre of the field to the north. The specific recommendations for planting and maintaining the walnut trees was provided within the Barton Hyett Tree report, 2020.

A summary of the key points taken from the Natural England Technical Information Note (Natural England, 2020).

Trees should be of M25 vigorous root stock and preferably from local varieties; available from: <http://www.adamsappletrees.co.uk/>

- New trees should be planted at traditional spacings. Within existing orchards these should follow and reinforce the original planting pattern.
- Traditional standard dessert and cider apple orchards usually have a planting density of between 100-150 trees per ha with 8-10 m between rows and 7-9 m between trees within the rows.
- Tree guards should be used to ensure that the root avoid excessive shaking before the roots are established.

- Sheep will strip and eat the bark of fruiting trees. When creating a new orchard, it may be preferable to cut the orchard rather than graze it for the first few years until vulnerable young growth and shoot tips are beyond the reach of stock. However, if trees are adequately protected new orchards can be grazed from the outset.
- Weeds should be controlled to prevent competition until the trees are established.
- Good tree management and aftercare in the first few years after planting is crucial to ensure their survival and long-term health.

### 8.1.3 Pond

It is recommended to restore the pond to provide habitat for a range of wildlife and to seek a net gain in terms of biodiversity onsite. The following measures are recommended:

- The pond should be cleared of vegetation and liner or puddling clay should be used to hold water within the pond.
- The pond should be left to fill naturally with rainwater to avoid contamination, after which it should be left to colonise naturally with native aquatic vegetation, as this reduces the chance of introducing non-native species.
- The pond edges should be sown with a species-rich seed mixture such as Emorsgate Seeds EP1F – pond edge mixture.
- Refugia from retained deadwood will be created adjacent to the pond to create hibernating habitat for amphibians.

## 8.2 Bats

### 8.2.1 Destruction of roosts

Buildings B1 was confirmed to be a day roost for single common pipistrelle, with a max count of one bat within two roosting locations.

A derogation licence must be sought from NE prior to demolition; a Low Impact CL21 Licence can be used for this site. The licence can only be applied for once planning permission has been granted.

A precautionary working method statement will be required in order to protect bats during the demolition:

- There are no timing constraints under the low impact bat licence, therefore, demolition can be undertaken at any time of year.
- A toolbox talk will be given to on site contractors of the presence of bats and details of the licence before works can start.
- A pre-works check for bats will be undertaken by a licensed bat worker immediately prior to the works commencing (demolition etc.);
- A controlled 'soft-strip' of the roof materials on the structures will be undertaken by the roofing contractor under direct supervision of the licensed bat worker. The roof tiles and

barge boards will be removed by hand and areas beneath the panels will be inspected for any evidence of bats and removed by hand.

- If any bats are encountered, works must immediately stop, and the licensed ecologist will rescue the bat in line and move it to a safe place for release in the evening.

### **8.2.2 Lighting**

Any required external artificial lighting at the site must be installed on a system which will ensure that lights are turned off when not in use. A suitable system will include PIR lighting which will only turn on when movement detected. Lighting should be designed to reduce light spill onto the main structure onsite which provide a bat roost for multiple common pipistrelle bats.

No lighting will be installed on the historic driveway which will be reinstated within the proposals

### **8.2.3 Enhancement**

Under the Low Impact bat licence, no compensation measures are required. Nevertheless, it is recommended that roost features are provided as part of the development in order to enhance the site for roosting bats. As part of the proposals, new roosting provision should be provided for bats, which will provide a long-term enhancement for crevice dwelling bats at the site. See table 8 below for recommended provision.

## **8.3 Birds**

### **8.3.1 Mitigation**

There were five swallow nests located on the ridge beam of B3 As it is an offence to destroy or disturb an active bird nest, the works to B3 should be undertaken outside of the bird breeding season (March – August inclusive) or be subject to a pre-works check by a Suitably Qualified Ecologist. Alternatively, the swallow nests can be removed outside of the bird breeding season and then excluded from the structure by using plastic sheeting or similar across the gable of the structure.

All trees recommended for removal by Barton Hyett, 2020 should be removed between September and April in order to avoid the breeding bird season or be similarly subject to a pre-works check.

### **8.3.2 Compensation**

Six swallow nests cup will be installed on site in a sheltered position on the eastern gable of the new garage. Suitable swallow cups have been provided within table 8.

## 8.4 Reptiles

It was recommended to undertake a two-stage cut regarding the removal of ruderal vegetation within the tree lined avenue; detailed below. Retained wood from the tree removal will be used to create refugia adjacent to the reinstated drive (adjacent to the tree avenue) and next to the restored pond.

- A toolbox talk will be given to all contractors by the Ecological Clerk of Works (ECoW) prior to works commencing, which will include key features for identification of UK reptile and amphibian species and instructions regarding sympathetic working practices;
- All areas to be cleared will be searched by the ECoW, potential natural and artificial refugia removed and any faunal species carefully moved by hand to the hibernacula which will be created in advance;
- All vegetation within the proposed construction zone will be strimmed down to 15 cm height during the reptile active season (March – October inclusive). Habitat clearance will begin at the centre of the tree avenue and progress towards the north and south;
- Any reptiles found will be moved to former pond onsite;
- Following a 24-hour period, the vegetation will then be cut down to the ground; and maintained low until commencement of construction. Again, the grassland will be cleared working from centre of the tree avenue and progress towards the north and south.


## 8.5 Other Nocturnal Mammals


The following recommendations will avoid impacts on nocturnal mammals such as polecat and badgers during construction:

- All trenches should be covered at night or contain a ramp to avoid nocturnal mammals becoming trapped in them overnight.
- Any external lighting used during construction (e.g. security lighting) will be switched off at night to avoid disturbing nocturnal mammals.
- Any necessary piling of materials will be kept on pallets (i.e. off the ground) to avoid creating refugia for species such as hedgehog, which could be injured or killed when the materials are moved.

## 8.6 Ecological Provisions

Table 8 Recommended provisions

Provision	No.	Description	Installation
 Ceramic nest bowl	6	<b>Species:</b> Swallow Ceramic nest bowl mounted on a wooden back	Installed under eaves. 2-3m height minimum. On eastern gable of new garage

Provision	No.	Description	Installation
 <p>2F Schwegler Bat Box</p>	1	<ul style="list-style-type: none"> <li>• 33 (h) x 16 (d) cm</li> <li>• Weight 4kg</li> </ul> <p>Woodcrete, blend of concrete and clay which will not rot, leak, crack or warp. 20-25 years lifespan. Removable front panel.</p>	<p>Installed between 3-6m within a mature tree onsite.</p>

## 10.0 CONCLUSIONS

The Site was located at Middle Lypiatt, Gloucestershire (Central Grid Reference SO 87726 04680).

The development proposals include the creation of an extension to the north-east of B1, the conversion of B3 into accommodation, the creation of a garage to the east, and the reinstatement of the historic driveway through the avenue of tree north of the site.

The proposals necessitate the destruction of two bat roosts of single common pipistrelle bats to enable the creation of an extension. Recommendations have been provided which include the requirement of a NE derogation licence, the provision of suitable lighting and a suitable working method statement for the duration of the construction works. Other roosts were identified on site but were assessed to not be impacted from the development. Recommendations were provided to prevent any detrimental effects regarding the development on existing roosts.

Horseshoe bats were recorded on the static detectors and the tree avenue was highlighted as providing moderate foraging potential for bats. It was recommended to not provide any artificial lighting within this section, to ensure that the light sensitive horseshoe bats are not impacted when foraging and commuting.

The proposals necessitate the removal of ruderal vegetation within the tree avenue, sections of amenity grassland and five trees to enable the reinstatement of the historic access drive. Recommendations to compensate for the loss of tree and ruderal habitat include initiating grassland management under the trees, providing a grassland buffer to the west of the avenue, the creation of a traditional orchard and circular arrangement of walnut trees within the field to the north, and restoring the former pond within the centre of the site. It was concluded that the impacts were low in scale and the recommendations would provide a significant net gain in terms of biodiversity on site.

## 11.0 REFERENCES

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## APPENDIX 1      BAT SURVEY RESULTS

### Emergence Surveys

#### ***Survey 1: Emergence 21<sup>st</sup> May 2020***

##### Position 1

21:06 - NOC heard not seen (HNS)  
21:17 - CP commute between houses  
21:23 - CP flew from centre of main house away south-east  
21:45 - CP HNS  
22:00 - CP forage in distance along hedge to north east - faint calls near constant.  
22:08 - CP briefly forage in courtyard while lights on  
22:11 - lights off and immediately heard BLE  
22:18 - becoming gusty  
22:21 - CP commute overheard HNS  
22:24 - CP social calling as passed through courtyard

##### Position 2

21:13 - CP seen commuting south to north over site.  
21:24 - CP flew round side of building to the north west. Security light on gable end  
21:55 - DAUB HNS  
22:00 - CP forage from north to south past line of ornamental trees.

##### Position 2

21:13 - CP HNS  
21:22 - CP emerged from western gable (outhouse)  
21:45 - NATT recorded foraging over site

##### Position 4

21:13 - CP HNS  
21:19 -21:26 constant CP foraging hanging around and circling eastern elevation side  
21:32 - x 2 CP constant foraging  
21:52 - DAUB HNS  
22:00 - bat flew west to east over building  
22:12 - NOC HNS

## Survey 2 Emergence 11<sup>th</sup> June 2020

### Position 1

21:08 - 2X CP emerged from main structure north-west of B1  
21:15 - CP HNS  
21:11 – NOC HNS  
22:15 – constant CP foraging north-east of position

### Position 2

21:06 - no rule commuting east to west behind Matt,  
21:13 - possible NATT heard. Commuting south to north west of main structure.  
21:19 - CP commuted from  
South east north  
21:28 - CP emerged from cross gable on western pitch.  
21:31 - CP HNS  
21:41 - CP HNS likely foraging due to buzz and multiple passes.  
22:10 - NOC HNS  
22:16 - CP foraging in garden  
22:32 - CP foraging directly above me before commuting north

### Position 3

21:33 - CP heard not seen.  
22:03 - CP flying over top of the tree northwards.  
22:26 - CP heard but not seen.

### Position 4

21:40 - NATT flying south to north from direction of mature beech over eastern gable.  
21:51 - CP HNS  
21:55 – CP HNS  
22:15 - 22:27 - lights on and off  
22:49 – NATT HNS

## Survey 3 Emergence 4<sup>th</sup> August 2020

### Position 1

20:43 - 4x CP emerged from south-east elevation of main residential structure north of B1.  
20:49 - CP commute over house to north, headed south over site and into gardens.  
21:00 - 21:25 CP consistent foraging in gardens.  
21:42 - very light rain started.  
21:47 - DAUB HNS.  
21:57 - SER HNS1 pass.  
22:17 - BLE HNS 1 pass.

22:22 - NOC HNS 1 pass.

#### Position 2

21:01 - CP HNS.  
21:09 - CP forgoing eastwards.  
21:14 - NATT flying northwards.  
21:21 - WHISK circling to north.  
21:31 - CP flying west.  
21:39 - NOC flying east to west.  
21:54 - BLE heard but not seen.  
21:57 - SER heard but not seen.  
22:19 - DAUB heard but not seen.

#### Position 3

20:54 - CP faintly HNS.  
21:08 - CP commuting south east to north west.  
21:10 - CP commuting west to east over surveyors  
21:14 - NATT commuting south to north over B3.  
21:22 - WHISK came from north circled before returning north.  
21:38 - BLE commuting east to west over site  
21:38 - NOC commuting HNS  
21:40 - light drizzle  
21:49 - CP HNS  
21:50 - drizzle stopped  
21:55 - BLE and CP HNS  
21:57 - SER HNS  
22:02 - 2X CP commuting with social calls.  
22:19 - DAUB HNS

#### Surveyor 4

21:00 - CP foraging North of site  
21:04 - CP flew over barn towards Position 3  
21:08 - CP foraging  
21:10 - CP pass  
21:25 - CP pass  
21:33 - CP pass

## Activity Surveys

### Activity Surveys

#### 21<sup>st</sup> May 2020

21:22 first bat c pip commuting NW along driveway  
21:24 SP foraging western corner  
21:30 CP northern boundary foraging  
21:34 NATT foraging wood northern boundary  
21:39 CP foraging over ruderal in north corner of southern field  
21:43 CP foraging south eastern boundary  
21:49 CP commuting south from direction of greenhouse and second foraging around scattered trees  
21:55 NOC HNS by wall bisecting site  
22:04 CP commuting HNS western boundary by road

#### 11<sup>th</sup> June 2020

21:27 first bat c pip entered site from north corner and foraged along treeline in northern corner and over meadow for several minutes  
21:29 NOC commuting north east over road  
21:45 CP foraging over bare ground east of main house  
21:49 CP commuting south along wall dividing site  
21:51 CP foraging eastern corner of meadow  
21:52 CP commuting north along wall east side of meadow  
21:53 CP foraging by light on wall then commutes north bay did not trigger light  
22:00 CP HNS north western boundary  
22:01 CP commuting west across meadow and s pip commuting north along road  
22:03 CP foraging along Lane on meadow side  
22:05 CP foraging northern corner  
22:07 CP foraging ang woodland edge on meadow side  
22:13 CP commuting north from house, turned west over dry pond  
22:16 CP HNS eastern corner  
22:18 CP HNS by line of trees east of house  
22:35 CP foraging woodland edge Eastern corner  
22:51 CP foraging woodland edge eastern end

15<sup>th</sup> July 2020

21:44 x3 CP foraging at site entrance - south west boundary  
21:48 CP travelling east to west up drive  
21:55 CP over gardens foraging over old pond  
22:09 CP HNS (site entrance)  
22:12 CP foraging between house and old barn at end of drive back and forth - 22.15  
22:28 CP western boundary road  
22:34 CP again by drive  
22:37 CP between house and old barn  
22:49 CP foraging above woodland  
22:57 CP on western boundary HNS along treeline  
23:02 CP at site entrance constant  
23:12 CP by house and drive

4<sup>th</sup> August 2020

20:55 first bat c pip foraging trees on northern boundary HNS at first then seen foraging low along meadow side of tree line  
21:00 2 X SP flew out of canopy tree avenue  
21:07 CP foraging Easter corner of meadow by spoil heaps then commuted onto amenity grassland to east to forage around mature trees and across grassland in eastern corner  
21:13 SP foraging around line of trees in southern corner

3<sup>rd</sup> September 2020

20:06 - 20:09 x1 CP foraging within tree corridor (social calls)  
20:16 x2 CP (adult and pup) foraging up and down driveway, west boundary  
20:24 x1 CP foraging along driveway  
20:27 CP foraging northeast corner of garden.  
20:33 x2 CP (adult and pup) foraging around scattered trees central garden (bet greenhouse & copper beech)  
20:37 - 20:40 CP foraging southern end of tree corridor  
20:44 x2 CP (adults) northwest (alongside road), commuting /foraging  
20:48 x2 CP foraging tree line field side of driveway  
21:00 CP foraging around pond (faint HNS)  
21:21 x2 CP foraging central garden area by copper beech (social calls)  
21:25 WHISK. HNS - 2 passes southern end of tree corridor  
21:29 WHISK - 1 pass - central area tree corridor  
21:37 - 21:40 x1 CP foraging along driveway (social calls)

## Static results

Static 1 did not record.

Table 9 Static 2 SM4 FS5 30<sup>th</sup> April – 15<sup>th</sup> May

Bat Species	No. recordings	Mean Calls	First recording
<i>Pipistrellus pipistrellus</i>	4115.00	514.38	20:39:23
<i>Pipistrellus pygmaeus</i>	17.00	2.13	20:58:58
<i>Pipistrellus nathusii</i>	211.00	26.38	20:39:27
<i>Nyctalus noctula</i>	94.00	11.75	20:09:29
<i>Nyctalus leisleri</i>	1.00	0.13	20:58:42
<i>Eptesicus serotinus</i>	4.00	0.50	21:22:46
<i>Myotis brandtii</i>	2.00	0.25	21:58:33
<i>Myotis daubentonii</i>	5.00	0.63	21:48:45
<i>Rhinolophus hipposideros</i>	38.00	4.75	21:14:43
<i>Rhinolophus ferrumequinum</i>	1.00	0.13	21:22:56

Table 10 Static 3 SM4 ZC 2 11<sup>th</sup> – 23<sup>rd</sup> June

Bat Species	No. recordings	Mean Calls	First recording
<i>Pipistrellus pipistrellus</i>	397.00	33.08	20:30:04
<i>Pipistrellus pygmaeus</i>	27.00	2.25	20:40:40
<i>Pipistrellus nathusii</i>	68.00	5.67	20:38:18
<i>Nyctalus noctula</i>	53.00	4.42	20:27:21
<i>Nyctalus leisleri</i>	6.00	0.50	21:41:08
<i>Eptesicus serotinus</i>	12.00	1.00	21:05:44
<i>Myotis brandtii</i>	4.00	0.33	22:07:29
<i>Myotis nattereri</i>	1.00	0.08	20:45:30
<i>Rhinolophus hipposideros</i>	8.00	0.67	21:11:39
<i>Barbastella barbastellus</i>	5.00	0.42	21:43:49

Table 11 Static 4 SM4 ZC3 11<sup>th</sup> – 23<sup>rd</sup> June

Bat Species	No. recordings	Mean Calls	First recording
<i>Pipistrellus pipistrellus</i>	4020.00	335.00	20:13:13
<i>Pipistrellus nathusii</i>	448.00	37.33	20:09:12
<i>Myotis daubentonii</i>	8.00	0.67	00:40:00

Table 12 Static 5 SM4 MINI 1819

Bat Species	No. recordings	Mean Calls	First recording
<i>Pipistrellus pipistrellus</i>	278	139	0.88353
<i>Pipistrellus pygmaeus</i>	4	2	0.038183
<i>Pipistrellus nathusii</i>	3	1.5	0.900752
<i>Nyctalus noctula</i>	8	4	0.883773
<i>Eptesicus serotinus</i>	1	0.5	0.957002
<i>Myotis daubentonii</i>	1	0.5	0.179907
<i>Rhinolophus ferrumequinum</i>	1	0.5	0.121065

Table 13 Static 6 SM4 MINI 1578 23<sup>rd</sup> – 27<sup>th</sup> July

Bat Species	No. recordings	Mean Calls	First recording
<i>Pipistrellus pipistrellus</i>	603	150.75	21:07:37
<i>Pipistrellus pygmaeus</i>	6	1.5	21:22:55
<i>Pipistrellus nathusii</i>	14	3.5	21:37:05
<i>Nyctalus noctula</i>	28	7	21:12:38
<i>Eptesicus serotinus</i>	1	0.25	22:58:05
<i>Myotis daubentonii</i>	2	0.5	23:11:15
<i>Rhinolophus ferrumequinum</i>	1	0.25	02:54:20

Table 14 Static 7 SM4 FS5 3<sup>rd</sup> – 6<sup>th</sup> September

Bat Species	No. recordings	Mean Calls	First recording
<i>Pipistrellus pipistrellus</i>	432	144.00	0.82375
<i>Pipistrellus pygmaeus</i>	15	5.00	0.830845
<i>Nyctalus noctula</i>	19	6.33	0.819479
<i>Eptesicus serotinus</i>	2	0.67	0.894595
<i>Myotis brandtii</i>	1	0.33	0.952338
<i>Myotis nattereri</i>	2	0.67	0.854722
<i>Myotis daubentonii</i>	5	1.67	0.935451
<i>Plecotus auritus</i>	2	0.67	0.027963
<i>Rhinolophus hipposideros</i>	18	6.00	0.860208
<i>Rhinolophus ferrumequinum</i>	2	0.67	0.133171

Table 15 Static 8 SM4 FS 5 3<sup>rd</sup> - 8<sup>th</sup> September

Bat Species	No. recordings	Mean Calls	First recording
<i>Pipistrellus pipistrellus</i>	2747	549.40	19:44:37
<i>Pipistrellus pygmaeus</i>	8	1.60	22:34:13
<i>Pipistrellus nathusii</i>	17	3.40	20:00:46
<i>Nyctalus noctula</i>	6	1.20	20:16:29
<i>Nyctalus leisleri</i>	1	0.20	21:57:20
<i>Myotis brandtii</i>	2	0.40	22:32:18
<i>Myotis nattereri</i>	1	0.20	21:28:19
<i>Myotis daubentonii</i>	4	0.80	20:29:56
<i>Rhinolophus hipposideros</i>	4	0.8	0.876354
<i>Rhinolophus ferrumequinum</i>	2	0.4	0.86456



## Tree Ground Level Assessment

Table 16 All trees ground level assessment

Tree Tag	Description	Potential
T1 -A2	Beech, height 20, mature, tear out on lower limb on lower edge of the branch, tear out on higher branch facing downwards, tear out on branch higher up on southern elevation. Dead limb on western elevation. Dead over hanging limb on eastern elevation. Overall low potential. Photos 1-4	Low
T2 -A2	Beech, 21 metres, mature. Small dead limb coming off western pitch, two pruning cuts on western pitch unsure of depth. Three features low potential. Three photos.	Low
T19- B1	Larch, 12, mature, negligible	Negligible
T20- B1	Larch, 14, mature. Negligible potential	Negligible
T21- U	Beech, 10 metres, semi mature, negligible	Negligible
T22- C1	Lime, 8.5 semi mature. Negligible potential	Negligible
T23- B2	Horse chestnut, 12, early mature no features negligible potential	Negligible
G5- B2	<Null>	Negligible
G5- B2	2X Mature sycamores, ivy clad at base of the tree	Negligible
G4-B2	Grouping, sycamore	Negligible
G5 -B2	Mature sycamores. Ivy at base of the tree negligible potential	Negligible
G4-B2	Grouping, beech	Negligible
G4-B2	Grouping, sycamore	Negligible
G5 -B2	Mature sycamores. Ivy at base of the tree negligible potential	Negligible
G5 -B2	2X sycamore. Semi mature with no features. Negligible potential	Negligible
G5 -B2	Mature ash, 16 metres high, semi mature. No features negligible potential.	Negligible
G4-B2	Grouping, sycamore	Negligible
G5 -B2	Sycamore, 14 metres, semi mature, negligible potential	Negligible
G5 -B2	Sycamore, 10 metres. Negligible potential	Negligible
G5 – B2	Mature ash. Pruning hole approximately 10 metres on northern pitch, large woodpecker hole on eastern pitch at 12 metres. Pruning cut on eastern fork facing up. Wound on southern elevation. Moderate potential	Moderate
G5 -B2	No features negligible potential	Negligible
G5 -B2	Sycamore- small wound at base of tree on northern pitch, approximately 20 mm full of slugs	Negligible
G4-B2	Grouping, sycamore	Negligible
G6-B2	Grouping, sycamore	Negligible
G6-B2	Sycamore, small pruning cut which doesn't go anywhere	Negligible
G7	Hedgerow of semi mature trees negligible potential	Negligible
T17- B1	Early mature, 11, negligible potential.	Negligible
T18-B1	Norway maple, 11 metres, mature, negligible potential.	Negligible
T15- B1	Atlas cedar, 11, mature negligible potential.	Negligible
T12-B2	Common beech, 13, semi mature, negligible potential	Negligible
G2-B2	Himalayan birch	Negligible
T16-C1	Willow spp. 8 metres tall, semi mature. Negligible potential	Negligible
T10-B1	Himalayan birch, 11 metres, mature. Negligible potential.	Negligible

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T8-C1	Cherry, 6 metres, early mature negligible potential	Negligible
T5-A1	Lime, 21, mature, small knot hole on western pitch's approximately 6 metres, start of tear out on northern pitch. small wound dense canopy low potential.	Negligible
T4-A2	Common lime, 21, mature, crack on western branch, weld on eastern pitch approximately 35 mm deep. Low potential	Low
N/A	<Null>	Negligible
T13-B1	Common walnut, 10 metres, early mature, negligible potential	Negligible

## APPENDIX II LEGISLATION - SPECIES

This section outlines the key legislation related to the habitats and species considered within this survey report.

### Bats

All British bats are fully protected under Section 9 Schedule 5 of the Wildlife and Countryside Act 1981 and amendments. Agreement, and are fully protected under The Conservation of Habitats and Species Regulations 2017 (as amended). In addition, they are protected under the Berne Convention; they are given migratory species protection within the Bonn Convention. Regulation 43 (1) of The Conservation of Habitats and Species Regulation 2017 makes it an offence to:

- deliberately capture, injure or kill any species of bat;
- deliberately disturb any species of bat;
- damage or destroy a breeding site or resting place of any species of bat.

It is an offence to disturb any bat roosting site, whether the bats are there or not. Under Regulations 43 (2) disturbance includes in particular any disturbance which is likely:

- To impair their ability
  - to survive, to breed or reproduce, or to rear or nurture their young; or
  - in the case of a hibernating or migratory species, to hibernate or migrate; or
- To affect significantly the local distribution or abundance of the species to which they belong.

Presence of bats does not necessarily mean that development cannot go ahead, but that with suitable, approved mitigation, exemptions can be granted from the protection afforded to bats under regulation 43 by means of a licence. Natural England (NE) is the appropriate authority for determining licence applications for works associated with developments affecting bats, including demolition of their roost sites. In cases where licences are required, certain conditions have to be met to satisfy Natural England. Before the Statutory Nature Conservation Organisation (SNCO), in this case NE, can issue a licence to permit otherwise prohibited acts three tests have to be satisfied under the requirement of Regulation 55. These are:

1. Imperative Reasons of Overriding Public Interest [Reg 55(2)(e)];
2. No Satisfactory Alternative [Reg 55(9)(a)];
3. Maintenance of Favourable Conservation Status [Reg 55(9)(b)].

In order to meet the tests, SNCO usually expects the planning position to be fully resolved as this is necessary to satisfy tests 1 and 2. Full planning permission, if applicable, will need to have been granted and any conditions relating to bats fully discharged. ahead of any licence application to the SNCO. The LPA have a legal duty under The Conservation of Habitats and Species Regulations 2017, to assess whether the application is likely to meet the Three Tests

and therefore the requirements for Natural England licensing, prior to determination of an application. The Licence application process may take two months before a licence is issued. Planning Permission and granting of a bat licence are separate legal functions. Therefore receiving planning permission from the Local Authority is no guarantee that the SNCO will issue a derogation licence.

## Reptiles

All reptile species in Great Britain receive some legal protection from legislation in the Wildlife and Countryside Act 1981 (as amended), and the two rarest species are afforded additional protection by European law - The Conservation of Habitats and Species Regulations 2017 (as amended). Both of which provide mechanisms to protect species, their habitats and sites occupied by the species.

The two European protected species, **Sand lizards** (*Lacerta agilis*) and **Smooth snakes** (*Coronella austriaca*), receive all elements of protection in Section 9 of the Wildlife and Countryside Act 1981 (as amended) and Conservation of Habitats and Species Regulations 2017 (as amended):

These pieces of legislation prohibits the following on any of the above species:

- Deliberately or intentionally killing and capturing (taking) or intentional injuring.
- Deliberately disturbing
- Deliberately taking or destroying eggs
- Damaging or destroying a breeding site or resting place or intentionally damaging a place used for shelter or protection.
- Intentionally obstructing access to a place used for shelter; and keeping, transporting, selling or exchanging; offering for sale or advertising.

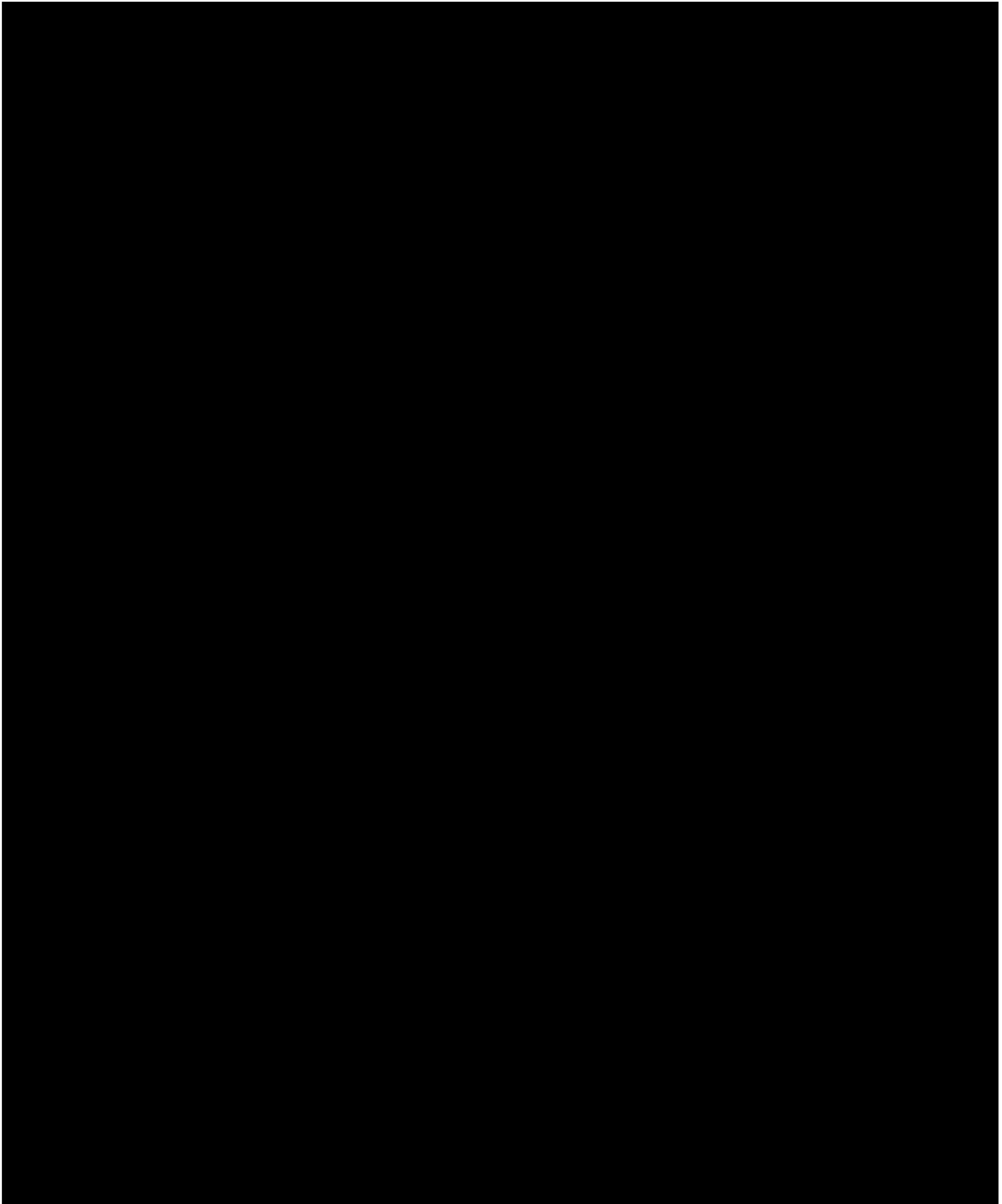
Under Regulations 43 (2) (The Conservation of Habitats and Species Regulations 2017 (as amended)) disturbance includes in particular any disturbance which is likely:

- To impair their ability
  - to survive, to breed or reproduce, or to rear or nurture their young; or
  - in the case of a hibernating or migratory species, to hibernate or migrate; or

To affect significantly the local distribution or abundance of the species to which they belong.

Species that receive protection against intentional killing, injuring and sale only from Schedule 9 of the Wildlife and Countryside Act 1981 (as amended): **Slow-worm** (*Anguis fragilis*), **Common lizard** (*Lacerta vivipara*), **Adder** (*Vipera berus*) and **Grass snake** (*Natrix natrix*).

Both the Wildlife and Countryside Act 1981 and The Conservation of Habitats and Species Regulations 2017 (as amended) apply to all life stages of the protected species: i.e. eggs and spawn, larvae, juveniles and adults are all protected.



## **Birds**

All wild birds are protected under the Wildlife and Countryside Act 1981 (as amended) and cannot be killed or taken, their nests and eggs taken, damaged or destroyed while their nest is in use or being built. It also prohibits or controls certain methods of killing or taking except

under licence. Other activities that are prohibited include possession and sale. Activities such as killing or taking birds (including relocating) which would otherwise be illegal can be carried out under licence where there is suitable justification and the issue cannot be resolved by alternative means.

Specially protected or Schedule 1 birds receive full protection under the Wildlife and Countryside Act 1981 (as amended). Part I birds are protected at all times, Part II during the close season only. In addition to the protection from killing or taking that all birds, their nests and eggs have under the Act, Schedule 1 birds and their young must not be disturbed at the nest.

## Great crested newt

Great crested newts are fully protected under UK and European legislation:

- Bern Convention 1979: Appendix III
- Wildlife & Countryside Act (as Amended) 1981: Schedule 5
- EC Habitats Directive 1992: Annex II and IV
- The Conservation of Habitats and Species Regulations 2017 (as amended)
- Countryside Rights of Way Act 2000 (CRoW 2000).

These pieces of legislation prohibit the following:

- Deliberately or intentionally killing and capturing (taking) or intentional injuring.
- Deliberately disturbing
- Deliberately taking or destroying eggs
- Damaging or destroying a breeding site or resting place or intentionally damaging a place used for shelter or protection.
- Intentionally obstructing access to a place used for shelter; and keeping, transporting, selling or exchanging; offering for sale or advertising.

Under Regulations 43 (2) (The Conservation of Habitats and Species Regulations 2017 (as amended)) disturbance includes in particular any disturbance which is likely:

- To impair their ability
  - to survive, to breed or reproduce, or to rear or nurture their young; or
  - in the case of a hibernating or migratory species, to hibernate or migrate; or

To affect significantly the local distribution or abundance of the species to which they belong.

Paragraphs 43(1) and 43(2) ensure that protection applies to all stages of their life cycle.

GCN mitigation and licensing can be complex. Natural England have a rapid risk assessment tool which can be used for guidance to assist with determining whether a licence needs to be applied for, or if the development can proceed with Reasonable non-licensed Avoidance Measures (RAM). If a licence is required, the Favourable Conservation Test needs to be met.

