OUTBUILDING AT 188 ST EDITH'S MARSH, BROMHAM, WILTSHIRE

CONVERSION TO RESIDENTIAL

PROTECTED SPECIES SURVEY
&
MITIGATION STRATEGY

On behalf of

MR & MRS CAVILL

Final Report

24th July 2023

Prepared by

MALFORD
Environmental Consulting

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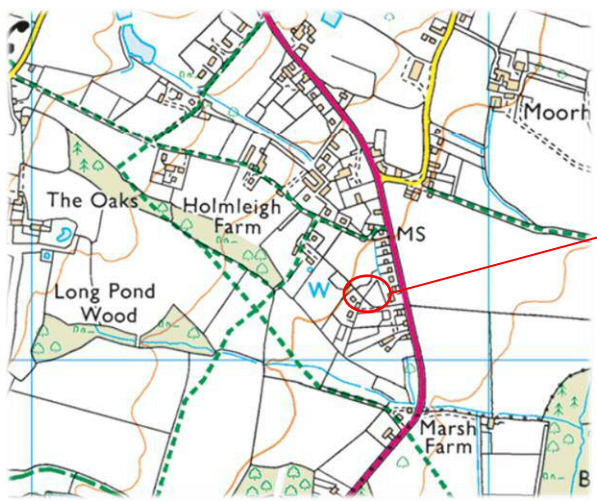
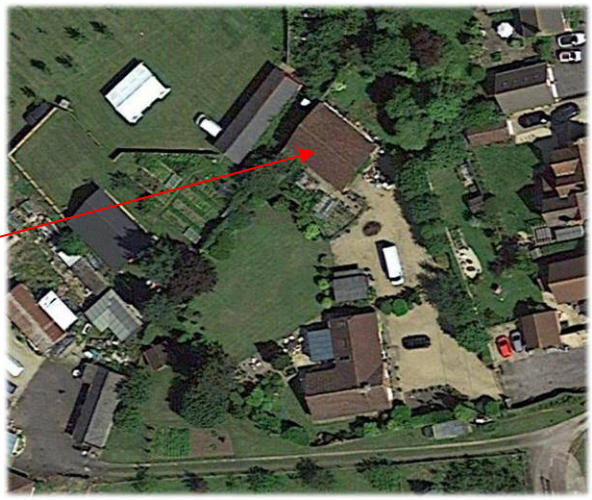
1 Introduction

The client is seeking planning permission from Wiltshire Council to convert an outbuilding (workshop/storage) to a residential dwelling. The building is located within the curtilage of 188 St Edith's Marsh, Bromham, Wiltshire, SN15 2DJ (NGR ST 97746 64147), see below.











Malford Environmental Consulting was commissioned to undertake appropriate baseline ecological surveys, which included a Phase 1 (building/bat roost and nesting bird inspection) survey of the building and immediate surrounding land in the property curtilage, plus additional Phase 2 bat surveys as appropriate. The surveys were undertaken by:

- Dr Stephen Dangerfield: Natural England licensed bat worker (NE Class Licence Level 1 WLM-CL17, Licence No. 2015-11600-CLS-CLS) and full member of the Chartered Institute of Ecology and Environmental Management (CIEEM);
- Anton Kattan: Natural England licenced bat worker (NE Class Licence Level 2 WLM-CL18, Licence No. 2015-12201-CLS-CLS) and full member of the CIEEM; and
- Rob Spencer: Natural England licenced bat worker (NE Class Licence Level 2 WLM-CL18, Licence No. 2015-14778-CLS-CLS).

The surveyors have a combined 55 years' professional experience of undertaking bat surveys.

The surveys concentrated on identifying the presence of roosting bats and other protected species (e.g. nesting birds) inhabiting or using the existing building, and identifying potential for other protected species within the surrounding land.

This report sets out the findings of the surveys, and where necessary makes recommendations for actions to ensure the proposed development complies with nature conservation legislation and meets the requirements of planning policy.

Section 40 of the Natural Environment and Rural Communities Act 2006 (NERC Act) requires all public bodies to have regard to biodiversity conservation when carrying out their functions. Under the NERC Act the local planning authority should not determine a planning application if there are any surveys outstanding for European protected species. The National Planning Policy Framework (NPPF), July 2021, requires the planning system should conserve and enhance the natural environment (Section 15) by, *inter alia*, 'protecting and enhancing sites of biodiversity value' and 'minimising impacts and providing net gains for biodiversity' (para 174) and 'protection and recovery of priority species' (para 179). This is reflected in Wiltshire Council Core Policy 50.

2 Scope of Work and Methodology

2.1 Phase 1 survey

The initial Phase 1 building (bat roost) inspection and protected species survey was undertaken on 13th October 2022. The survey was undertaken by licensed bat surveyors in accordance with Bat Conservation Trust guidelines[1]. The survey included an internal and external inspection of the building looking for signs of, or the potential for the building to support, roosting bats. Trees within the grounds were also assessed. A ladder, high-powered torch, binoculars and endoscope were all available and were used where necessary to examine roof space, crevices and other small spaces suitable for roosting bats to occupy.

Evidence of bats, considered during the search included:

- Droppings.
- Urine staining.
- Feeding remains (such as moth wings).
- Smudge marks and scratches around potential bat roost holes.
- Live roosting bats, bat skeletal remains or dead bats.

Conditions indicating an absence of bats can include the presence of spider webs, bird nesting material and wasp nest material blocking access holes or possible roosting gaps, or sheltering live butterflies/moths or cluster flies.

Bat roost potential was established using the following scale:

1. *Negligible potential/not a roost*: no suitable features
2. *Low potential*: one or more suitable features that could be used by individual bats opportunistically
3. *Moderate potential*: one or more suitable features that could be used by bats, but unlikely to support a roost of high conservation status
4. *High potential*: one or more suitable features that are suitable for use by larger numbers of bats on a regular basis
5. *Confirmed roost*: evidence of current/recent bat occupation

The survey also assessed the building for the presence of nesting birds.

The survey also assessed the immediate surrounding land for other protected species, including badger etc.

[1] Collins, J. (ed.) (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn*). The Bat Conservation Trust, London

2.2 Phase 2 bat survey

Following the Phase 1 inspection (see Section 3.2) the building was classed as having 'high' potential (Category 4) for supporting bats with the presence of: external gaps (for example, under ship-lap and or fascia boards); internal gaps (for example, at the top of internal walls); and access flyways into the building interior via large and small openings; and scattered / small accumulations of bat droppings (species identified through DNA analysis) found within the building interior.

As such, further survey is required to determine presence-absence of bats, and if present the characterisation of a roost(s) to be completed. The additional Phase 2 bat survey was designed to answer the following questions:

- Which part(s) of the building is used by roosting bats?
- Which bat species use the building for roosting?
- How many bats does the building/roost support?
- What type of roost(s) is present?

The Bat Conservation Trust guidelines recommend that for buildings with a 'high' bat roost potential three separate surveys are needed to confirm an absence, while survey effort to establish roost characterisation is site specific, and that surveys should be repeated until the information to answer the above questions is reliably collected, although appropriate methods and equipment should be used to minimise the number of repeat visits. The optimum period for Phase 2 bat survey is May-August (potentially September).

The building was subject to the following survey programme:

- *Dropping DNA analysis*

Three samples of bat droppings from the building interior were collected on 13th October 2022 (Ref. MEC-SEM 1; MEC-SEM 2 and MEC-SEM 3). These were sent to the ecological forensics team at the School of Life Sciences, University of Warwick for DNA analysis.

- *Building internal inspections*

In addition to the initial Phase 1 daytime inspection, an additional five internal inspections of the building interior were undertaken on 25th May, 12th June, 20th June, 3rd July and 12th July 2023. If bats were present a roost count of the location, species and number of bats was made.

- *Dusk emergent surveys*

The target building is a relatively uncomplicated structure with limited potential roost access points, which could easily be observed and categorised using dusk emergence surveys only. Emergence surveys are more accurate for roost counts (establishing number of bats in the roost), whereas dawn surveys are more appropriate for locating roosts and access points.

The building was therefore subject to three dusk bat roost emergence surveys, which were conducted on the evenings of 25th May, 20th June and 12th July 2023. The surveys were conducted during suitable weather conditions.

During the emergence surveys, two bat surveyors (supported with one infra-red camera on the 12th July survey) were positioned outside (and inside) the building covering all elevations and potential roost access points.

The surveys were conducted using appropriate equipment including hand-held detectors capable of delivering full spectrum and heterodyne outputs (Wildlife Acoustics Echo Meter Touch 2 Pro, Elekon Bat Scanner and BatBox Duet). A thermal imager was available for all three surveys, while an infrared camera was used to support the third survey.

The surveys assessed bat activity to confirm (1) whether and/or how the building is being used by bats, and (2) by what species and with what level of activity (numbers of bats).

❖ *Static bat detector*

A Wildlife Acoustics SM4BAT-FS bat detector/recorder was installed within the building interior (in a location near to where lesser horseshoe bat droppings were found) during 12th to 20th June 2023 and 3rd to 12th July 2023. The box recorded for a total of 17 nights. The box was installed primarily to identify the timing / frequency of activity of lesser horseshoe (*Rhinolophus hipposideros*) bat.

The detectors use a SMM-U1 ultrasonic microphone. This detector was set to record from half hour before sunset to half hour after sunrise, and the unit automatically activates when there is a trigger above 16kHz for a period of greater than 0.5 seconds. The unit is triggered by the bat's echolocation call and records continuously over the duration of bat activity.

Wildlife Acoustic's Kaleidoscope Pro 3 analysis software was used for species identification. The software runs a classifier that filters the bat calls in to species groups. The Kaleidoscope Pro 3 classifier was used to sort batches of data collected on the data logger into species groups. The bat calls were then verified manually.

To quantify nightly bat activity levels for horseshoe bats, the presence or absence of bat activity using one minute time intervals was used[2]. If one or more bat echolocations was recorded within a one-minute interval, bat activity per minute was set to '1'. If no activity was recorded within a one-minute time interval, bat activity per minute was set to '0'.

A bat activity index (BAI) is calculated by summing the per-minute bat presence/absence of bat activity for each hour. Essentially, the BAI is the number of minutes within each hour that bat activity was recorded. This metric is analogous to count data.

This survey strategy, which covers DNA analysis of droppings, six daytime inspections, three dusk emergent surveys and deployment of a data-logger for 17 nights during June/July 2023, is (1) in accordance with the BCT bat survey guidelines, and (2) sufficient to underpin a Natural England EPS (Bats) Mitigation Licence application.

[2] Miller B. W. (2001). *A Method for Determining Relative Activity of Free-Flying Bats Using a New Activity Index for Acoustic Monitoring* . Atca Chiropterologica 3(1). 93-105

3 Baseline Conditions

Photographs of the building exterior/interior and the immediate surrounding land are presented in Appendix A.

3.1 Desk-based study

The development site is not covered by any European or national nature conservation designations, and there are no designations within 2km of the target building.

The development site is not located within a Bat Consultation Zone of a Bat Special Area of Conservation (SAC).

Records of bats from within 2km of the target building were obtained from the Wiltshire and Swindon Biological Records Centre (WSBRC) on 15th May 2023. These data identified at least nine species of bat including: **common pipistrelle**, soprano pipistrelle, Nathusius's pipistrelle, **Natterer's**, noctule, serotine, **brown long-eared**, **lesser horseshoe**, greater horseshoe and western barbastelle.

Species highlighted in bold have roosts recorded, and these highlighted in underlined bold have maternity roosts recorded.

3.2 Building description

3.2.1 Exterior

The building comprises a double height building, which is orientated on a northwest-southeast alignment. The building is about 12m long by 9.5m wide.

External walls are constructed from sealed brick (lower half) and timber ship-lap (upper half) on the front with sealed blockwork on the sides and forming the lower half of the back of the building. The upper section of the back wall comprises corrugated sheets, which are lined with timber boards. There are timber fascia boards running along each side of the building.

There are no gaps associated with the sides of the walls, but there are gaps under the timber fascia boards, which lead into the building interior or into gaps at the top of the walls (see below), while there are gaps through the upper part of the rear wall leading into the building interior.

The building has a pitched roof, which is clad in cement pan tiles and ridge capping. The majority of the roof pan tiles and ridge caps are intact, closed-fitting and sealed with mortar – although there are some gaps as listed below.

The building is accessed via a pedestrian door, which is permanently left open, or via a double timber door that is maintained closed. The building is in use for general storage / workshop and windows are intact, glazed and sealed.

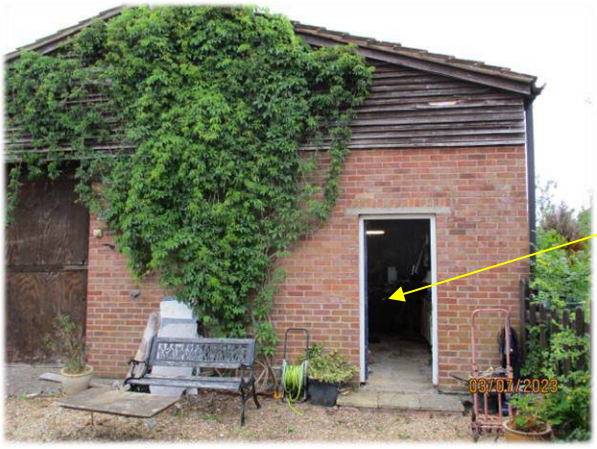
The gaps / recesses on the building exterior are as follows:

- Small gap under one end pan tiles on the southeast-facing gable end wall where mortar has fallen away;
- Large gap along the top of the corrugated sheets at the rear of the building;
- Gaps under timber fascia boards that run along both sides of the building;
- Very small gaps under raised timber ship-lap on the front of the building; and
- Small gaps between a timber barge board and ship-lap on the front of the building.

Some of the above gaps, especially associated with the sides and rear of the building, lead directly into the building interior.



Examples of external gaps on the building including gaps under timber fascia, above corrugated sheets and between barge board and ship-lap.



Door left permanently open providing large flyway into the building interior.

3.2.2 Interior

Internal walls are mainly blockwork with timber on the upper parts of the front and rear walls. The blockwork walls are double skin leaving a gap between them, which is open at the top. The building interior is generally one large open space, with a mezzanine floor in the southern

corner constructed with wooden boards attached to timber rafters. At the front of the building is a very small, enclosed cubicle for a toilet.

The roof structure comprises close-fitting timber or metal trusses, purlins and rafters, with a single narrow ridge board. The roof is lined with bituminous roofing felt, which is coming away or has holes in some locations including above the ridge board.

The interior of the building only has a few recesses, which include:

- Gaps at the top of the blockwork walls leading into a void between the walls;
- Gaps between the corrugated sheets and internal timber boards on the back wall; and
- Gaps where roof liner is missing or has fallen away or has holes in it.



Examples of internal gaps within the building including gaps between roof tiles and roofing felt, and at top of intermnal blockwork walls.

3.3 Surrounding land

The land immediately surrounding the building comprises hard-standing (gravel or paving slabs), formal lawn, planting areas or ornamental shrubs and trees.

Land surrounding the development site is residential or farmland.

3.4 Phase 1 bat survey

There was evidence of bat activity within the building interior as follows:

- Small accumulation of medium-sized droppings at the southeastern end of the building on the mezzanine floor underneath an end rafter (Ref. MEC-SEM 1).
- Scattered, small droppings on a variety of surfaces throughout the building (Ref. MEC-SEM 2).
- A very small accumulation of medium-sized droppings at the base of the double wooden doors at the southeastern end of the building (Ref. MEC-SEM 3).

No live/dead bats were observed anywhere in the building. A few wings of small tortoiseshell butterfly and large yellow underwing moth found distributed through building.

DNA analysis of bat droppings collected during the initial survey confirmed droppings from and presence of lesser horseshoe (*Rhinolophus hipposideros*) (Ref. MEC-SEM 1); common pipistrelle (*Pipistrellus pipistrellus*) (Ref. MEC-SEM 2) and brown long-eared (*Plecotus auritus*) (Ref. MEC-SEM 3), with all analysis confirmed with maximum likelihood (see Appendix B).

Given the physical structure of the building with a number of external and internal gaps, exposed roof timbers, and with flyways into the building interior (especially via the permanently open door) the building is classed as having 'high' potential (Category 4) for supporting bats, with the building also located in an optimal location for bats being set within a semi-rural landscape.

Further bat survey of the building was undertaken as described in Section 2.2, with results set out in Sections 3.5 to 3.8.

The trees/shrubs surrounding the building were visually inspected and found not to support any potential bat roosting features (e.g. no holes, cracks, splits, lifting bark etc.), and are therefore classed as Category 1 (not a roost/negligible roost potential).

3.5 Additional building inspections

A further five daytime inspections of the building interior was undertaken with dates and weather conditions for each inspection set out below.

Date	Temp (°C)	Cloud (%)	Wind (BS)	PPT
25th May	16	0	3	Dry
12th June	22	0	1	Dry
20th June	18	60	1	Light rain at start
3rd July	14	100	4	Dry
12th July	16	20	2	Dry

BS = Beaufort scale. PPT = precipitation

The daytime inspections recorded the following:



- 25th May: no bats seen and no changes to droppings;
- 12th June: no bats seen and no changes to droppings;
- 20th June: no bats seen and no changes to droppings;
- 3rd July: no bats seen and no changes to droppings; and
- 12th July: no bats seen. Few new dropping and ca. twenty large yellow underwing moth wings caught in spider web at front of building (see photo).

3.6 Bat emergence surveys

3.6.1 Survey #1

A dusk emergence survey conducted on 25th May 2023 between 20:40 and 22:40, with sunset at 21:06. Survey weather conditions were excellent with the temperature ranging between 16°C and 14°C during the survey. The evening was clear (<10% cloud) with a light breeze (BS3) and no rain.

During the survey one surveyor was positioned out the front of the building covering the southerly-facing elevations and one surveyor was positioned at the rear of the building covering the northerly-facing elevations.

The key findings of the survey are as follows:

Emergence

- One common pipistrelle (*Pipistrellus pipistrellus*) bat emerged at 21:21 (15 minutes after sunset) from a gap between the timber barge board and timber ship-lap on the front of the building (as shown).



Activity

- One common pipistrelle bat was recorded foraging around the building and adjacent garden/vegetation until end of the survey. Very occasionally joined by a second pipistrelle bat.
- Occasional passes of serotine (*Eptesicus serotinus)* bat between 21:37 and 22:15.
- Occasional high passes of noctule (*Nyctalus noctula*) between 21:01 and 22:18.

- Lesser horseshoe (*Rhinolophus hipposideros*) bat arrived on site at 21:47 (41 minutes after sunset) with foraging over side garden before being observed inside the building at 22:20 hanging from an end rafter at south-eastern end of building above the small accumulation of droppings (as shown).



3.6.2 Survey #2

A dusk emergence survey conducted on 20th June 2023 between 20:45 and 22:40, with sunset at 21:28. Survey weather conditions were excellent with the temperature ranging between 18°C and 16°C during the survey. The evening was patchy cloud (50% cloud), with a very light breeze (BS1) with very light rain at the start before clearing away.

During the survey one surveyor was positioned out the front of the building covering the southerly-facing elevations and one surveyor was positioned at the rear of the building covering the northerly-facing elevations.

The key findings of the survey are as follows:

Emergence

- No bats were observed emerging from the building.

Activity

- Common pipistrelle (*Pipistrellus pipistrellus*) bat intermittently foraging around building and in adjacent garden from 21:48 until the end of the survey.
- Up to three serotine (*Eptesicus serotinus*) bats intermittently foraging around building and in adjacent garden from 22:03 until the end of the survey.
- High pass of a noctule (*Nyctalus noctula*) bat at 21:51 and 21:59.
- Contact of lesser horseshoe (*Rhinolophus hipposideros*) bat at rear of building as 22:11 and 22:13 (43-45 minutes after sunset) before observed inside the building at 22:15 flying and then hanging from the end rafter at south-eastern end of building above the small accumulation of droppings (as per first survey on 25th May).

3.6.3 Survey #3

A dusk emergence survey conducted on 12th July 2023 between 20:45 and 22:45 with sunset at 21:22. Survey weather conditions were excellent with the temperature ranging between 16°C and 15°C during the survey. The evening was patchy cloud (10-40% cloud) with a light breeze (BS2) and no rain.

During the survey one surveyor was positioned directly in front of the building covering the south-eastern facing elevation (for 30 minutes) before being stationed inside the building. One surveyor was positioned at the rear of the building on the south-west facing elevation. An infrared camera was positioned inside the building pointing at the open doorway.

The key findings of the survey are as follows:

Emergence

- No bats were observed emerging from the building.

Activity

- One common pipistrelle (*Pipistrellus pipistrellus*) bat arrived on site from south at 21:44 (22 minutes after sunset) and entered the building through open doorway before exiting at 21:46. Bat again enters building via the doorway at 21:55 and exits at 21:56. Bat recorded intermittently foraging around building and in adjacent garden until the end of the survey.
- One lesser horseshoe (*Rhinolophus hipposideros*) bat arrived on site from north at 21:57 (35 minutes after sunset) and entered the building through the open doorway before exiting at 22:00. Bat again enters building via doorway at 22:17 and exits at 22:18. Intermittent foraging in garden and around building.
- One brown long-eared (*Plecotus auritus*) bat entered the building through the open doorway at 22:14 (52 minutes after sunset) before exiting at 22:16. The bat again enters building via the doorway at 22:23 and stays inside on a roof beam (as shown) and was last seen at 22:40.



- At least three serotine (*Eptesicus serotinus*) bats intermittently foraging around building and in adjacent garden from 21:50 until the end of the survey.
- High pass of a noctule (*Nyctalus noctula*) bat at 21:50/51 and 22:06.

3.6.4 Surveyor locations

The surveyor locations for each dusk survey are shown below.



3.7 Static bat detector

The static bat detector, located within the building interior (at south-eastern end), recorded for: 8 nights between 12th and 20th June; and 9 nights between 3rd and 12th July. Results for each monitoring period are shown in Appendix C and are summarised below.

12th to 20th June

Lesser horseshoe (*Rhinolophus hipposideros*) was present during all eight monitoring days, with a very similar pattern of activity recorded of a bat entering the building +40 minutes after sunset and then returning intermittently through the night but not returning around sunrise (no contacts after 04:00).

The majority of BAI recorded was 1-10 minutes / hour, with the maximum BAIs recorded being up to 14 minutes between the hours of 22:00 and 02:00.

The findings of the static box monitoring support and confirm the findings of the dusk surveys that a single lesser horseshoe bat is using the building for night roosting only.

3rd to 12th July

Lesser horseshoe (*Rhinolophus hipposideros*) was present during all nine monitoring days, with a very similar pattern of activity recorded of a bat entering the building +40 minutes after sunset and then returning intermittently through the night but not returning around sunrise (almost no contact after 04:00).

The majority of BAI recorded was 1-10 minutes / hour, with the maximum BAIs recorded were 18-31 minutes between the hours of 22:00 and 02:00.

The findings of the static box monitoring support and confirm the findings of the dusk surveys that a single lesser horseshoe bat is using the building for night roosting only.

3.8 Other protected species

There is no evidence of current/active bird nesting within or on the target building. There are bird droppings, a few pigeon (*Columba* sp) feathers and old nesting material. However, pet cats use the building to shelter within, and this probably keeps nesting birds away.

There is always a possibility for small passerine bird (e.g. robin [*Erithacus rubecula*] or wren [(*Troglodytes troglodytes*]) nests to be present on beams, tucked under eaves or at the roof apex.

There are no other protected species associated with the building or the proposed development plot. There is no badger sett, and the land within the development plot, which comprises the building and mainly hard-standing/formal garden, is unsuitable for supporting herpetofauna.

4 Conclusions

4.1 Bats

4.1.1 Roost evaluation

The target building at 188 St Edith's Marsh is classed as a confirmed bat roost for two species of bat, as follows:

- Common pipistrelle (*Pipistrellus pipistrellus*). Single bat occasionally day roosting within an external gap between a timber barge board and ship-lap on the south-east facing elevation.
- Lesser horseshoe (*Rhinolophus hipposideros*). Single bat observed entering the building through the open doorway after sunset, and monitoring data confirms night roosting activity only.

The use of the building interior by bats, including the lesser horseshoe bat, is opportunistic as bats are only accessing the building interior due to the door being left permanently open to provide shelter for domestic cats.

Other bat species recorded within the building interior are not roosting, but instead are using the building interior for foraging or for feeding perches, as follows:

- Common pipistrelle (*Pipistrellus pipistrellus*). Single bat observed entering the building via the open doorway and foraging for a few minutes at a time.
- Brown long-eared (*Plecotus auritus*). Single bat observed entering the building via the open doorway and flying/clinging to beams. This combined with evidence of droppings and butterfly/moth wings recorded during daytime inspections confirms that a single bat is using night feeding perches within the building interior.

Based on the findings from the bat surveys the significance of the bat roosts associated with the target building has been classified in accordance with the site assessment recommended in industry-standard bat survey and mitigation guidelines[3,4]. The roosts are:

- Common pipistrelle bat. Occasional summer roost for a single common species (not a maternity site); and
- Lesser horseshoe bat. Night roost for a single rarer species (that is widespread in Wiltshire) (not a maternity or hibernation site)

Therefore, these two roosts are classed as low conservation significance and an ecological resource for bats that is important in a Local (Site) context.

[3] English Nature (2004). *Bat Mitigation Guidelines*
[4] Collins, J. (ed.) (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn*). The Bat Conservation Trust, London

4.1.2 Conservation status of target bats

Common pipistrelle (day roost)

The common pipistrelle bat is one of the most common bat species in the UK and is widely distributed throughout Britain (Richardson, 2000). The UK population, excluding Northern Ireland, is estimated to be 2,430,000. Pipistrelle bat populations declined dramatically in the twentieth century but have shown a positive trend this century. There has been a significant upward trend when measured against the 1999 base year.

Lesser horseshoe (night roost)

The lesser horseshoe bat is listed as 'rare' in the British Isles and is largely confined to Wales, southwest England (including Wiltshire) and western Ireland. The species showed a decline in numbers and distribution in the last century. The National Bat Monitoring Programme (NBMP) Population Trends shows that the species population is increasing in the UK (since at least 1997) with the British pre-breeding population estimated at 14,000 in 1995 (7000 in England) and 18,000 in 2006 (9000 in England). The lesser horseshoe bat is listed as Species of Principal Importance by the Secretary of State under Section 41 of the NERC Act 2006.

Brown long-eared (feeding perch)

The Distribution Atlas of Bats in Britain and Ireland describes the brown long-eared bat as being widespread throughout Britain, and the Bat Conservation Trust's NBMP (National Bat Monitoring Programme) records the species as common with the population considered to have been stable over the period 1999-2015. The British pre-breeding population was estimated at 200,000 in 1995 (155,000 in England).

References for determining conservation status include

- Bat Survey Guidelines; Chapter 3 (Collins, 2016)
- State of UK's Bats (BCT and JNCC, 2017)
- National Bat Monitoring Programme annual reports (e.g. Bat Conservation Trust, 2020)
- The Distribution Atlas of Bats in Britain and Ireland: 1980-1999 (Richardson, 2000)
- Bats of Britain, Europe and Northwest Africa (Dietz & Kiefer, 2016)
- EPS licensing data (available in England on DEFRA's MAGIC website)
- A Review of the Population and Conservation Status of British Mammals (Mathews, 2018)
- Atlas of the Mammals of Great Britain and Northern Ireland (Crawley *et al*., 2020)
- IUCN-compliant Red List for British Mammals (Mathews & Harrower, 2020)
- Wiltshire Mammal Atlas (March, 2017)
- Local record centres and bat groups

4.1.3 Roost impact assessment

The target building at 188 St Edith's Marsh is a confirmed occasional summer roost for a single common pipistrelle and a night roost for a single lesser horseshoe bat.

The conversion of the building will result in the damage/modification or permanent loss of the roosts and could potentially also result in the injury/death/disturbance to bats if undertaken without appropriate safeguards. This would contravene wildlife legislation (see Appendix D).

The proposed scheme is predicted to have a low adverse impact[5] as work will only affect an individual bat of two species and will not affect a colony roost of high conservation status (i.e. not a breeding or winter hibernation roost).

The proposed scheme will not affect the ability of the species to breed or reproduce and the site does not provide shelter for winter hibernation. The planned work does not pose a threat to the favourable conservation status of the two species of bat and will not affect the ability of these species to maintain their current range and distribution in the locality. The conversion of the building is considered to have no significant long-term impact on local populations of the two bat species.

Conversion of the building will be covered by a Natural England licence under the provision of the Conservation of Habitats and Species Regulations 2017.

Mitigation to protect roosting bats and provide alternative roosting habitat, in accordance with legislation and planning policy, is set-out in Section 5.1

4.2 Nesting birds

There is no evidence of current bird nesting associated with the building, but evidence of previous nesting activity was recorded and there is the possibility of bird nesting in the future. Action to ensure protection of nesting birds is discussed in Section 5.2.

[5] English Nature (2004). *Bat Mitigation Guidelines*

5 Mitigation and Enhancement

5.1 Bats

5.1.1 Introduction

Mitigation concepts have been defined based upon industry-standard bat mitigation guidelines[6] that establish an appropriate level of mitigation for adverse impacts on a moderate conservation status roost as:

- *Loss of a summer roost for individual bats of common species (e.g. common pipistrelle):* Flexibility over provision of bat-boxes, access to new buildings etc. No conditions about timing or monitoring.
- *Loss of a night roost for individual bats of rarer species (e.g. lesser horseshoe bats): Provision of new roost facilities where possible. Need not be exactly like-for-like, but should be suitable, based on species' requirements. No timing constraints or monitoring requirements*.

Common pipistrelle bats summer roosts are usually crevices in building especially under tiles and behind boards on a gable. This species readily uses bat boxes[7].

Lesser horseshoe bats will use a wide range of structures for night roosts such as porches, sheds, outbuildings and agricultural buildings[8].

In addition, brown long eared bats (recorded using feeding perches in the building) are a woodland species that naturally have summer roosts in tree holes. Although this species has adapted to using building loft space, they are also found in bat boxes[9].

5.1.2 Pre-construction work

Prior to construction work on the building commencing, two general purpose cavity bat boxes will be installed within the curtilage of the property. Each box will be suitably sited on an alternative building or tree under the guidance of the licenced bat ecologist. The boxes will provide alternative roosting habitat for crevice-dwelling bat species if found during the construction phase.

5.1.3 Horseshoe bat night roost structure

To provide alternative night-roosting habitat for the lesser horseshoe bat, a new bat night roosting structure will be incorporated within the overall scheme design (on land under the control of the applicant).

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[6] English Nature (2004). *Bat Mitigation Guidelines*
[7] Joint Nature Conservation Committee (2007). *Second report by the UK under Article 17 on the implementation of the Habitats Directive from January 2001 to December 2006. Conservation Status Assessment for Species: S1309 – Pipistrellus pipistrellus – common pipistrelle bat*.
[8] Schofield, H. W (2008). *The Lesser Horseshoe Bat Conservation Handbook*. The Vincent Wildlife Trust
[9] Joint Nature Conservation Committee (2007). *Second report by the UK under Article 17 on the implementation of the Habitats Directive from January 2001 to December 2006. Conservation Status Assessment for Species: S1326 – Plecotus auritus – brown long-eared bat*.

The Lesser Horseshoe Bat Conservation Handbook[10] states that 'providing lesser horseshoe bats with a night roost structure is very straight forward, as they use a wide range of structures such as sheds, garages, porches and outside toilets'. Therefore, a night roost structure can take a variety of forms as long as the structure is of suitable size and provides shelter from the environment/elements, a dark area and places to perch.

The new structure will be designed and constructed in accordance with the key design features described in The Lesser Horseshoe Bat Conservation Handbook[10] (pages 56-57).

It will be a small timber-framed structure, which will be a minimum 2m wide, 2m deep and 2.5m high. The structure will be clad with timber weatherboard and lined with a breathable membrane. The roof will be pitched and clad with timber boards and roofing felt, tiles or slates, with exposed internal roof timbers providing perches. A ceiling with hatch (0.5m x 0.5m) leading into a 1m high roof void will be incorporated. One side will have a 1.5m high opening to allow for inspection.

The internal roof, above the roof timbers, will be lined with a traditional roof liner comprising a hessian reinforced bituminous roofing felt with a sand finish on its upper surface to allow bats to cling onto. Modern/synthetic liners must be avoided as they have a smooth surface that bats find hard to grip onto or can shred and tangle/trap bats. Preservative treatment of timbers, other than pressure treatment, will be avoided.

To provide roosting opportunities for crevice-dwelling bats, two 0.25m deep triangular timber baffles (constructed from OSB board) will be affixed at the apex of the roof. The two baffles will be joined together with small battens leaving a 25mm gap between the two baffles (providing a squeeze gap for crevice-dwelling bats to use). The timber baffles will be positioned 0.4m away from the internal gable end wall.

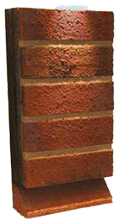
No external lighting must be used adjacent to or shine directly at the night roost entrance, and clear lines of flight to the entrance must be maintained at all times.

The bat night roosting structure will be sited on the edge of the existing garden, which is land under the control of the applicant.

5.1.4 Bat roosting bricks

To replace roosting habitat for common pipistrelle, and other crevice-dwelling bats, two integrated bat roosting bricks will be included on the converted building. The bat bricks will be integrated into the southeast facing gable end wall, located either side of the gable apex.

Alternative bat bricks can be viewed on-line (e.g. www.nhbs.com or www.wildcare.co.uk), with two examples shown below. One of these or an equivalent will be used.



Habibat bat brick (custom brick facing)



Ibstock Enclosed Bat Box C

[10] Schofield, H. W (2008). *The Lesser Horseshoe Bat Conservation Handbook*. The Vincent Wildlife Trust

Clear lines of flight to the bat box entrances must be maintained at all times, and no external lighting will be used adjacent to or shine directly at the entrance slots.

5.1.5 External lighting

The development will limit the impact of light pollution on roosting, and foraging, bats by keeping lighting to a minimum (in terms of coverage, luminosity and use) to ensure there is no significant increase in ambient night-time light levels and directed away from:

- The new bat night roost structure;
- The southeast-facing gable end wall of the renovated building where integrated bat boxes will be installed; and
- The northern and eastern boundary trees and shrubs.

The new house will limit external lighting, for example over doorways only, designed in compliance with guidelines on Bats and Lighting in the UK[11] to ensure significant adverse impacts on bats are avoided or minimised to an acceptable level. This includes the following elements:

- Use of correct LED lighting to minimise/avoid ultraviolet and Infrared emissions and which have a sharp cut-off;
- Minimising outward and avoiding upward light spill through the correct positioning of luminaires and use of shields/hoods; and
- The lighting will not operate through the night instead being operated by passive infrared (PIR) motion sensors, thereby ensuring a long period of complete darkness during each night.

5.1.6 Timing of construction activities

Due to the fact that the existing roosts are a daytime and night-time summer (non-breeding and non-hibernation) roost for individual bats construction work on the building can be undertaken at any time of year.

All licensable working activities will be undertaken in daylight, hours, which is in accordance with best working practice[12] and allows the licenced bat worker to address any issues if bat(s) are found during the construction work.

5.1.7 Supervision of construction

Prior to construction starting the licenced bat worker will provide a toolbox talk to the applicant / contractor that will cover aspects such as: bats covered by the licence; bats and the law; evidence of bat and what to look out for; good working practice; and what to do in the event of finding bats.

Immediately prior to starting licensable activities, which includes any works to the external cladding or roof, the building interior and any associated external holes/gaps will be inspected (in the daytime) by the licenced bat worker. If bats are found the licensed bat worker will

[11] Bat Conservation Trust and Institution of Lighting Professionals (2018). *Bats and artificial lighting in the UK (Guidance Note 08/18)*. Bats and the built environment series.

[12] English Nature (2004). Bat Mitigation Guidelines

capture and move the bat(s) or exclude the bats in accordance with the NE licence method statement.

The licensed bat worker will oversee the construction programme with the licensable activities undertaken with direct supervision of the licensed bat worker.

The licensed bat worker will be available on-call for the duration of the construction programme. If a bat or bats are found then work will stop immediately. Work will not proceed again until an assessment has been made by the licenced bat worker and the bats have been appropriately dealt with as per the NE licence method statement.

5.1.8 Post-construction review and monitoring

The replacement bat roosting features included within new development, including integrated bat boxes and a night roosting structure, will be inspected and signed-off by a licenced bat worker.

The planned work is affecting roosts of low conservation value associated with two bat species. As such there is only the requirement for minimal post-scheme monitoring of the new night roost structure as part of the Natural England licence implementation. This will involve two daytime inspections of the night roost structure undertaken during May-August following completion of the development.

A monitoring report for the post-construction survey is a requirement of licensing, and currently a condition for the licence return on most Natural England bat mitigation licences.

5.1.9 Natural England licence

The conversion of the target building, which supports confirmed bat roosts for two different bat species, must be undertaken under a Natural England licence, under the provisions of the Conservation of Habitats and Species Regulations 2017.

A licence from Natural England should be applied for once full planning permission has been granted, and there are no outstanding pre-commencement planning conditions relating to bats.

The project can only progress where the licence application is considered to meet the requirements of the following three tests:

1. The consented works must be for preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment;
2. There must be no satisfactory alternative; and
3. The action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range

Although Natural England are the licensing authority, recent case law (*R (on the application of Simon Woolley) v Cheshire East Borough Council, June 2009*) has established that planning authorities now need to consider all three tests before planning permission affecting bats can be granted.

As part of the Natural England licence application process the appointed Natural England licensed bat worker will review the mitigation strategy as set out in this report.

There may be a need for additional bat inspection/survey to be undertaken to verify or supplement the original survey findings. This is especially true if there is a significant delay

between the baseline surveys (as reported in this report) and receiving planning permission or applying for a NE mitigation licence. Survey information from the most recent bat activity season is required for the licence application.

5.2 Nesting birds

5.2.1 Protecting nesting birds

Given the absence of active bird nests there is no specific mitigation for nesting birds required for this development. However, if at any time during the proposed work nesting birds (with eggs or chicks) or birds constructing a nest are subsequently identified to be present work in that area must cease until the nest is clear (i.e. birds have vacated the nest).

5.2.2 New bird nesting boxes

To provide an enhancement for nesting birds, two swift nesting boxes will be incorporated into the renovated property. The provision of swift boxes recognises that these bird nesting boxes are not only used by swift but also by a range of other small passerine birds and are therefore seen as a 'universal' bird box for new development.

Integrated nest-boxes, i.e. ones fitting into the fabric of an external wall, will be installed as a pair either side of the apex on the northwest-facing gable elevation. This location provides sufficient height and shelter from direct sunlight.

A range of alternative bird boxes are available and can be viewed on-line (for example www.nhbs.com or www.wildcare.co.uk), with an example Vivara Pro Cambridge swift box (chamber and entrance brick) shown here. This or equivalent should be used.





Appendix A Site photographs




Front of the building (left) and gravel area in front of building (right)




Southwest-facing side of building (left) and northeast facing side of building (right)




The interior of the building with timber truss roof



Building interior under the mezzanine (left) and above the mezzanine (right)



Garden to the immediate southwest (left) and immediate northeast (right)



Wider garden of 188 Sr Edith's Marsh comprising gravel (left) and formal lawn (right)

Appendix B Bat Dropping DNA Analysis

WARWICK
THE UNIVERSITY OF WARWICK

EcoWarwicker
Ecological Forensics

19 May 23

Re: Identification Results for Stephen Dangerfield, Malford Environmental Consulting Limited

Job number 19610, received 05 May 2023
Sample labelled: MEC-SEM 1
PCR amplification successful. DNA sequence:
ATGACCAACATTCGAAAGTCCCACCCACTATTTAAAATTATCAATGACTCATTCATTGA
TCTACCTGCCCCATCAAGTATTTCCTCCTGATGAAACTTTGGATCCCTACTAGGAG

Phylogenetic analysis identification: *Rhinolophus hipposideros*

Confirmed by maximum likelihood, maximum parsimony, bootstrap 100%.

Best regards,

Professor Robin Allaby

WARWICK
THE UNIVERSITY OF WARWICK

EcoWarwicker
Ecological Forensics

19 May 23

Re: Identification Results for Stephen Dangerfield, Malford Environmental Consulting Limited

Job number 19611, received 05 May 2023
Sample labelled: MEC-SEM 2
PCR amplification successful. DNA sequence:
ATGACAAACATTCGAAAATCCCACCCCCTGATCAAAATCATCAATAACTCATTCATTG
ATCTACCAGCTCCATCAAACATTTCAG

Phylogenetic analysis identification: *Pipistrellus pipistrellus*

Confirmed by maximum likelihood, maximum parsimony, bootstrap 100%.

Best regards,

Professor Robin Allaby

WARWICK
THE UNIVERSITY OF WARWICK

EcoWarwicker
Ecological Forensics

19 May 23

Re: Identification Results for Stephen Dangerfield, Malford Environmental Consulting Limited

Job number 19612, received 05 May 2023
Sample labelled: MEC-SEM 3
PCR amplification successful. DNA sequence:
ATGACCAACATTCGAAAGTCCCACCCTCTCATAAAAATTATCAATGACTCATTCATTG
ACTTACCTGCTCCCTCAAATATTTCATCATG

Phylogenetic analysis identification: *Plecotus auritus*

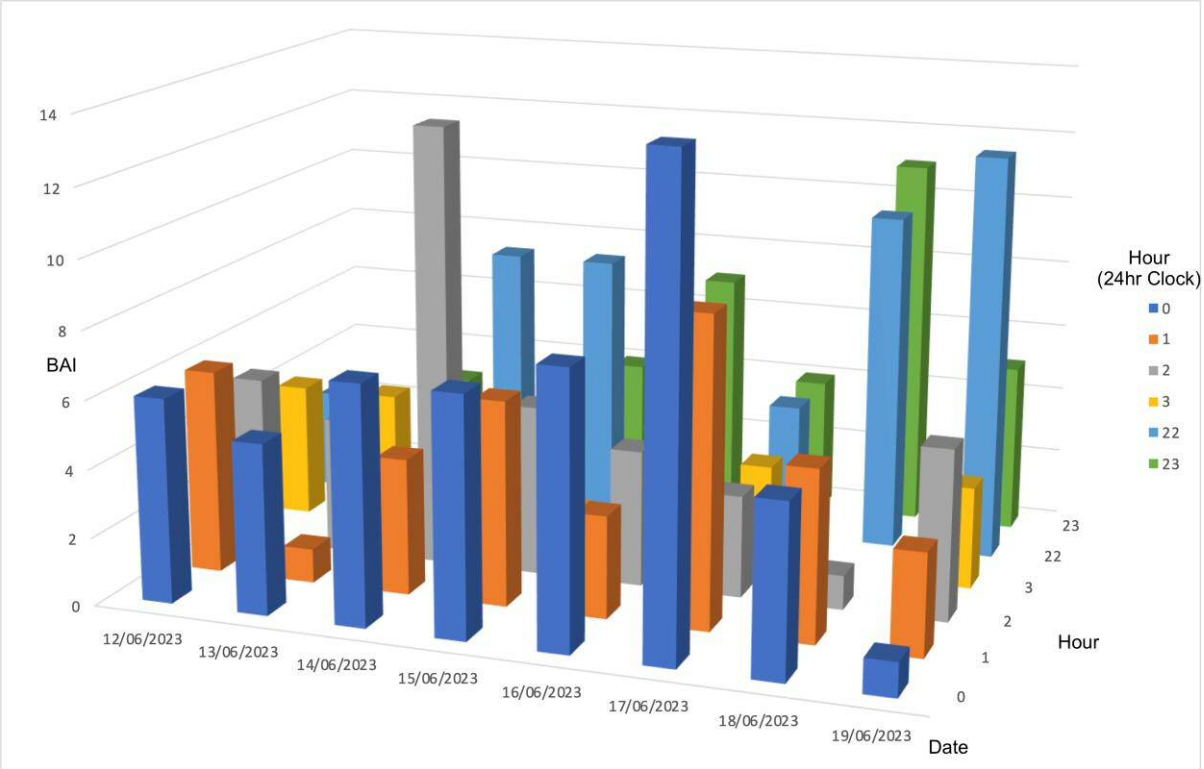
Confirmed by maximum likelihood, maximum parsimony, bootstrap 100%.

Best regards,

Professor Robin Allaby

Appendix C Data from Static Bat Detector Monitoring

Monitoring period 12th to 20th June 2023: Lesser horseshoe bat



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04:00								
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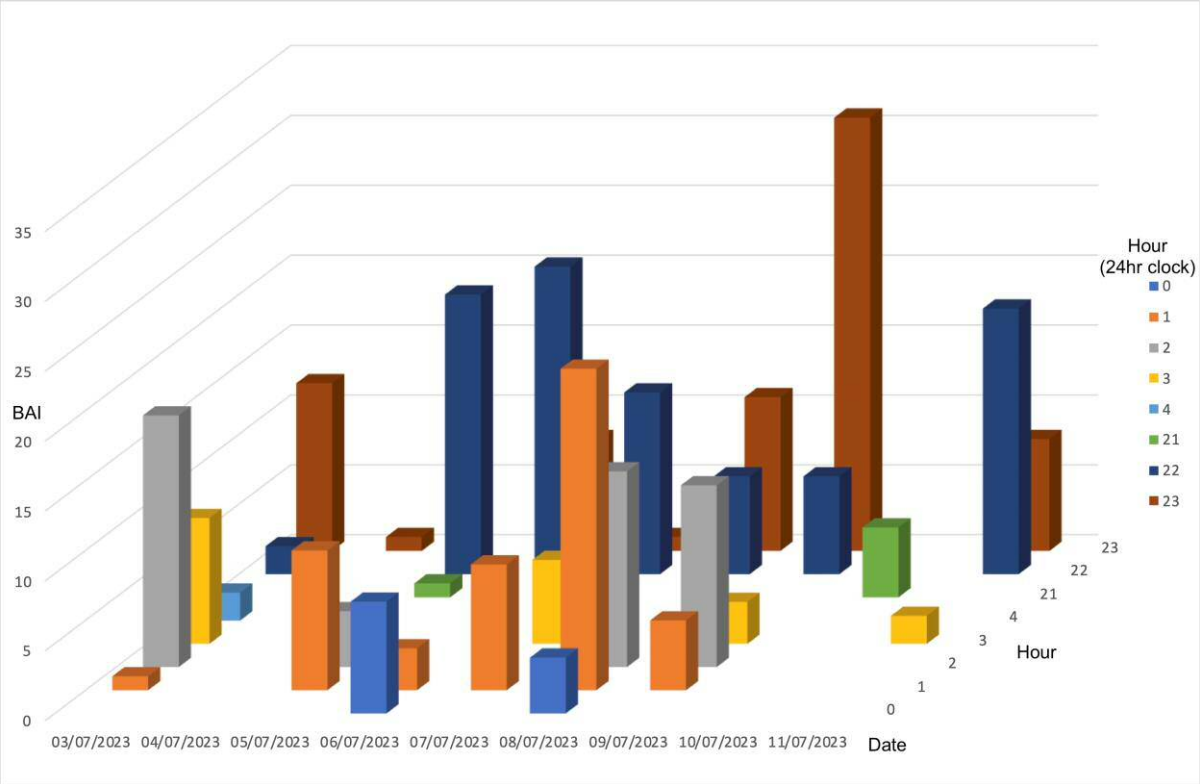
Monitoring period 3rd to 12th July 2023: Lesser horseshoe bat



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01:00	1		10	3	9	23	5		
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03:00	9				6		3		2
04:00	2								
05:00									

Appendix D Bat Legislation

Bats (Chiroptera) are afforded protection through their inclusion in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000) and the Conservation of Habitats and Species Regulations 2017 (SI 2010/490). Section 41 of SI 2010/490 makes it an offence to:

- Deliberately capture, injure or kill a bat [S41(a)];
- Deliberately disturb a bat [S41(b)]; or
- Damage or destroy a breeding site or resting place of a bat [S41(d)].

Disturbance includes any action which is likely to:

- Impair their ability:
  - To survive, to breed or reproduce, or to rear or nurture their young; or
  - To hibernate or migrate
- Affect significantly their local distribution or abundance

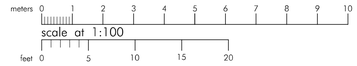
In relation to S41(d) an offence has been committed if the person could reasonably have avoided the damage to or destruction of the breeding site or resting place concerned.

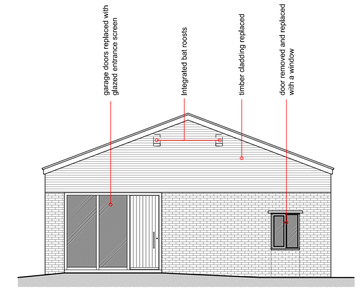
The UK BAP lists all bat species as being of Conservation Concern, and lists six species of bat (Bechstein's, noctule, soprano pipistrelle, brown long-eared, lesser horseshoe and greater horseshoe) as priority species. The Wiltshire BAP has a Species Action Plan covering all bats.

Developments that compromise the protection afforded to bats under the provisions of the Conservation of Habitats and Species Regulations 2017 will require a licence to do so lawfully from Natural England (NE). As part of the licensing process the results of an appropriate level of bat survey and subsequent mitigation strategy must be submitted to Natural England.

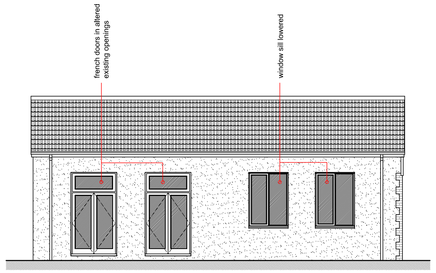
Appendix E Bat Mitigation Design Plan







SOUTH EAST ELEVATION



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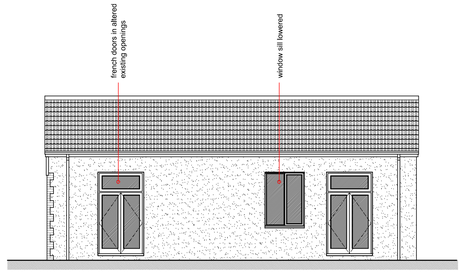

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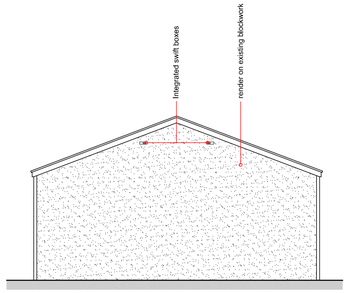

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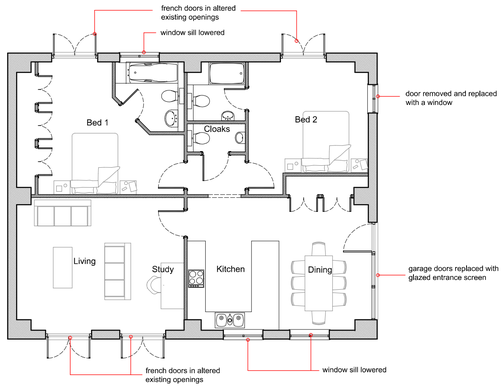
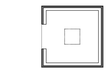
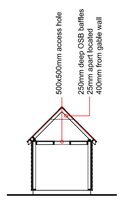


FLOOR PLAN



BAT SHED PLAN



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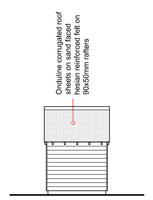
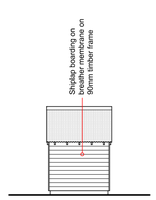


SOUTH ELEVATION



EAST ELEVATION



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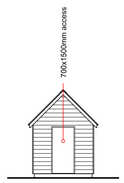

WEST ELEVATION

HORSESHOE BAT NIGHT ROOST STRUCTURE

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DATE PRINTED: Monday, 24 July, 2023

REVISIONS

CLIENT: Mr and Mrs Cavill

SITE: 188 St. Ediths Marsh

DRAWN: tk | DATE: 24-07-2023 | SCALE: 1:100/ 200@A1

TITLE: Proposed Design

DRAWING NUMBER: P1_ 1944 - PLAN 2.dwg

READY FOR PLANNING APPLICATION

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