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PROFESSIONAL ECOLOGICAL SOLUTIONS



ECOLOGY

TREE PROTECTION FENCING

SITE PREPARATION & CLEARANCE

HABITAT MANAGEMENT & ENHANCEMENT

Report	Ecological Appriasal (EA)
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Executive Summary

Ecosupport Ltd was instructed by Lonmer Construction to undertake an updated walkover survey and to provide an EclA of 'Mortimers Farm' (here after referred to as 'the site') to bring together all survey data and mitigation into one document. This was required in order to identify any potentially important ecological features that may be affected by the proposed development. As part of this assessment, the following surveys were undertaken:

- Data request submitted to the Hampshire Biodiversity Records Centre (DERC)
- Extended phase I habitat survey
- Preliminary Roost Assessment
- Bat Emergence surveys
- eDNA survey for Newts

The following important ecological features were identified on site following the conclusion of the above survey work and may be subject to adverse impacts in the absence of suitable mitigation / compensation:

- Common Pipistrelle maternity roost in Building D, with day roosts in building A, B, C and E
- Brown Long Eared maternity roost in building B with a satellite roost in building C (and historically D)
- Serotine, Soprano Pipistrelle and Natterers day roost in building B (with a historic Soprano Pipistrelle day roost in building D).
- Potential for breeding and nesting birds
- Suitable habitats for Foraging and Commuting Badgers
- Mature trees

In the absence of any mitigation measures, the proposed development is anticipated to result in **Moderate adverse impacts at the County level** although the following mitigation / compensation measures will be employed to minimise the scale of the impact:

- Implementation of a mitigation strategy under EPS license for all buildings with bat roosts
- Detailed lighting strategy with targeted areas of landscape planting to preserve and enhance commuting / foraging routes for bats and minimise impacts on roosts across the site
- Covering of excavations / use of escape ladders to protect terrestrial mammals
- Timed works / supervised works to avoid impacts to nesting birds

1.0 INTRODUCTION

1.1 Brief

Ecosupport Ltd was commissioned by Lonmer Construction to conduct updated surveys in support of an EcIA at Mortimers Farm, Fair Oak (here after referred to as 'the site'). The purpose of this survey was to assess any ecological impacts that may arise as a result of the proposed development. The objectives of the survey were as follows:

- Identify and classify any priority habitats;
- Assess the ecological value of the site;
- Identify any signs of protected species and potential features that may support them
- Make recommendations for further survey work as necessary;
- Make recommendations for any necessary ecological avoidance and mitigation where possible.

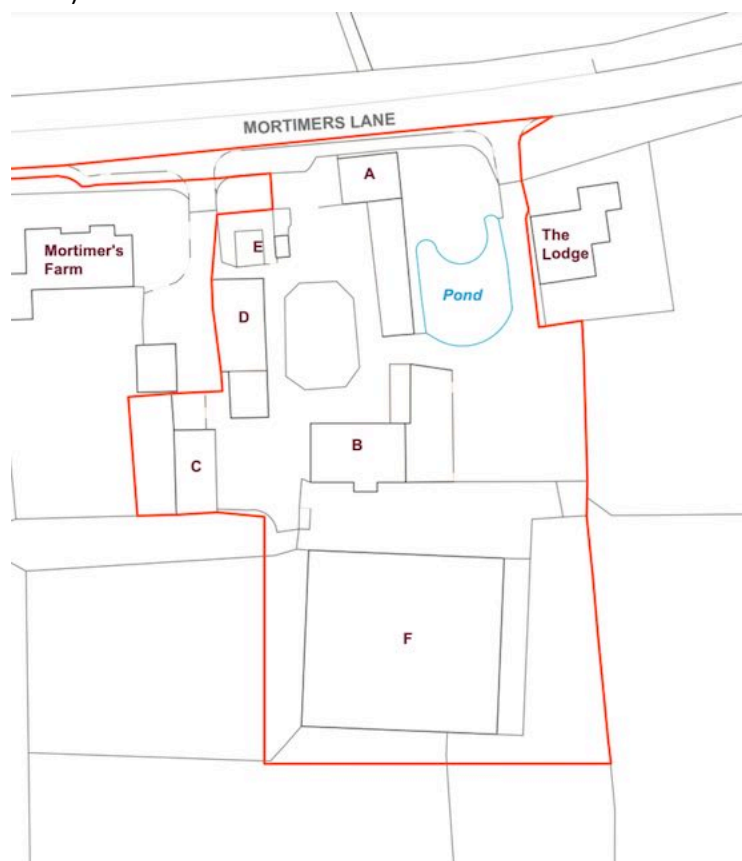
NB: If the works do not take place within 18 months of this report¹ then the findings of this survey will no longer be considered valid and certain aspects may require updating.

1.2 Site Description & Location

The site comprises a number of farm buildings associated with Mortimers Farm, Eastleigh, SO50 7EA (centred on OS grid reference SU 50843 18930). The site is bounded by agricultural fields to the east and south, a residential property to the west and Mortimers Lane to the north (**Fig 1**). The immediate surrounding environ is semi-rural, with the farm being situated within agricultural land close to the suburbs of Eastleigh.

¹ <https://cieem.net/wp-content/uploads/2019/04/Advice-Note.pdf>

Figure 1. Aerial image of the site with approximate redline boundary provided (Google Earth, 2022).



1.3 Proposed Development

The proposed development entails the conversion / renovations works to the existing buildings on site so that each building can be used for residential purposes as well as the creation of 5 new residential properties.

2.0 RELEVANT LEGISLATION AND POLICY

2.1 Legislation

2.1.1 *The Environment Act (2021)*

The Environment Act 2021 is the UK's new legislation for environmental protection in the UK, which includes protection of water quality, clean air, and biodiversity among other key protections. This Act provides the government power to set targets to reach long-term aims relating to the environment, which will be periodically reviewed and updated. This legislation also establishes a new environmental watchdog organisation, the Office for Environmental Protection (OEP), which will hold the government accountable on environmental issues.

Part 6 of The Environment Act relates to nature and biodiversity. This section makes provision for biodiversity net gain to be a condition of planning permission in England and a requirement for nationally significant infrastructure projects. Biodiversity net gain will require maintenance for a period of at least 30 years after the completion of enhancement works to be achieved.

The legislation also includes updates to existing environmental legislation, such as the NERC Act 2006, to strengthen biodiversity enhancement rather than just conservation and includes a requirement for local, or relevant, authorities to publish biodiversity reports. Further, The Environment Act places a requirement on responsible authorities to prepare local nature recovery strategies, which will outline nature conservation sites and priorities and opportunities for recovering or enhancing biodiversity within the local area. Within England, the legislation also provides Natural England with the power to publish 'species conservation strategies' and 'protected site strategies' to identify activities that may affect a species or site's status and outline their opinions on measures that would be appropriate to avoid, mitigate or compensate any adverse impacts.

2.1.2 *The Conservation of Habitats and Species Regulations 2017 (as amended)*

The Conservation of Habitats and Species Regulations 2017 transposes the EU Habitats Directive (Council Directive 92/43/EEC) into UK domestic law. It provides protection for sites and species deemed to be of conservation importance across Europe. It is an offence to deliberately capture, kill or injure species listed in Schedule 2 or to damage or destroy their breeding sites or shelter. It is also illegal to deliberately disturb these species in such a way that is likely to significantly impact on the local distribution or abundance or affect their ability to survive, breed and rear or nurture their young.

The Conservation of Habitats and Species Regulations 2019 (EU Exit) makes changes to the three existing instruments which transpose the Habitats and Wild Birds Directives so that they continue to work (are operable) upon the UK's exit from the European Union (EU). These include The Conservation of Habitats and Species Regulations 2017 and The Conservation of Offshore Marine Habitats and Species Regulations 2017. This instrument also amends section 27 of the Wildlife and Countryside Act 1981 to ensure existing protections continue. The intention is to ensure habitat and species protection and standards as set out under the

Nature Directives are implemented in the same way or an equivalent way when the UK exits the EU.

In order for activities that would be likely to result in a breach of species protection under the regulations to legally take place, a European Protected Species (EPS) licence must first be obtained from Natural England.

2.1.3 The Wildlife and Countryside Act (1981) (as amended)

This is the primary piece of legislation by which biodiversity is protected within the UK. Protected fauna and flora are listed under Schedules 1, 5 and 8 of the Act. They include all species of bats, making it an offence to intentionally or recklessly disturb any bat whilst it is occupying a roost or to intentionally or recklessly obstruct access to a bat roost. Similarly, this Act makes it an offence to kill or injure any species of British reptiles and also makes it an offence to intentionally kill, injure or take any wild bird or to take, damage or destroy their eggs and nests (whilst in use or being built).

The Wildlife & Countryside Act (1981) states that it is an offence to 'plant or otherwise cause to grow in the wild' any plant listed in Schedule 9 part II of the Act. This list over 30 plants including Japanese Knotweed (*Fallopia japonica*), Giant Hogweed (*Heracleum mantegazzianum*) and Parrots Feather (*Myriophyllum aquaticum*).

2.1.4 The Countryside and Rights of Way Act (2000)

This Act strengthens the Wildlife & Countryside Act by the addition of "reckless" offences in certain circumstances, such as where there is the likelihood of protected species being present. The Act places a duty on Government Ministers and Departments to conserve biological diversity and provides police with stronger powers relating to wildlife crimes.

2.1.5 Natural Environment and Rural Communities Act (2006)

The Natural Environment and Rural Communities (NERC) Act 2006 requires that public bodies have due regard to the conservation of biodiversity. This means that Planning authorities must consider biodiversity when planning or undertaking activities. Section 41 of the Act lists species found in England which were identified as requiring action under the UK Biodiversity Action Plan and which continue to be regarded as conservation priorities under the *UK Post – 2010 Biodiversity Framework*.

2.1.6 Protection of Badgers Act

The Protection of Badgers Act (1992) relates to the welfare of Badgers (*Meles meles*) as opposed to nature conservation considerations. The Act prevents:

- The wilful killing, injury, ill treatment or taking of Badgers and / or
- Interference with a Badger sett
- Damaging or destroying all or part of a sett
- Causing a dog to enter a set and
- Disturbing a Badger while it is occupying a sett

Provisions are included within the Act to allow for the lawful licensing of certain activities that would otherwise constitute an offence under the Act.

2.2 Policy

2.2.1 National

Section 15 of the National Planning Policy Framework (NPPF, 2021) 'Conserving and enhancing the natural environment' states that planning policies and decisions should contribute to and enhance the natural environment. They should do this by protecting and enhancing sites of biodiversity and minimising impacts on and providing net gains for biodiversity, including establishing coherent ecological networks.

The plan states to protect and enhance biodiversity plans should identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks. This includes the hierarchy of international, national and locally designated sites of importance for biodiversity, wildlife corridors and stepping stones that connect them. Plans should identify the protection and recovery of priority species and opportunities for securing measurable net gains for biodiversity.

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

- if significant harm to biodiversity resulting from a development cannot be avoided, adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
- development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact;
- 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
- development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.

2.2.2 Local

The Eastleigh Borough Local Plan 2016 – 2036 has a number of policies relating to ecology with the relevant ones listed below;

'General Approach

1. The Council will work with statutory and voluntary agencies and developers, and will determine planning applications, to:

a. protect, conserve and enhance all:

i. international, national and local nature conservation designations;

and

ii. networks of natural habitats and features, including the Local Ecological Network, Priority Biodiversity Areas and Priority Biodiversity Links, watercourses, wetland complexes, woodland trees, and trees and hedgerows important to biodiversity and local character; and facilitate their adaptation to climate change wherever possible;

b. assist in achieving national, county and local biodiversity targets as set out in Biodiversity Action Plans (BAPs);

c. seek a net gain of biodiversity on all development sites (including sites for redevelopment) through the protection, enhancement and connection of existing and provision of new habitats and features of nature conservation interest compatible with the native biodiversity characteristics of the Borough, having regard to local geodiversity and soils; and

d. contribute to major elements of the PfSH Green Infrastructure Strategy and other strategies for the provision and enhancement of multifunctional green infrastructure including green routes, ecological networks and biodiversity enhancements (see strategic policy S9).

International Designations

2. Development which is likely (either individually or in combination with other developments) to adversely affect the integrity of an international or European nature conservation site will not be permitted subject only to imperative reasons of overriding public interest and securing any necessary compensatory measures in the absence of alternative solutions. A 'project level' Habitat Regulations Assessment will be required where there are likely significant effects or uncertainty. Any mitigation measures required to ensure no adverse impact must be implemented at the appropriate time.

3. The Council will work with PfSH, Natural England, the Environment Agency and other wildlife organisations to develop and implement with developers a strategic approach to the protection and enhancement of international and European sites from the direct and indirect effects of development. Within Eastleigh Borough this will include:

a. implementing:

i. the Solent Recreation Mitigation Strategy (requiring contributions from residential developments within 5.6 kilometres of the Solent Special Protection Area to the Strategy); and

ii. the interim and any future New Forest Recreation Mitigation Strategy if required; or alternative agreed site specific measures to address recreational disturbance;

b. preserving the water quality and flows within the Itchen and Hamble, Southampton Water and Solent;

c. protecting the River Itchen SAC, in particular the maintenance and where appropriate restoration of habitats and qualifying species to favourable conservation status (as defined by article 1 of the Habitats Directive); and

d. seek contributions towards measures set out in the Southern Damselfly Conservation Strategy (or other strategy) specifically to deliver biodiversity net gain.

National and Local Designations

4. Development will not be permitted if it is likely (either individually or in combination with other developments) to have a direct or indirect adverse effect on a Site of Special Scientific Interest (SSSI), Site of Importance for Nature Conservation (SINC) or Local Nature Reserve (LNR) as shown on the policies map (or on a more recent plan provided by the Hampshire Biodiversity Information Centre) unless it can be demonstrated that:

a. there are no alternative solutions;

b. the adverse effects are unavoidable;

c. measures are taken to mitigate or, as a last resort, compensate for the adverse effects;

d. there is an overall biodiversity net gain; and

e. if there are any residual adverse effects which cannot be avoided, mitigated or compensated, the benefits of the development must clearly outweigh the adverse effects on the nature conservation value of the site and any broader impacts on national and local designations.

Priority habitats, protected and priority species and the local ecological network

5. Development will not be permitted if it is likely (either individually or in combination with other developments) to have a direct or indirect adverse effect on priority

habitats, protected or priority species, or on the local ecological network unless it

can be demonstrated that:

a. there are no alternative solutions;

b. the adverse effects are unavoidable;

c. measures are taken to mitigate or, as a last resort, compensate for the adverse effects;

d. there is an overall biodiversity net gain; and

e. if there are any residual adverse effects, the benefits of the development clearly outweigh the adverse effects on priority habitats, priority and protected species, and the local ecological network.

Irreplaceable habitats

6. Development will not be permitted if it results in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees), unless there are wholly exceptional reasons and a suitable compensation strategy exists.

Buffers

7. Buffers free from development will be provided to designated sites to avoid/mitigate impacts, including recreational impact and impacts on edge habitats, and to maintain dark skies.

Surveys

8. Development will not be permitted unless it can be demonstrated that:

- a. there have been thorough habitat and species surveys;*
- b. the great crested newt strategic survey and strategy have been considered in all developments within 500m of a great crested newt pond; and*
- c. the strategic bat trapping survey has been considered in all developments within the locality of a woodland or connected habitat networks.'*

2.3 Biodiversity Action Plans & UK Post-2010 Biodiversity Framework

The UK Post-2010 Biodiversity Framework (JNCC & DEFRA, 2010) supersedes the UK Biodiversity Action Plan 1992-2012 (UKBAP), setting out goals relating to nature conservation at a UK scale, for example the reduction and reversal in the decline of threatened species and improving the status of biodiversity. The specific habitats and species contained within the UKBAP continue to be regarded as conservation priorities under the UK Post-2010 Biodiversity Framework, and are required to be a material consideration in the planning process under the 2021 NPPF.

3.0 METHODOLOGY

3.1 Desk Study

3.1.1 Data Request

A data request was submitted to Hampshire Biodiversity Information Centre (HBIC) to ascertain any records held of nature conservation designations and protected species within 1 km of the boundary of the site.

The data search covered:

- Statutory designated sites
- Non-statutory designations such as SINCs
- Records of protected and notable species.
- Records for waders and Brent Geese

3.1.2 Waterbodies

Any ponds located within 500m of the proposed development were searched for using Ordnance Survey maps and available aerial images.

3.2 Field Survey

3.2.1 Habitats

The field survey work which forms the basis of the findings of this report was carried out by Adam Jessop in 2018, updated in 2020, May 2021 and then again on 14th November 2022 by Aaron Domblides, a Project Ecologist with Ecosupport (4 years post BSc graduation experience).

The Phase 1 Habitat survey (JNCC, 2010) methodology was adopted which is a method of classifying and mapping wildlife habitats in Great Britain. It was originally intended to provide “...relatively rapidly, a record of semi-natural vegetation and wildlife habitat over large areas of the countryside”. The standard Phase 1 Habitat survey methodology has been ‘extended’ in this report to include the following:

- Floral species lists for each identified habitat;
- Descriptions of habitat structure, the evidence of management and a broad assessment of habitat condition;
- Mapping of additional habitat types (e.g. hardstanding);
- Identification of Priority Habitats under Section 41 of the NERC Act;
- Evidence of, or potential for, the presence of certain species/groups

3.2.2 Badger

The site was thoroughly searched for evidence of use by Badgers (*Meles meles*), with the specific aim of identifying the presence and location of any setts. In accordance with the *Badgers and Development: A Guide to Best Practice and Licensing* (Natural England, 2011) guidance, the survey extended for a 30m from the site’s boundary (observed where possible i.e. does not conflict with private dwellings). Evidence of Badgers could include latrines, dung pits, feeding remains and foraging evidence, trails and setts.

3.2.3 Bat PRA

The buildings located within the development site were assessed for any potential to support roosting and resting bats by externally searching for Potential Roost Features (PRFs) (which may include gaps under roof tiles, between beams, between hanging tiles or gaps / holes in soffits) and any evidence of bat occupation within the buildings. The methods outlined within *Bat Surveys for Professional Ecologists: Good Practice Guidelines 3rd Edition* (Collins (ed) 2016) were followed and the assessment was conducted by Aaron Domblides of Ecosupport in May 2021 (acting under the license of Adam Jessop NE class level 2 bat licence number 2015-13366-CLS-CLS) and updated in November 2022.

3.2.4 Bat emergence surveys

The bat surveys were led by Adam Jessop (2015-13366-CLS-CLS), Aaron Domblides (operating under class level 2 bat licence of Adam Jessop) and Sophie Hughes (6 years bat survey experience) with assistance from Lewis Lakudzala, Gregory Barratt, Russell Brewer, Leah Murphy, Maddie Errington, Gareth Ainscough, Leesha Hicks, Lucie Hartmann, Matt Baldwin, Sam Kelly, Sam Cook, Amber Lincoln, Lyndsey Mcbean, Oliver Skipwith, Nick Saville (with the approximate locations of the surveyors indicated in **Fig 2**). Both heterodyne (Bat Box Duet, Peterson D230 and Elkon Batscanner) and time expansion (Elekon Batlogger) detectors were used for identifying species calls / analysis of calls via sonogram (where required). The dusk emergence survey began approximately 15 minutes prior to sunset and continued until approximately an hour and 30 minutes after. Survey sheets were used to record the following information:

- Time of call registration
- Species (if possible to identify using heterodyne detector)
- Location / activity
- Direction of flight (if seen)

Figure 2. Approximate locations of the surveyors (Google Maps 2021)



3.3 Assessment Methodology

3.3.1 Introduction

The methodology for the assessment of the likely ecological effects of the proposed development is based on CIEEM's *Guidelines for Ecological Assessment in the UK* (CIEEM 2018). Although this assessment does not constitute a formal Ecological/ Environmental Impact Assessment, the CIEEM guidelines provide a useful framework for assessing ecological impacts at any level.

3.3.2 Valuation

Features of ecological interest are valued on a geographic scale. Value is assigned on the basis of legal protection, national and local biodiversity policy and cultural and/or social significance.

3.4 Limitations

3.4.1 Habitats

There were not considered to be any significant limitations on the results of the habitat survey with all areas of the site accessible and the survey conducted at a suitable time of year for vascular flowering plants.

3.4.2 Survey Work

There were not considered to be any significant limitations to the survey, with it undertaken during the accepted survey season (Collins (ed) 2016), during suitable weather conditions and with all areas of the building covered. One of the updated surveys was undertaken during light rain however this was considered to provide important information regarding the activity of bats during less favourable weather with bat still emerging as expected.

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4.0 ECOLOGICAL BASELINE

4.1 Designated Sites

4.1.1 Statutory and Non-Statutory Sites

Fig 3 below displays the map provided by HBIC with the non-statutory designated sites located within 1 km of the site. No Statutory designated sites are located within 1km of the site. The non-statutory sites were identified with a summary of these sites presented in **Table 1**.

Figure 3. Non - statutory designated sites located within 1km of the site as provided by HBIC (no statutory site found).

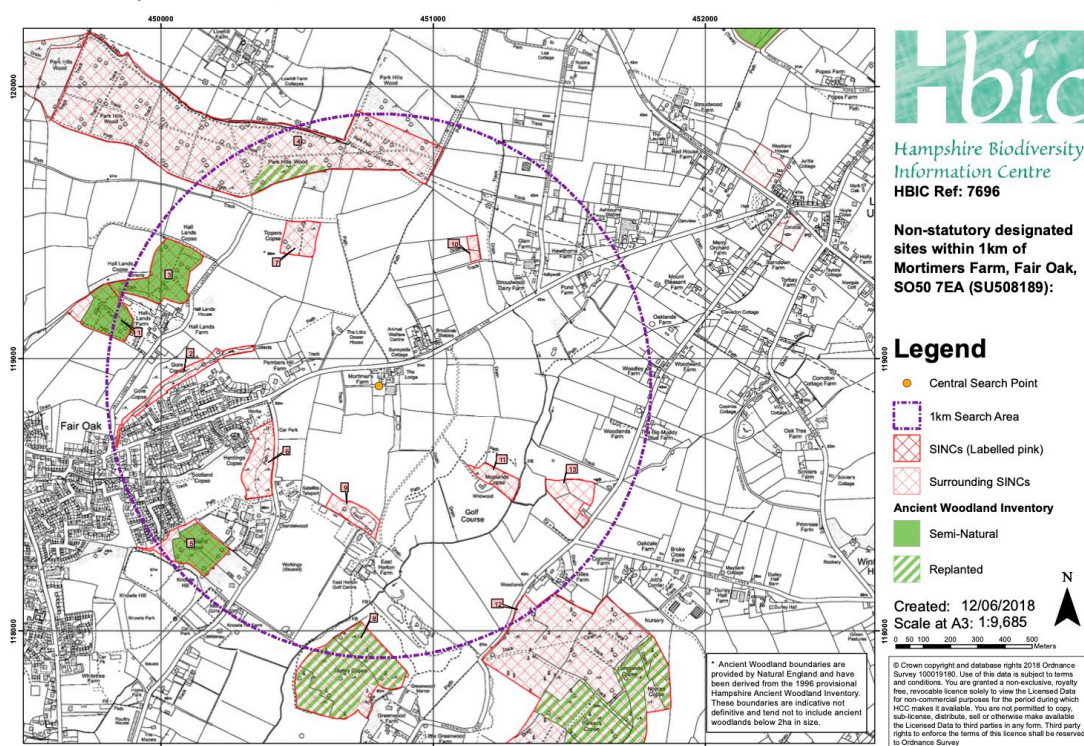


Table 1. Non-statutory designated sites. Assessed potential impacts take PROW into account where the information is available.

SINC Ref	SINC Name	Distance / direction	Criteria for designation	Potential Impacts
EA0108	Hall Landa Farm Wood	1.06 km NW	1A	None anticipated
EA0110	Gore Copse	0.84 km W	1A	Minor increase in visitor numbers
EA0111	Hall Lands Copse	0.99 km NW	1A	Minor increase in visitor numbers

WC0116	Park Hills Wood	1.14 km NW	1A	Minor increase in visitor numbers
EA0114	Knowlehill Copse	0.57km SW	1A	Minor increase in visitor numbers
EA0116	Knowle Lane Open Space	0.59 km SW	7A	Minor increase in visitor numbers
WC0133	Durley Copse	1.13 km NW	1B	Minor increase in visitor numbers
EA0138	Land at Knowle Lane, Fair Oak	0.52 SW	2B	Minor increase in visitor numbers
EA0126	Stroud Wood, Fair Oak and Horton Heath	0.57 km NE	1A/B	Minor increase in visitor numbers
EA0127	Moplands Copse	0.54 km NE	1A	Minor increase in visitor numbers
WC0143	Parker's Copse/Fir Plantation/Greenwood	1.58 km SE	1B	Minor increase in visitor numbers
WC0144	Barnhurst Meadow	0.78 km SE	3A, 3B	None anticipated
EA0119	Tipper's Copse	0.58 km NW	1A	Minor increase in visitor numbers

4.2 Vegetation Survey Results

The vegetation within the site has been described below using the broad Phase I habitat classification terminology as described with JNCC (2010). The below species noted should not be considered an exhaustive list and instead refer to dominant, characteristic and other noteworthy species associated with each community within the survey area. The habitat types on site comprise:

- Modified grassland
- Scattered trees
- Standing water
- Hardstanding
- Bare Ground
- Buildings

4.2.1 Amenity grassland

Surrounding the large agricultural barn in the southern portion of the site and within the central courtyard of the site are areas of modified grassland which are semi-regularly managed and dominated by grasses (**Fig 4**). Species diversity was low with less than 9 species recorded per square meter. Species noted included Perennial Rye Grass (*Lolium perenne*), Cock's-Foot (*Dactylis glomerata*), Annual Meadow Grass (*Poa annua*), Broad Leaved Plantain (*Plantago major*), Yarrow (*Achillea millefolium*), Common Daisy (*Bellis perennis*), Creeping Buttercup (*Ranunculus repens*), Bristly Oxtongue (*Helminthotheca echinoides*), Dandelion (*Taraxacum agg.*), White Dead Nettle (*Lamium album*), Creeping Thistle (*Cirsium arvense*), Common Nettle (*Urtica dioica*), White Clover (*Trifolium repens*), Red Clover (*Trifolium pratense*), Spurge (*Euphorbia spp*), Broad Leaved Dock (*Rumex obtusifolius*), Meadow Cranesbill (*Geranium pratense*), Dandelion (*Taraxacum spp*), Red Dead Nettle (*Lamium purpureum*), Sheppard's Purse (*Capsella bursa-pastoris*), Dove's Foot Cranesbill (*Geranium molle*), Spear Thistle (*Cirsium vulgare*), Germander Speedwell (*Veronica chamaedrys*), Mouse Ear Chickweed (*Cerastium fontanum*), Common Fumitory (*Fumaria officinalis*), Ragwort (*Senecio jacobaea*) and Enchanter's Nightshade (*Circaea lutetiana*).

Figure 4. Modified grassland around the perimeter of the agricultural barn



4.2.2 Scattered trees

Scattered Oak (*Quercus robur*) (**Fig 5**) are present across the site however they are to be retained as part of the development.

Figure 5. Mature Oak trees along the site boundary



4.2.3 Standing

water

A medium sized artificial pond exists on the north east of the site (**Fig 6**). The pond is reinforced on all sides by concrete with additional vegetation on the north and west sides. No fish could be seen within the pond but some Coots (*Fulica atra*) were seen using it and overhanging scattered trees shade parts of the pond. The only aquatic species noted being a type of pondweed (suspected to be Canadian Waterweed – *Elodia canadensis*) and Brooklime (*Veronica beccabunga*). The coverage of vegetation has decreased since the initial suite of survey work, likely as a result of pond management.

Figure 6. Pond at the north-east side of the site.



4.2.4 Hard standing

The majority of the site is made up of hard standing habitat in the form of a concrete yard (**fig 7**).

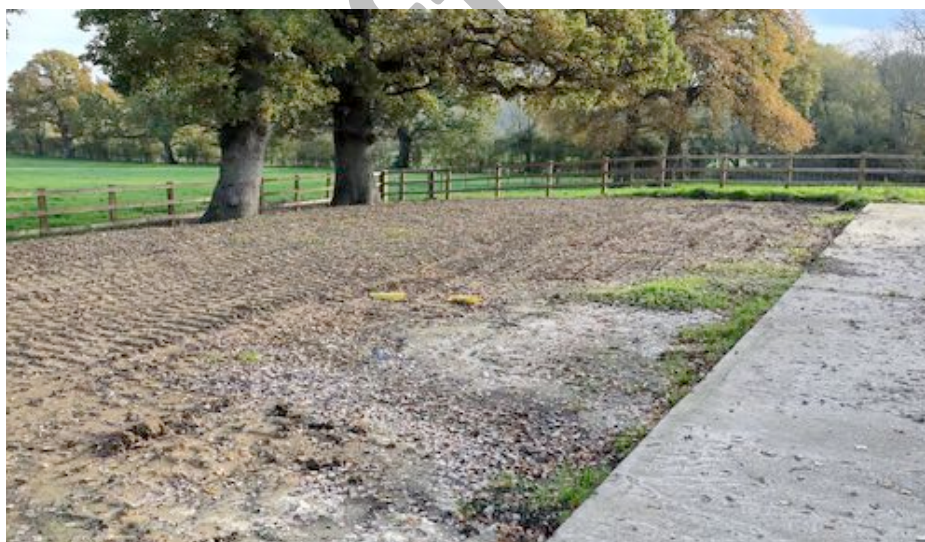
Figure 7. Hard standing area



4.2.5 Bare ground

A large area of bare ground is present along the eastern boundary within the southern portion of the site due to farm activities (**Fig 8**).

Figure 8. Area of bare ground along the eastern boundary within the southern portion of the site



4.2.6 Buildings

The final habitat type on site is buildings with one dwelling and five farm outbuildings (described in greater detail in section **4.3** below).

4.3 Bat Survey Results

4.3.1 Pre existing data

HBIC provided records for up to 66 records of bat within 1 km of the development site comprising an unidentified bat species (*Chiroptera sp.*), 2 unidentified *Myotis spp*, 3 unidentified Pipistrelle species (*Pipistrellus spp.*), 33 Common Pipistrelles (*Pipistrellus pipistrellus*), 3 Soprano Pipistrelle (*Pipistrellus pygmaeus*), a Long-Eared Bat species (*Plecotus sp.*) and 4 Noctule (*Nyctalus noctula*). The closest records are for *Myotis spp*, Pipistrelle, Soprano Pipistrelle and Noctule located 0.44 km west. It is not clear whether any of these are roost records.

4.3.2 Tree PRA

An exhaustive assessment of trees was not completed during the Phase I, however should any trees be directly impacted upon by the proposals, a full assessment should be made to determine their roost potential (with appropriate survey recommendations made as required).

4.3.3 Buildings PRA

The findings of the initial bat roost assessment undertaken of the built structures located on site is provided in **Table 2** below.

Table 2. Bat roost assessment of buildings on site and notes on any evidence of occupation observed. Building numbers are given as they relate to **Fig 3**.

Building No	Fig	Description of Construction	PRFs / Evidence of Occupation	Assessed Roost Potential
Building B	Figure 9. Barn to the south of the amenity grassland. 	Large L shaped barn of wooden overlapping weather boarding construction with a pitched clay tiled roof and wooden frame internally. The roof tiles were largely without any sarking underlining and gaps for direct access into building present in multiple locations (doors are usually left open as well). Building over 150 + years old.	Multiple broken, slipped and lifted tiles, gaps in mortise and tenon joints along with PRFs between wooden boarding used on external walls. Found evidence of bats in the form of <i>Brown Long Eared Droppings</i> , <i>Natterers Droppings</i> and Common Pipistrelle droppings (200+ in total), urine staining and feeding remains (moth wings).	High / Known Roost
Building A	Figure 10. Barn to the north-east of amenity grassland. 	Second large L shaped barn of more modern construction with red brick walls and a pitched clay tiled roof. Part of the building is used for machinery storage and part as a car port (car port section open fronted as seen in Fig 7).	Multiple broken, slipped and lifted tiles. Found evidence of bats in the form of <i>Plecotus</i> spp droppings Bat droppings and Pipistrelle droppings (30+ in total), and urine staining.	High / Known Roost

Building D	Figure 11. Outbuilding to the far west of the site. 	Former stable block that has been partially converted into accommodation with dormer added on first floor. Building of red brick wall construction (2 brick buttress supports on eastern elevation) with pegged clay tiled roof and clay tile hanging on dormer.	Multiple broken, slipped and lifted tiles on both roof and tile hanging dormer on eastern roof pitch (seen in Fig 8). Evidence of bats found between tile hanging on upper floor with suspected <i>Pipistrellus</i> spp droppings adhered between tiles	High / Known Roost
Building C	Figure 12. Cattle barn to the west of the amenity grassland. 	Open fronted cattle barn (still used for that purpose) of wooden overlapping weather boarding construction with a pegged clay tile roof (no sarking underlining present).	Multiple broken, slipped and lifted tiles, gaps in mortise and tenon joints along with PRFs between wooden boarding used on external walls (seen in Fig 9)	High / Known Roost

Building E	Figure 13. Small storage barn in north western corner of site. 	Small wooden storage barn / shed formally used as a grain store (raised on saddle stones). Building of wooden slatted construction with a pegged clay tile roof.	PRFs noted between roof tiles and a low number of suitably sized gaps between external wooden boards. Internally, building was heavily cobwebbed throughout.	High / Known Roost
Building F	Figure 14. Large agricultural barn within the southern portion of the site 	Large metal framed agricultural barn with single skinned corrugated metal and asbestos roof with single skinned wooden walls	Due to the nature of the construction of the building, it does not provide the thermal stability required by bats. Additionally there were no noted PRF's within the building and no evidence of bat occupation or feeding was identified.	Negligible

4.3.4 Emergence survey

The results of the bat emergence survey along with other relevant information of survey conditions are provided in **Tables 1** and **2** below.

Table 1. Relevant information on survey conditions recorded.

Date	Start Temp (°C)	End Temp (°C)	Cloud Cover (%)	Wind (beaufort scale)	Sunset / sunrise Time	Start Time	Finish Time	Additional Information
13/05/2021	11	9	50	0	20:45	20:30	22:15	Dry
17/06/2021	18	17	100	1	21:22	21:07	22:52	Light rain
02/07/2021	14	14	90	0	04:56	03:26	05:11	Dry
16/07/2021	12	12	0	0	05:10	03:40	05:25	Dry
21/07/2021	23	19	10	1	21:07	20:52	22:37	Dry

Table 2. Results from dusk emergence surveys at Mortimers Farm. HNS = Heard Not Seen.

Survey Date / buildings covered	Recorded Bat Roost(s)	Bat Activity on Site		
13/05/2021 All Buildings	Building A 1 Common Pipistrelle	Species	First Pass	Last Pass
		Common Pipistrelle	20:38	22:01
		Soprano Pipistrelle	20:56	21:37
	Building B 2 Common Pipistrelle, 1 Soprano Pipistrelle, 8 Brown Long Eared Bats	Brown Long Eared Bat	21:11	22:15
		Serotine	21:26	21:50
		<i>Myotis spp</i>	21:32	21:32
		Noctule	21:39	22:04
		<u>Summary:</u>		
	Building C 3 Brown Long Eared Bats	Activity during this survey was considered to be moderate - high with a number of bats emerging from the buildings on site and multiple bats foraging around the pond on site. Species diversity was high with 6 species recorded.		
	Building D 24 Common Pipistrelle	The first species recorded was a Common Pipistrelle (<i>Pipistrellus pipistrellus</i>) which was first recorded at 20:38 emerging from the hanging tiles on the eastern aspect of		
	Building E			

	No emergences	building D (Fig 15 and 16). Following this a further 23 Common Pipistrelle were recorded emerging from the hanging tiles of Building D between 20:39 and 21:18. Additionally 1 Common Pipistrelle was recorded emerging from the roof tiles on the western aspect of Building A (Fig 15 and 17) at 21:48 and 2 Common Pipistrelle were recorded emerging from the wooden cladding on the eastern aspect of building B at 21:51 and 21:54 (Fig 15 and 18). Individual / low numbers of Common Pipistrelle were also recorded intermittently foraging around the site (particularly around the pond) until 22:01. The second species recorded was Soprano Pipistrelle (<i>Pipistrellus pygmaeus</i>) which was first recorded at 20:56 emerging from the wooden cladding on the eastern aspect of building B (Fig 15 and 18). Between 21:06 and 21:37 a total of 14 Soprano Pipistrelles were recorded commuting / briefly foraging through the site. The third species recorded was a Brown Long Eared Bat which was recorded briefly foraging within the barn at 21:11 before emerging from an opening on the eastern aspect of the barn (Fig 18 and 18). Following this a further 7 Brown Long Eared Bats were recorded emerging from building B between 21:13 and 21:24, 3 of which emerged from the same opening on the eastern aspect (Fig 15 and 18), 2 emerged from the open barn door on the northern aspect (Fig 15 and 19), 1 emerged from the ridge tile on the northern aspect (Fig 15 and 19) and one emerged from a gap between the wooden cladding on the western aspect (Fig 15 and 20). Additionally 3 Brown Long Eared Bats emerged from building C, one of which emerged from the wooden cladding on the north eastern corner of building C and the other two out of the open sided eastern aspect of building C (Fig 15 and 21). By the end of the survey 5 of the Brown Long Eared Bats had returned to building B and were seen grouped together at the ridge beam within the western portion of the barn. The Fourth species recorded during this survey was a Serotine (<i>Eptesicus serotinus</i>) which was first recorded as HNS to the east of building B at 21:26. The only other Serotine recorded
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		during this survey was recorded commuting in a northerly direction to the east of the site at 21:50. The fifth species recorded during this survey was a single <i>Myotis</i> spp (likely Daubentons) which was seen briefly foraging over the pond at 21:32 before commuting away to the east. The final species recorded during this survey was a Noctule, which was first recorded as HNS at 21:39. The only other Noctule recorded was also HNS at 22:04.															
17/06/2021	Building B 12 Brown Long Eared Bats and 1 <i>Myotis</i> spp (likely Natterers) Building C No emergences	<table> <tr> <th>Species</th><th>First Pass</th><th>Last Pass</th></tr> <tr> <td>Common Pipistrelle</td><td>21:16</td><td>22:48</td></tr> <tr> <td>Soprano Pipistrelle</td><td>21:43</td><td>22:05</td></tr> <tr> <td>Brown Long Eared Bat</td><td>21:47</td><td>22:52</td></tr> <tr> <td><i>Myotis</i> spp.</td><td>22:06</td><td>22:18</td></tr> </table> <u>Summary:</u> Activity during this survey was considered to be moderate - high due to a number of bats emerging from the building on site, with bats also recorded foraging within the internals of the buildings on site. Species diversity was moderate with a total of 4 species recorded. The first species recorded was Common Pipistrelle which was first recorded flying away from building D at 21:16, before flying into building B for approximately 15 seconds before then commuting away in a westerly direction. Between 21:17 and 21:51 a total of 34 Common Pipistrelle were recorded flying away from building D before then briefly flying around the internals of Building B or C for approximately 5 – 20 seconds each. These bats then flew off in easterly or northerly directions. Between 21:43 and 22:18, individual Common Pipistrelle were then recorded intermittently foraging around the pond and within building B and C. Between 22:25 and 22:48 Common Pipistrelle were then observed swarming around building D and returning to roost. No Common Pipistrelle were recorded emerging from Building B or C during this survey.	Species	First Pass	Last Pass	Common Pipistrelle	21:16	22:48	Soprano Pipistrelle	21:43	22:05	Brown Long Eared Bat	21:47	22:52	<i>Myotis</i> spp.	22:06	22:18
Species	First Pass	Last Pass															
Common Pipistrelle	21:16	22:48															
Soprano Pipistrelle	21:43	22:05															
Brown Long Eared Bat	21:47	22:52															
<i>Myotis</i> spp.	22:06	22:18															

		The next species recorded was Soprano Pipistrelle which was first recorded commuting in a southerly direction to the east of building B at 21:43. The only other Soprano Pipistrelle was recorded foraging briefly to the north of building B at 22:05. The third species recorded during this survey was a Brown Long Eared Bat which was first recorded foraging within the internals of building B at 21:47. Following this, no Brown Long Eared Bats were recorded emerging from either building B or C or entering either building, however by the end of the survey a total of 12 Brown Long Eared Bats were observed within the internals of building B, 5 of which were recorded foraging within the internals and the remaining 7 were all grouped together at the ridge beam within the western portion of building B. This indicates that at least 12 Brown Long Eared Bats were roosting within building B at the time of this survey – however the day roost location is not the same as the night roost location observed at the end of this survey and at the end of the first survey. The fourth and final species recorded during this survey was a myotis spp (considered likely Natterers based on previous eDNA results (Ecosupport 2019) and the analysis of the bat calls recorded). This was first recorded foraging within the internals of building B at 22:06. It was then recorded foraging within the internals of building B until 22:18. This bat was not seen emerging from the building and is therefore understood to have returned to roost (likely between the sarking boarding and the roof of the building).		
02/07/2021 Building A, D and E	Building A No re-entries	Species	First Pass	Last Pass
		Common Pipistrelle	03:32	05:04
	Building D 44 Common Pipistrelle re- entries	Brown Long Eared Bat	03:36	04:12
		Myotis spp (Likely Daubentons)	03:41	04:00
		Serotine	03:54	04:17
		Noctule	04:26	04:41
	Building E 1 Common Pipistrelle re- entry	<u>Summary:</u> Activity during this survey was considered to be Moderate - High due to a number of bats swarming around the roost		

		locations from the buildings on site. Species diversity was moderate with 5 species recorded. The first species recorded was Common Pipistrelle which was first recorded briefly foraging to the south of building D around the oak tree. Between 03:37 and 04:28 individual Common Pipistrelle were recorded intermittently foraging and commuting through the site (particularly around the pond). At 04:16 the first Common Pipistrelle was observed swarming to the east of building D (flying between the mature oak tree and the building). Between 04:21 and 05:04 a total of 44 Common Pipistrelles were recorded re-entering to roost beneath the hanging tiles on the eastern aspect of building D. They were noted to swarm in groups of up to 8 before re-entering and many of these bats were using the mature Oak tree to the south of building D as cover. Additionally, a single Common Pipistrelle was observed re-entering to roost beneath the ridge tile of Building E at 04:43 (Fig 15 and 22). The second species recorded was a Brown Long Eared Bat, which was first recorded at 03:36, commuting to the east of building A in a northerly direction. Following this Brown Long Eared Bats were recorded occasionally foraging and commuting through the site between 03:47 and 04:01. Brown Long Eared bats were then recorded flying around building B and C until 04:11. No Brown Long Eared Bats were recorded re-entering Building A, D or E during this survey. The third species recorded during this survey was Myotis spp (likely Daubentons) which was first recorded foraging over the pond at 03:41. Following this the same bat was recording intermittently foraging over the pond until 04:00 before commuting away to the north of the site. The fourth species recorded was a Serotine which was first recorded briefly foraging around the trees adjacent to the pond / building A at 03:54. A serotine was then recorded foraging around this area between 04:13 and 04:17 before commuting away to the south. The final species recorded was Noctule which was first recorded as HNS commuting over the site at 04.26. The only
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		other Noctule recorded during this survey was recorded commuting high over the site in a northerly direction at 04:41.		
16/07/2021	Building B 18 Brown Long Eared Bats, 2 Common Pipistrelle, 2 Serotine Building C 4 Brown Long Eared Bats	Species	First Pass	Last Pass
		Brown Long Eared Bat	03:40	04:26
		Common Pipistrelle	03:41	04:50
		Serotine	04:35	04:41
		<u>Summary:</u> Activity during this survey was considered to be Moderate - High due to a number of bats swarming around the roost locations on the buildings on site. Species diversity was however low with 3 species recorded. The first species recorded during this survey was a Brown Long Eared Bat which was first recorded foraging around within the internals of Building B before flying out and commuting away to the south at 03:40. Following this multiple Brown Long Eared Bats were recorded foraging around building B, C and D on site, as well as within the internals of Buildings B and C. A total of 18 Brown Long Eared bats were recorded entering building B through the roosts entry / exit points in Fig 18 - 20, none of which were observed to re-emerge from this building. It is understood that these bats then returned to roost between the sarking boarding and the roof near the central ridge beam within the eastern portion of building B between 03:55 and 04:26. Additionally a total of 4 Brown Long Eared Bats were observed entering Building C without re-emerging between 04:12 and 04:24. The bats were observed flying around the internals of the southern area of building C before returning to roost. It is therefore understood that these bats were roosting between the sarking boarding and the roof. The second species recorded was Common Pipistrelle which was first recorded flying around the western aspect of building D at 04:41. Common Pipistrelle were the recorded constantly flying around building D and the nearby oak tree until the last re-entry at 04:50. Common Pipistrelle were also recorded occasionally foraging around the externals of building B		

		between 04:14 and 04:37. Two Common Pipistrelle were then recorded re-entering to roost beneath the wooden cladding of the eastern aspect of Building B at 04:41 and 04:45 (Fig 15 and 18). The third and final species recorded was a Serotine which was first recorded re-entering to roost beneath the wooden cladding on the eastern aspect of building B at 04:35. A second Serotine then returned to roost within the same area at 04:41.																		
21/07/2021 Building A, D and E	Building A No Emergences Building D 42 Common Pipistrelle Emergences Building E No Emergences	<table><tr><th>Species</th><th>First Pass</th><th>Last Pass</th></tr><tr><td>Common Pipistrelle</td><td>21:06</td><td>22:31</td></tr><tr><td>Soprano Pipistrelle</td><td>21:19</td><td>22:16</td></tr><tr><td>Brown Long Eared Bat</td><td>21:42</td><td>22:26</td></tr><tr><td>Serotine</td><td>21:43</td><td>22:17</td></tr><tr><td><i>Myotis spp</i> (likely Daubentons)</td><td>22:01</td><td>04:50</td></tr></table>	Species	First Pass	Last Pass	Common Pipistrelle	21:06	22:31	Soprano Pipistrelle	21:19	22:16	Brown Long Eared Bat	21:42	22:26	Serotine	21:43	22:17	<i>Myotis spp</i> (likely Daubentons)	22:01	04:50
		Species	First Pass	Last Pass																
		Common Pipistrelle	21:06	22:31																
		Soprano Pipistrelle	21:19	22:16																
		Brown Long Eared Bat	21:42	22:26																
		Serotine	21:43	22:17																
		<i>Myotis spp</i> (likely Daubentons)	22:01	04:50																
		<u>Summary:</u> Activity during this survey was considered to be moderate - high due to a number of bats emerging from the building on site, with bats also recorded foraging and commuting across the site (particularly around the pond). Species diversity was moderate with a total of 5 species recorded. The first species recorded was Common Pipistrelle which was first recorded emerging from the hanging tiles of building D (Fig 15 and 16) at 21:06, which then commuted away to the south of the site. Following this a further 41 Common Pipistrelle were recorded emerging from the hanging tiles on the eastern aspect of building D between 21:13 and 21:47. Following this Common Pipistrelle were recording occasionally foraging / commuting through the site, until the last recording at 22:31. No Common Pipistrelles were recorded emerging from Building A or E during this survey. The next species recorded was Soprano Pipistrelle which was first recorded commuting through the northern portion of the site at 21:19. A total of 4 other Soprano Pipistrelles were then																		

		recorded commuting / briefly foraging through the site between 21:39 and 22:16. The third species recorded during this survey was a Brown Long Eared Bat which was first recorded at 21:42 commuting in a northerly direction to the east of Building A adjacent to the pond. Following this low numbers of Brown Long Eared Bat were then recorded foraging and commuting through the site until the last recording at 22:26. The fourth species recorded was a Serotine which was first recorded as HNS to the west of building D at 21:43. Following this 6 other Serotine passes were recorded between 21:45 and 22:15, one of which was recorded foraging over the pond area for 2 minutes. The final species recorded was an individual Myotis spp (considered likely to be Daubentons) which was recorded foraging constantly over the pond between 22:01 and 22:30.
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Figure 15. Approximate locations of the Common Pipistrelle roost locations (red dots), Likely Plecotus roost locations (Orange dot), Plecotus night roost location (blue dot), Plecotus roost access points (orange arrows), Serotine (Pink Dot) during the 2021 surveys.

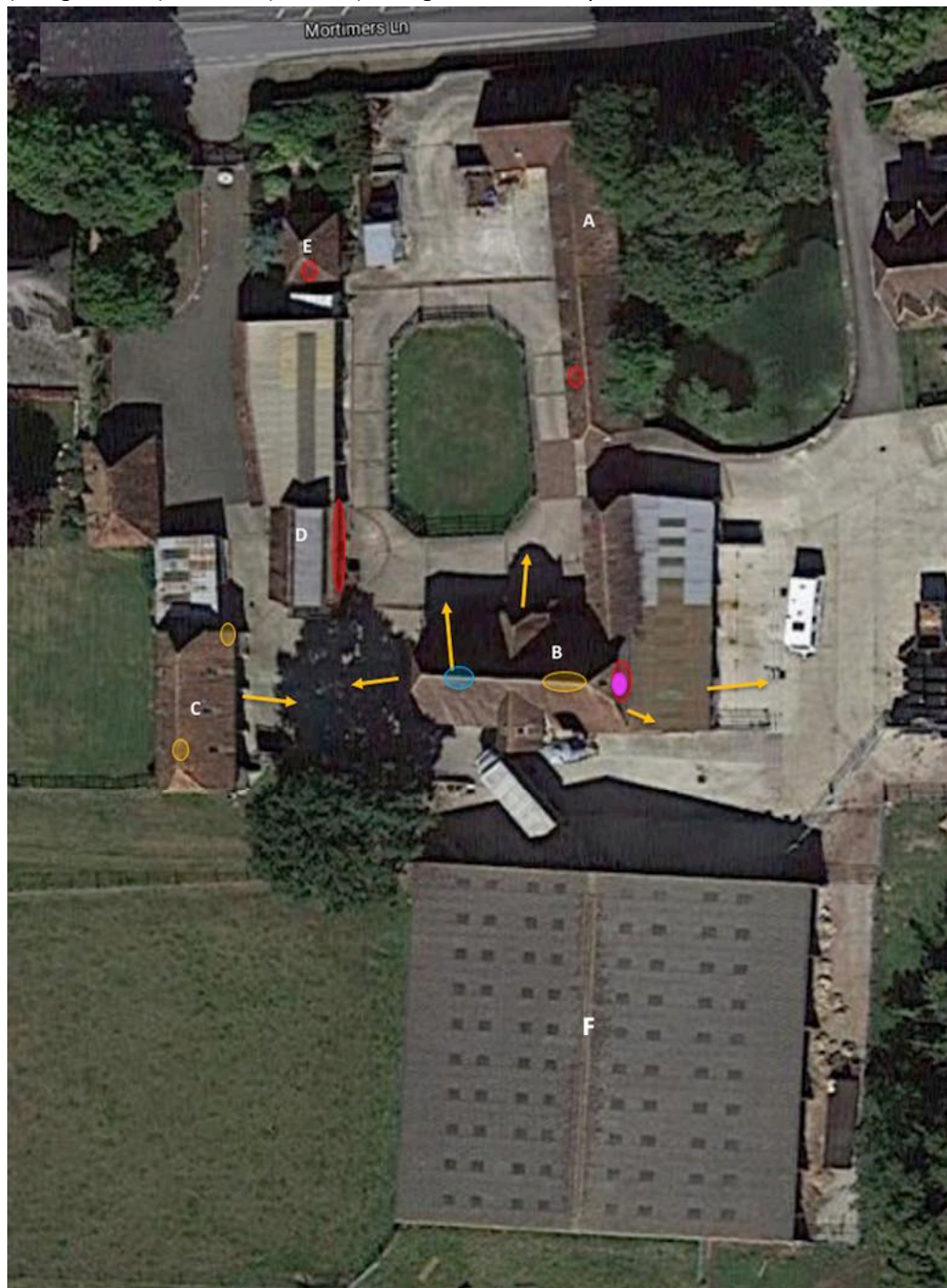


Figure 16. Approximate locations of the Common Pipistrelle roosts on building D (Red circle) during all surveys.



Figure 17. Approximate locations of the Common Pipistrelle roosts on building A (Red circle) during the first survey.



Figure 18. Approximate locations of the Common Pipistrelle roosts (red Circle), Serotine roost (pink circle) and Brown Long Eared Bat roost access location (orange arrow) on the eastern elevation of building B.



Figure 19. Brown Long Eared Bat roost entrance / exit points (orange arrows)



Figure 20. Brown Long Eared Bat roost entrance / exit point (orange arrow), with historic Serotine roost (pink circle – Ecosupport 2019) and historic Common Pipistrelle roost location (red circle – Ecosupport 2019).



Figure 21. Brown Long Eared Bat roost entrance / exit point (orange arrows)



Figure 22. Common Pipistrelle roost location (red circle) within building E and historic Common Pipistrelle roost location (purple circle – Ecosupport 2019).



4.3.5 Evaluation

4.3.5.1 Foraging and commuting

Overall, the levels of foraging and commuting bats recorded on site during the surveys was moderate – high, largely due to the presence of a number of bat roosts on site. The pond was also used by a variety of bat species including Common Pipistrelle, Soprano Pipistrelle, Serotine and Daubenton's Bat for foraging, with the internals of buildings B and C also used for foraging by both Brown Long Eared Bat, Common Pipistrelle and occasionally Natterers Bat. Given the nature of the development, it is considered there will be no impact to foraging and commuting bats around the site, however there will be a loss of internal foraging opportunities for bats within buildings B, C and F.

4.3.5.2 Roosting

Based on the results of the preliminary roost assessment and follow up emergence surveys, Mortimers Farm has been classified as supporting a Common Pipistrelle Maternity roost in building D, a common Pipistrelle Day Roost in building A, B, C and E, A Brown Long Eared Maternity Roost in Building B, A Brown Long Eared Bat satellite roost in building C (and historically in building D), a Serotine day roost in Building B, a Soprano Pipistrelle roost in Building B (and D historically) and a Natterers day roost in building B. The proposed works will result in the loss / significant alteration of these roosts within each of the buildings on site.

4.3.5.3 Site Status Assessment

In accordance with the *Bat Mitigation Guidelines* (Mitchell – Jones, 2004), the Common Pipistrelle day roost present within building A, B, C and E, the Plecotus satellite roosts within building C (and historically D) Soprano Pipistrelle day roost within building B and D (historically) are considered to be of **LOW CONSERVATION SIGNIFICANCE** and therefore of **LOCAL SIGNIFICANCE** using the IEEM valuation criteria for bat roosts (Wray et al., 2010). The Common Pipistrelle Maternity Roost in building D, the Brown Long Eared Maternity roost within building B, the Serotine summer day roost in building B and the Natterers summer day roost in building B are considered to be of **MODERATE CONSERVATION SIGNIFICANCE** and therefore of **COUNTY SIGNIFICANCE** using the IEEM valuation criteria for bat roosts (Wray et al., 2010).

4.4 Badgers

During the walkover survey no evidence of Badgers was noted on site, however the habitats on site do provide suitable foraging and commuting opportunities for Badgers. Therefore the site is considered to be of **Moderate Potential** for foraging and commuting Badgers.

4.5 Reptiles

The habitats on site lack the structure and heterogeneity required by reptiles due to the short sward height, management regime, lack of suitable cover and lack of suitable habitats within the immediate surroundings (as seen in **Fig 4**). Therefore the habitats on site are considered to be of **Negligible potential** for reptiles.

4.6 Great Crested Newts

HBIC do not hold any records of GCN from within 1 km of the site and only two water bodies were identified, one within the site's boundary (**Fig 6**) and a large pond in a woodland area approximately 95m to the south of the site (**Fig 23**). The pond is situated on private land and was inaccessible at the time of survey. The pond on site was given a HSI score of 0.6 (ARG, 2016) and was subject to an eDNA test in taken in April 2021. A screen shot of the results of this test are given in **Fig 24** which came back as negative.

Figure 23. Google maps image showing the approximate location of the pond to the south of the site within an area of woodland which is part of the east Horton Golf Course).



Figure 24. eDNA results for the pond located on site.

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA IN POND WATER FOR THE DETECTION OF GREAT CRESTED NEWTS (TRITURUS CRISTATUS)

SUMMARY

When great crested newts (GCN), *Triturus cristatus*, inhabit a pond, they continuously release small amounts of their DNA into the environment. By collecting and analysing water samples, we can detect these small traces of environmental DNA (eDNA) to confirm GCN habitation or establish GCN absence.

RESULTS

Date sample received at Laboratory: 29/04/2021
 Date Reported: 11/05/2021
 Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
3489	Mortimers Pond	SU 508 189	Pass	Pass	Pass	Negative	0

4.7 Nesting birds

4.7.1 Pre existing information

HBIC provided 3 records of notable birds within 1 km of the proposed development site that could potentially be impacted by the development, including Barn Owl (*Tyto alba*), Starling (*Sturnus vulgaris*) and House Sparrow (*Passer domesticus*). Starlings and House Sparrows are red listed species and Barn Owls are protected under the Wildlife and Countryside Act 1981 (amended).

4.7.2 Site assessment

All buildings on site could potentially support a range of breeding and nesting bird species, particularly Starlings and House Sparrows. Although building 2 does provide suitable nesting habitat for Barn Owls, no evidence of Barn owls was identified within any of the buildings (such as pellets or feathers ect) or within the empty nest box (**Fig 25**). Additionally, no Barn Owls were recorded during any of the bat surveys (in 2018 or the surveys to date carried out in 2021). The site is assessed as offering **High potential** for a range of breeding bird species.

Figure 25. Internal of building 2 including Barn Owl box to the left.



5.0 LIKELY ECOLOGICAL IMPACTS IN ABSENCE OF MITIGATION

5.1 Introduction

The CIEEM guidelines (CIEEM 2018) require that the potential impacts of the proposals should be considered in absence of mitigation. In order for a significant adverse effect to occur, the feature being affected must be at least of local value. However, in some cases, features of less than local value may be protected by legislation and/or policy and these are also considered within the assessment. Although significant effects may not be identified at this stage of the assessment, it is often possible to provide appropriate mitigation.

5.2 Site Preparation and Construction

5.2.1 Impacts to Habitats

The development will result in the loss of amenity grassland, hard standing and buildings with the majority of this habitat considered to be of value at the **Site** level of significance. The mature oak trees and pond are well established and would provide an important resource for local wildlife. These features are therefore considered to be of **Local** value. Therefore in the absence of mitigation, **an adverse impact is considered possible at the local level.**

5.2.2 Impacts to Wildlife

Nesting birds were noted using the internals of the buildings on site with a diverse range of local records also returned by HBIC for within a 1 km radius of the site. Therefore, an **adverse impact is likely** at the **local level** if works take place during nesting season.

The proposed works will involve the demolition of the existing buildings on site which will result in the loss of multiple known bat roosts. This would likely result in the disturbance, harm or even death of multiple bats. Therefore an **adverse impact is certain** at the **Local – County** level (with the level of significance to dependent on which buildings / roosts are impacted upon).

The proposed plans will lead the creation of some excavations which could cause Badgers to become trapped and could lead to injury or death. Therefore an **adverse impact is possible** at the **local level.**

5.3 Operational Phase

The proposed plans have the potential to cause impacts on the behavior of nocturnal species (particularly bats) through lighting (where additional lighting is installed). Therefore in the absence of mitigation an **adverse impact** is possible at the **Local – county level (depending on the level / positioning of the lighting).**

6.0 RECOMMENDATIONS

6.1 Introduction

The below sections outline a number of recommendations for further survey work required to fully assess the potential ecological impacts of the development and ensure and proposed mitigation and compensation appropriate and proportionate. In addition to this, measures are outlined to protect the existing features of value and provide enhancements post development.

6.2 Bats

6.2.1 Mitigation

6.2.1.1 EPS Licence

All works that affect bat roosts carried out on buildings A - E must take place under an EPSL obtained from Natural England and under the supervision of a licenced ecologist. Destruction of the roosts and capture of bats (if required) will need to be carried out under the supervision of a licenced ecologist. All works would be detailed within the EPSL Method Statement required as part of the licence application.

6.2.1.2 Timing

It is recommended that works avoid the hibernation period (November – February), when bats are in a torpid state and therefore more vulnerable, but also within the optimum period for carrying out works (as per Bat Mitigation Guidelines). Given the presence of Maternity roosts / satellite roosts within buildings B, C and D, destructive works to these buildings (or works that would likely result in disturbance to roosting bats) must be undertaken outside of the maternity period of bats (i.e mid-May and mid-Sept). Works will take place in suitable weather conditions as defined by best practice guidance (Mitchell-Jones et al. 2004). Given that building A and E only contain day roosts, there are no time constraints on the destructive works to these buildings (with the exception of avoiding the hibernation period).

6.2.1.3 Supervision

Prior to any works getting underway the licensed bat worker will give a Tool Box talk which will detail best practice methods of sensitive stripping/removal of roofing tiles/materials and identifying signs of bats. Personel will be educated on signs of bats and that, in the unlikely event a bat is found whilst the licensed ecologist is not on site, that all works should stop immediately until the licensee returns to site. The licensed bat worker will then assist contractors with the removal of construction materials surrounding the roosts and in any areas considered to be of high risk of bats being present.

6.2.1.4 Capture (if required)

If during the sensitive removal of construction materials bats are discovered, the supervising ecologist will place the individuals into a holding bag (a soft cloth bag with closure-strings and with seams on the outside (Mitchell-Jones and McLeish, 2004) to ensure the bat keeps calm and will not take flight during daylight hours. They will then immediately transport the bat to

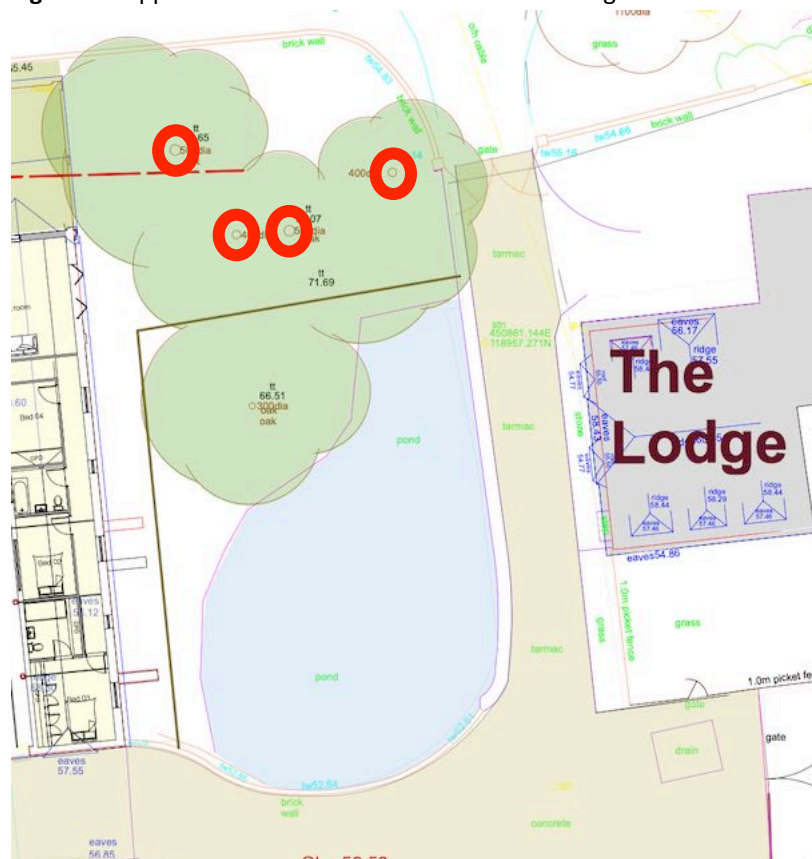
one of the mitigating bat boxes where the bat will be released and left undisturbed. During this time, the licenced bat worker will be wearing appropriate bat handling gloves to ensure the bat does not come to any harm. The licenced bat worker will have ample experience in handling a variety of bats and is confident in doing so.

6.2.1.5 Bat boxes / Car Port

Prior to any works getting underway 2 Schwegler 2F bat boxes (with double front panel), 2 Schwegler 2F and 2 Schwegler 1 FS large colony boxes (or equivalent) will be erected on the retained Oak trees on site (as per **Fig 26 and 27** below). These are to ensure that during the supervised soft strip of the buildings, should any bats be found and captured, they are not left without anywhere suitable to roost within.

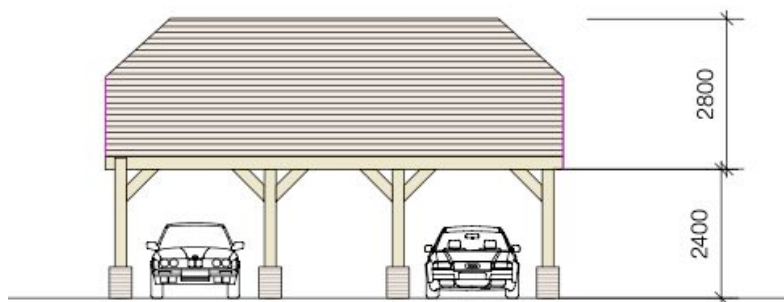
Figure 26. Bat box positions on the tree adjacent to buildings B, C and D



Figure 27. approximate location of boxes on trees along the northern boundary

These bat boxes are manufactured from long-lasting Woodcrete which will not rot, leak, crack or warp, and will last for at least 20 - 25 years, making it suitable for long-term mitigation projects. It also provides a rough surface for bats to cling on to and climb and will ensure any captured bats are not left without a suitable roosting alternative (whilst compensatory works take place).

Additionally, a car port will be built to provide a replacement roost to replicate the lost features provided by existing buildings (**Fig 28**). This will be 8.2m long x 5.7m wide x 5.2 meters high and will be built from the same types of materials (i.e clay peg tile roof underlined with wooden sarking boarding). Two thirds of the roof will be sectioned off with wooden boarding to create a loft area, with access via a 1x0.5m opening for bats to freely enter. The other section of the roof will be left open to provide direct access to gaps between the wooden sarking boarding and the roof. This car port will be created before works to buildings B / C are started to ensure that an alternative roost location is available during the works, as well as post completion.

Figure 28. Carport to the west of Barn B

Two Schwegler 1FW bat hibernation box (or equivalent) will be provided within the sectioned off bat loft area of the car port. These are multi-layered and provide insulation for bats during the winter whilst also allow air to permeate, making them also suitable for large colonies within the summer. The internal wooden panel provides crevice spaces for bats to roost within, with sufficient space for bats to freely hang also.

6.2.1.6 Roof underlining

To cover for the eventuality that all the new dwellings may become suitable for bats in the future, roofing felt must be utilised as opposed to Breathable Roof Membrane (BRM) or other fibrous materials for all roofing works, as there is considerable evidence to suggest that such material poses a threat to bats occupying a structure due to entanglement in the fibres (Natural England, 2015).

6.2.1.7 Hedgerow / tree planting

In addition to the provision of the open fronted car ports on site, hedge and tree planting will be implemented to provide compensation for the loss of foraging and sheltering opportunities within the existing buildings on site (**Fig 29**). The hedgerow will include at least 6 different native species to attract a variety of insects. Trees will be planted every 20m (where larger trees are not already present) to provide a larger canopy to provide cover for bats.



6.2.2 Compensation

Given the presence of a number of separate roosts on site which range from local – county level of significance, the most appropriate compensation would be the long-term retention of the above measure in combination with the provision of new roosting opportunities within the converted buildings on site and the retention of roosting areas where possible. The steps outlined below will be incorporated within the new development.

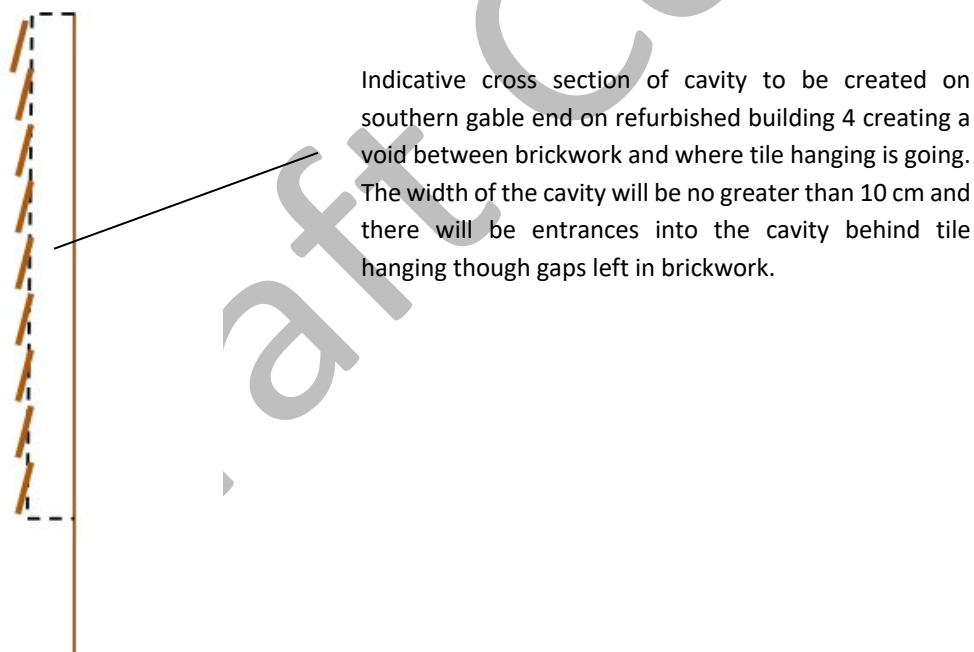
6.2.2.1 Common Pipistrelle

Given the significance of the maternity roost in building D, the Bat Mitigation Guidelines (Mitchell-Jones, 2004) suggest for roosts of this conservation significance require a 'like for like replacement' as a minimum (i.e. a new area of tile hanging on the same building that will provide a similar roost in terms of characteristics). After discussions with the architect, this will be achieved through covering the upper section of the southern gable end of building D in tile hanging (which will seek to make use of as many of the tiles removed from the dormer where the bats are currently roost as possible) (**Fig 29**). As it is also likely there is a cavity behind the existing wall (allowing the bats to group together) a cavity will be created on the gable end under the tile hanging as per the sketch in **Fig 30** below.

Figure 29. Hanging tiles on the southern aspect of building D



Figure 30. Indicative sketch of roost compensation for *Pipistrellus* spp maternity roost in building 4.



6.2.2.2 BLE

As with the *Pipistrellus* maternity roost, the Bat *Mitigation Guidelines* (Mitchell-Jones, 2004) will require a more or less like for like replacement. This will be achieved through the provision of a dedicated loft space within the refurbished building B (**Fig 31**), as this will seek to maintain the functionality of the existing roost.

The void will span the entire length of the roof of building B and will therefore be 17.8m long, 2.5m wide and 2.0 meters high be 2m in height from the centre of the roof to the floor of the loft (Fig 32 and 33).

Figure 32. Bat loft dimensions in barn B



Figure 33. Bat Loft shown from the external view (red area)



Eight new bat accesses in various positions will be installed to provide direct access into the bat loft. This will provide a variety of entrance points and the locations have been selected to be as close as possible to the existing entrance locations to increase the likelihood of use. The approximate locations of these bat accesses are shown in Fig 34 - 36.

Figure 34 Location of bat tiles on northern facing aspect of building B.

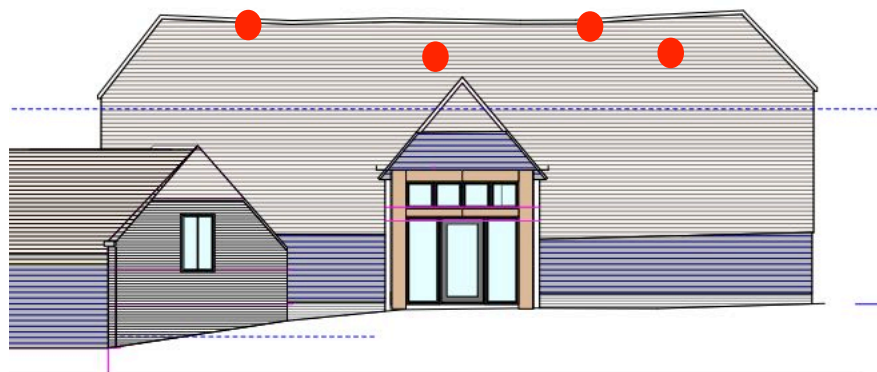


Figure 35. Location of bat tiles on southern facing aspect of building B.



Examples of two types of tiles that can be used (one at the ridge and one to replace a regular tile) are shown below in **Fig 36**. It will be necessary to ensure that there are also gaps in the bitumen underlining and wooden sarking at these locations to provide direct access into the loft area as required. The above mitigation, alongside any natural gaps that are present between tiles, will provide ideal roosting access for the Brown Long Eared Maternity roost as well as provide suitable roosting opportunities for a wide range of other species.

Figure 36. Redline boundary of the application site.



A Schwegler 1FW bat hibernation box (or equivalent) will be included within the internal bat loft of Barn B. These are multi-layered and provide insulation for bats during the winter whilst also allow air to permeate, making them also suitable for large colonies within the summer. The internal wooden panel provides crevice spaces for bats to roost within, with sufficient space for bats to freely hang also. This will create further hibernation and maternity roosting opportunities for bats within barn B.

6.2.2.3 Serotine and Soprano Pipistrelle

The wooden weather boarding will be retained / replaced like for like on building B where the Serotines and Soprano Pipistrelle were recorded roosting. Given the irregular shape and nature of this type of weather boarding, this will provide ongoing roosting opportunities for both species. Additionally, the installation of an internal wall will greatly improve the roosting opportunities within this area due to a large increase in PRF's and the increased thermal stability of these areas.

6.2.2.4 Natterers Bat

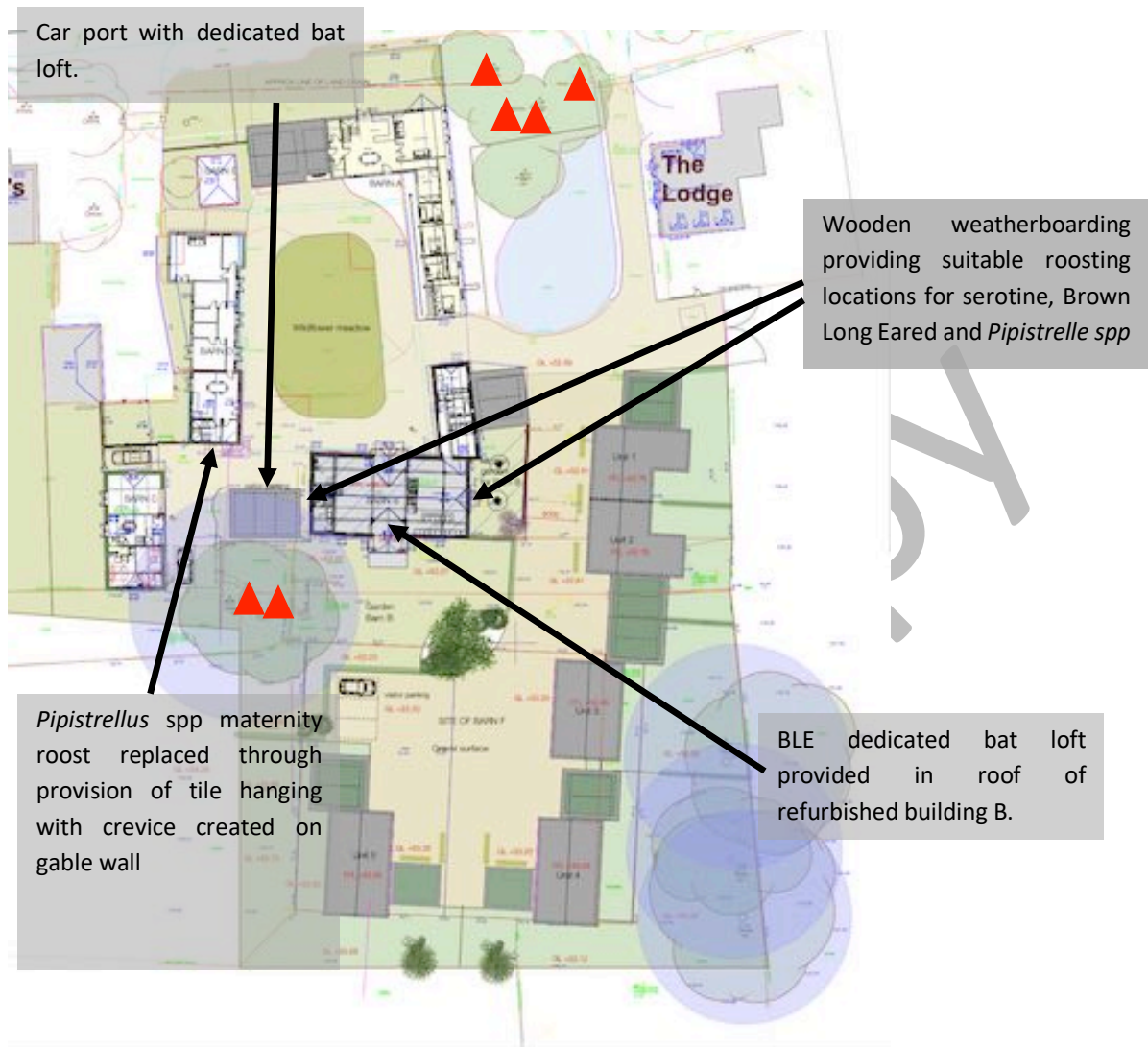
The creation of the new car port and the retention of the bat boxes on site will provide ample opportunities for Natterers to roost. Therefore no additional compensation for Natterer's is required.

6.2.3 Bat Roost Mitigation / Compensation Summary

Fig 37 below provides a summary of the bat roost mitigation / compensation measures to be provided on site.

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Figure 37. Roost provision to be included within the new dwellings on site with bat boxes on trees shown with red triangles



6.2.4 Monitoring and Maintenance

The *Bat Mitigation Guidelines* indicate for roosts of moderate conservation significance 2 years post completion for works monitoring is required to assess how the bats have responded to the mitigation / compensation works. This monitoring will involve both an updated internal inspection of the newly refurbished buildings (to assess use by the *Pipistrellus* / BLE) and emergence surveys on the buildings. Surveys will be undertaken during the peak summer months of June or July and can be either dusk or dawn.

6.3 Terrestrial mammals

During the construction phase, any open excavations left overnight should either be covered to prevent commuting Badgers falling in or escape ladders should be used to prevent them from becoming trapped. Any open pipework should be checked and then capped nightly.

6.4 Nesting Birds

In order to avoid disturbance of nesting birds or damage to their nests, clearance of any shrubs should be undertaken outside of the bird-nesting season (typically March to August, dependant on the weather). If this is not possible, sections to be cleared should be thoroughly checked by an ecologist immediately prior to clearance acting in a Ecological Clerk of Works (ECOW) capacity. If any active nests are found they should be left undisturbed with a suitable buffer of undisturbed vegetation (ca. 5m) until the nestlings have fledged. As Barn Owls do sometimes nest early or late in the season and building 2 should be checked by an ecologist prior to demolition even if outside the bird nesting season.

To replace the lost nesting habitat, a total of 15 bird boxes will be erected on site. These will comprise of 4 sparrow nest boxes (Vivara Pro Woodstone House Sparrow Nest Box or similar), 3 starling nest boxes (Vivara Pro Woodstone Starling Nest Box or similar), 2 Vivara Pro Seville 28mm woodstone nest boxes (or similar), 2 Vivara Pro Seville 32mm woodstone nest boxes (or similar) and 4 Woodstone Swift nest boxes. Additionally a barn owl box will all be installed on site within the newly built car port (which will be built as compensation for bats). The Sparrow nest boxes will be paired together to provide communal nesting (which is preferred for House Sparrows). Indicative locations of these boxes will be shown in the BEMP (the requirement of which can be included as a condition of the planning application).

6.5 Enhancements

6.5.1 Birds

To act as biodiversity enhancement, a total of 5 swift bricks will be installed onto the newly built dwellings within the southern portion of the site will incorporate one Swift brick. The 'CJ Wildlife Swift maxi nesting box' with entrance via a CJ Wildlife 'Cambridge Swift full-face brick' (The Cambridge System is a concept comprising an entrance piece and a nest box embedded in the cavity and inner leaf. It is particularly suited to gable ends at roof-space level). If this model is not suitable for the building specifications, an alternative swift box with internal floor space exceeding 400cm squared must be used. A list of swift boxes can be found on the RSPB website via the following link (<https://www.rspb.org.uk/globalassets/downloads/about-swifts/swift-bricks.pdf>) however it is worth noting that some of these do not have an internal floor space exceeding 400cm squared and are therefore not considered appropriate.

Additionally the newly planted hedgerow (which is to be undertaken as part of the bat mitigation) will provide further nesting opportunities for birds as well as providing a valuable food resource.

6.5.2 Bats

A variety of new bat roosting features will be incorporated into the newly built dwelling without the southern portion of the site. These will include features such as bat bricks, bat access points into the cladding and bat access tiles. Additionally, the use of reclaimed tiles on the re-roofing of the existing building on site will provide natural gaps which will provide ideal roosting opportunities / access points for bats. The specifications and location of these features will be included within the BEMP once the plan has been finalised (the requirement of which can be included as a condition of the planning application). Additionally the hedge / tree planting on site will provide an enhanced food resource for bats. In combination with all of the mitigation / compensation measures, there will be an overall benefit to bats on site as a result of the development.

6.5.3 Hedgehogs

2 new Hedgehog homes will be incorporated (such as the Igloo Hedgehog home or Hogitat Hedgehog house) within the newly planted hedgerow along the site boundaries within the southern portion of the site. These will be provided within the retained boundary habitats on site and will provide an area of refuge for Hedgehogs.

To ensure permeability for small mammals across the site, the garden fences of the properties will ensure at least 2 gaps are present within the gravel boards / bases of each fence line to allow for movement of Hedgehogs between gardens and into the wider area. The gaps should be at least 15 cm high by 15 cm wide with permeability for small mammals.

Small signage should be installed at these points to ensure they remain open upon completion of the development. The People's Trust for Endangered Species provide such signage, the purchase of which also supports conservation efforts.

6.5.4 Wildflower plug planting

To improve the botanical diversity of the retained grassland area on site, plug planting will be undertaken at a density of 5 per square meter. The following are examples of species that should be considered: Barren Strawberry, Hedge Bedstraw, Yellow Pimpernel, Birds Foot Trefoil, Common Knapweed, Daisy, Germander Speedwell, Kidney Vetch, Meadow Vetchling, Ox Eye Daisy, Self Heal, Sheeps Sorrell, Marjoram, Red Clover, Ragged Robin, Salad Burnet, Ribwort Plantain and Rough Hawkbit.

7.0 REFERENCES

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