Midland Ecology

Working with you

Offa House, Village Street, Offchurch, CV33 9AS

Prepared for: Mrs Hartog

Bat Surveys - Presence/Likely-Absence

July 2021

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Executive Summary

Background

The survey follows Collins (2016) Good Practice Guidelines. It provides recommendations for mitigation/compensation, if considered necessary. If a deviation from the guidelines has been made, this will be detailed in the Method Section.

The following report (which has been prepared with due consideration for various best-practice guidance and methodologies, including those of the Chartered Institute of Ecology and Environmental Management (CIEEM 2016) and BS 42020, details the findings and recommendations for the site at Offa House, Village Street, Offchurch, Warwickshire, CV33 9AS.

The client commissioned Midland Ecology to undertake surveys to confirm bat presence/likely-absence[1], and roost characterisation if bats are present, as the proposals include for full refurbishment of the dilapidated dwelling.

Conclusion and Discussion

On the first (dusk) survey, no bat activity was observed associated with the buildings.

On the second (dawn) survey, three common pipistrelle were seen returning to roost within the hipped ridge within the north-east of B1, one common pipistrelle was seen returning to roost within the window lintel within the north gable end of B1 and sixteen soprano pipistrelle were seen returning to roost within the south-east corner of the butterfly roof of B1.

The findings suggest the presence of a summer roost for a low number of male and/or female common pipistrelle bats within the main part of B1; as well as a maternity roost of soprano pipistrelle within the butterfly roof of B1. It is also known (from previous surveys) that a brown long-eared feeding perch is present on the west side of the main part of B1.

Bat activity levels on site were found to be moderate, although heavier use of the tree-lined boundaries was identified.

Potential Impact

As the proposal calls for conversion of the existing building, the roosts present within it would be destroyed, with the potential for direct harm to any bats present during works.

[1] It is not currently scientifically possible to prove an absence, so an assessed absence is usually referred to as a "likely-absence".

Bat activity levels on site were found to be moderate, although heavier use of the tree-lined boundaries was identified. Any increased lighting levels on these areas would have the potential to disrupt bat foraging and/or commuting routes.

Recommendations

A European Protected Species Mitigation Licence (EPSML) from Natural England will be required in order to legally carry out the proposed works. This will require a detailed method statement / mitigation plan; in line with the accompanying document: *Offa House site plan - mitigation measures*. Agreement and subsequent implementation of which should be made a condition of any planning consent. A summary of the proposed mitigation/compensation measures is provided in section 4 of this report.

1.0 Introduction

The client, Mrs Hartog, has commissioned Midland Ecology to undertake Bat Roost Characterisation Surveys for the site at Offa House, Village Street, Offchurch, Warwickshire, CV33 9AS. Planning permission is being sought for full refurbishment of the dilapidated dwelling.

Previous Bat Roost Characterisation surveys, conducted by Midland Ecology in 2018 and 2019 found bats roosting within the building referred to as B1. These surveys therefore needed updating. Given that less than 2 years had passed between the end of the previous surveys and the start of the update surveys, it was determined that two further surveys were required, in order to update our knowledge of bat activity and roosting behaviour on this site.

It was specified that these should consist of one dusk emergence survey and a separate dawn re-entry survey undertaken within the peak activity period (May to August).

The survey can be conducted between May and September with the optimal season for surveying maternity colonies limited to mid-May to August inclusive, however it can also be limited due to bad weather, when bats are less active.

The aims of the survey were:

- To find or record the emergence of bats from a building or built structure.
- To find roosts by tracking back bat flight paths or observing dawn flight activity at roosts.
- To determine presence/likely-absence of species i.e. the species present in a given area.
- To determine the intensity of bat activity both spatially and temporally i.e. to help estimate bat populations.
- To determine the type of activity, most usually foraging (e.g. by feeding buzzes), commuting (e.g. by high directional pass rates) and mating (e.g. by mating social calls).

Recommendations for design mitigation, where this is consistent with national guidelines and assessed appropriate by the surveyor in the context of the proposal, are provided. These recommendations will be based on an evaluation of which of the following roost categories may be present onsite (if any):

Table 1: Bat roost status definitions

Status	Description
Hibernation Site	Where bats may be found during the winter. (This is assessed within the context of this report).
Daytime Summer Roost	Used by males and/or non-breeding females (Seasonal limitations prevent robust analysis of this).
Night Roost	Where bats rest between feeding bouts during the night but are rarely present during the day.
Feeding Roost	Where bats temporarily utilize feeding perches and stations to eat an item of prey.
Transitional (or Swarming) Site	Where bats may be present during the spring or autumn (This cannot be assessed within the context of this report).

Summary of legislation and National Planning Policy that protects bats in England:

- Conservation of Habitats and Species Regulations 2017.
- Wildlife and Countryside Act 1981 as amended.
- Countrywide and Rights of Way Act 2000.
- Natural Environment and Rural Communities Act 2006.
- National Planning Policy Framework ("NPPF").
- Circular 06/05.

This legislation makes it illegal to:

- Intentionally or deliberately kill, injure or capture bats.
- Deliberately disturb bats, whether at roost or not.
- Damage, destroy or obstruct access to bat roosts.
- Possess or transport a bat or any part of a bat, unless acquired legally.
- Sell, barter or exchange bats, or any part of a bat.

A bat roost is well-defined by the legislation as the 'resting place' of a bat. However, the word roost is used to describe this resting place and is generally accepted as the word describing where a bat (or bats) rest, feed or sleep.

2.0 Method

The survey follows Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn).

Surveyors are positioned around the building(s), tree or structure in order to cover all elevations. The survey then observes for emerging or re-entering bats from suitable features such as holes, cracks and crevices. Notes on commuting and foraging bats are also made in the surrounds.

If a deviation from the guidelines has been made the reason and justification will be explained below: -

No deviation from the standard guidelines has been made for this survey.

Table 2: Habitat value (likelihood) of bat presence assessed against Collins (2016) guidelines Source: Adapted from Collins (2016) pp 35, Table 4.1.

Likelihood of bat presence (Habitat Value)	Features that bats can and will use, regardless of evidence being present.
Confirmed Bat Presence	Bats are found to be present during the survey. Evidence of bats is found to be present during the survey.
Higher likelihood of bat presence.	Pre-20th century or early 20th century construction. Agricultural buildings of traditional brick, stone or timber construction. Large and complicated roof void with unobstructed flying spaces. Large (>20 cm) roof timbers with mortice joints, cracks and holes. Entrances for bats to fly through. Poorly maintained fabric providing ready access points for bats into roofs, walls, bridges, but at the same time not too draughty and cool. Roof warmed by the sun, in particular south facing roofs. Weatherboarding and/or hanging tiles with gaps. Low level of disturbance by humans. Bridge structures, follies, aqueducts and viaducts over water and/or wet ground.
Lower likelihood of bat presence.	Modern, well-maintained buildings or built structures that provide few opportunities for access by bats. Small, cluttered roof space. Buildings and built structures comprised primarily of prefabricated steel and sheet materials.

	Cool, shaded, light or draughty roof voids. Roof voids with a dense cover of cobwebs and no sections of clean ridge board. High level of regular disturbance. Highly urbanised location with few or no mature trees, parkland, woodland or wetland. High levels of external lighting.
Negligible likelihood of bat presence.	No features suitable for roosting, minor foraging or commuting.

Notes on using this table

1 The features listed here may not be indicative of use of the site by bats during winter or spring.

2 Pre-1914 buildings may present the greatest likelihood of providing roost space for bats due to their design, materials used and age. Pre-1990 buildings, especially when close to good foraging habitat, and with favoured features such as cavity walls and soffits, also have a high likelihood of providing roost sites for some bat species.

3 Post-1990 buildings are generally less likely than older buildings to house roosts; however, some modern designs provide access to suitable roosting spaces for bats. Pipistrelles in particular occupy modern buildings and built structures providing that there are suitable access gaps (> 8mm) and provided the structure has appropriate characteristics for roosting.

3.0 Results

The following section details the results of the desk study, inspection and survey. The desk-study includes information from the magic.degfra.gov.uk database, other online information sources, and map/aerial photo information. The field surveys section details the building, structure or tree (numbered for reference), description of any evidence found and habitat value if no evidence has been located.

3.1 Desk Study

The desk study is centred on Grid Reference SP 3574 6567 and postcode CV33 9AS.

3.1.1 Designated sites

The survey area is not subject to any statutory or non-statutory nature conservation designations. There is one statutory designated site within the 2km study area; this is described in Table 3.

Table 3: Designated Nature Conservation sites within the study area

Designated site name	Distance from site (approximately)	Reasons for notification and integral value
Statutory designated site (Local Nature Reserve)		
Leam Valley LNR	1.1km southwest	**Habitats:** Flood meadows, marsh, woodland and dry grassland in the Leam Valley. The site has a variety of plants and animals including butterflies and birds. Birds such as meadow pipits, skylarks and barn owls are increasing because of changes to grassland mowing. The river attracts dragonflies and damselflies including banded demoiselle and white legged damselfly. Kingfishers are regularly seen. The site is assessed as having County Value.

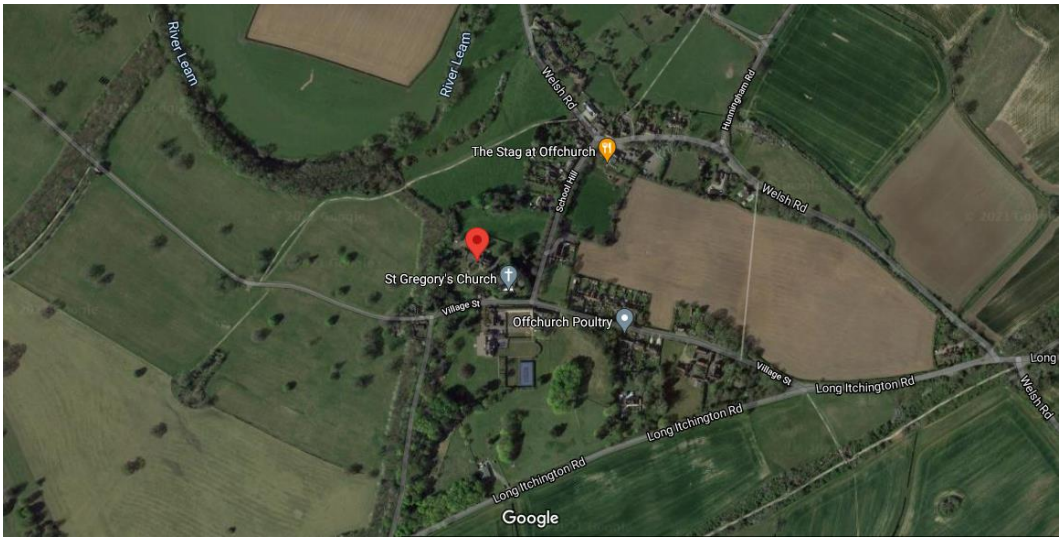
The site also falls within the Impact Risk Zones of three Sites of Special Scientific Importance (SSSI); Long Itchington & Upfton Woods SSSI and Upfton Fields SSSI to the south, and Waverley Wood Farm SSSI to the north.

3.1.2 Landscape

The site lies adjacent to deciduous woodland fragments and a large area marked on the MAGIC database as woodpasture. Numerous further deciduous woodland fragments are present within the study area; most notably along the dismantled railway approx. 500m to the south. A fragment of ancient and semi-natural woodland is present approx. 1.8km to the east of site. Also present within 2km are areas of floodplain grazing marsh and good quality semi-natural grassland. These habitats are likely to be classified as habitats of Principal Importance.

A review of aerial photographs (Figure 1) and OS maps shows that while the site itself shows only limited potential of being important in the context of the surrounding landscape, the adjacent deciduous woodland to the west is likely to have some level of importance; forming as it does a linear feature connecting blocks of woodland and the nearby pond to the wider hedgerow network and providing suitable habitat corridors for a range of species.

Figure 1: Aerial photo of site, showing landscape structure © Google 2021



3.1.3 Historical records

A search of the MAGIC database yielded no records of EPSML having previously granted within 2km of site.

3.2 Field Surveys

The following section details the structures reference, bats located, evidence located and observed emergence/re-entry.

Table 4: Survey conditions

Date	Timings Start/end sunset/ sunrise	Structure reference/ location	Equipment Used	Weather: Start	Weather: Finish
28/06/2021	21:01 - 23:31 Sunset: 21:31	B1 & B2	Echo Meter Touch Pro x 1 Magenta x 4 Peersonic x 1	Temp: 14˚C Overcast Cloudy: 95% Wind: 1/12 Rain: None	Temp: 14˚C Overcast Cloudy: 95% Wind: 1/12 Rain: None
Comments (to include # of surveyors used for each visit): Six surveyors were positioned around the buildings (Appendix 1).					
26/07/2021	03:17 - 05:47 Sunrise: 05:17	B1 & B2	Echo Meter Touch Pro x 1 Magenta x 4 Peersonic x 1	Temp: 16˚C Dry/Warm Cloudy: 100% Wind: 0/12 Rain: None	Temp: 16˚C Dry/Still Cloudy: 60% Wind: 0/12 Rain: None
Comments (to include # of surveyors used for each visit): Six surveyors were positioned around the buildings (Appendix 1).					

Table 5: Results and observations of the surveyors located around B1. Surveyor locations, bat activity and emergence/re-entry points are shown on maps in appendix 1 of this report.

Surveyor Location	Dates and Times	Bat Activity Observed
A	28/06/2021 21:01 - 23:01	22:02 x1 common Pipistrelle (CP) *Pipistrellus pipistrellus* seen commuting, flew from behind surveyor (from church yard) east - west 22:03 x1 CP seen commuting, again flew from behind, headed north 22:05 x1 CP seen commuting east to west 22:12 x1 CP seen commuting east to west 22:13 x1 CP seen commuting east to west 22:15 x1 CP seen foraging around north east corner of the property 22:16 x1 CP seen commuting north east to south west over B1 22:17 x1 CP seen foraging over house 22:18 x1 CP foraged in front of surveyor 22:20 x1 CP seen commuting south west over B1 Between 22:20 – 22:22 CPs could be heard foraging but not seen 22:21 & 22:22 x1 CP seen commuting east to west 22:24 x1 CP seen foraging around north east corner of B1 22:27 x1 CP seen flying west to east 22:29 x1 CP seen foraging in front of B1 22:30 x1 CP seen commuting west to east 22:31 x1 CP seen foraging in front of B1 heading south 22:32 x1 CP seen foraging at front of B1 22:34 x1 CP seen commuting north east 22:36 x1 CP seen foraging in front of house heading south 22:38 x1 CP seen foraging in front of house heading south 22:39 x1 CP foraging, headed north 22:41 x1 CP foraging in front of surveyor 22:42 x1 seen foraging at front and north side of B1 22:59 a noctule (*Nyctalus noctula*) was heard foraging but not seen
B	As above	At 21:58, 22:00 and 22:03 CP appeared from east, foraged between trees then headed west

		22:06 CP was seen foraging above surveyor, headed west 22:09/12/15 CP heard foraging but not seen 22:18 x1 CP seen flying east to west 22:20 x1 CP seen flying west 22:31 a Noctule was heard but not seen 22:45 a myotis species (*Myotis spp.)* was heard but not seen 22:58 either a serotine (*Eptesicus serotinus*) or a Leisler's bat (*Nyctalus leisleri)* was heard briefly but not seen 23:07 x1 CP was seen foraging in front of surveyor flew west Regular CP foraging detected between 22:30 and end of survey
C	As above	21:41 a Noctule was heard commuting but not seen 21:47 x1 CP seen flying southwest across B1 At 22:21 and 22:25 a CP was heard but not seen 22:32 a Noctule was heard but not seen Between 22:36 and 23:10 CP were heard but not seen
D	As above	At 21:56 and 21:58 a CP was heard but not seen 22:00 x1 CP flew east to west over B1 22:01 x1 CP seen foraging around surveyor From 22:01 until 23:01 CP were intermittently heard foraging (not seen) 22:31 a Noctule was heard but not seen
E	As above	21:53 a CP was heard but not seen 21:54 x1 CP was seen commuting north east 21:57 a CP was heard but not seen 21:59 – 22:04 a soprano Pipistrelle (SP) Pipistrellus pygmaeus was foraging around surveyor and treeline to the western boundary of the garden 22:11 a CP was heard foraging 22:20 x1 CP was seen foraging, headed west 22:23 x1 CP was seen commuting east to west 22:25 x1 CP seen commuting west to east on same flight path as 22:23 observation 22:29 and 23:11 a CP was heard but not seen

F	As above	21:59 x1 CP flew from south west, foraged around the south of B2, headed north 22:10 x1 CP flew south along treeline at rear of garden 22:11 x1 CP commuted east to west over B2 22:11 x1 CP foraged around B2 22:24 x1 CP commuted south over B2 22:25 x1 CP commuted north west 22:29 a SP was heard but not seen 22:32 and 22:58 a Noctule was heard but not seen 22:41 and 22:48 a SP was heard but not seen
Conclusion: No bat activity seen associated with the house.		
A	26/07/2021 03:17 - 05:47	03:33 – A Brown Long Eared (BLE) *Plecotus auritus* was heard foraging behind the surveyor. 04:12 – An unknown bat (no call heard but likely a CP) was seen flying north past the surveyor. 04:21 - An unknown bat (no call heard but likely a CP) was seen flying south-west past the surveyor and over the roof of B1. 04:25 - An unknown bat (no call heard but likely a CP) was seen flying east past B1 and the surveyor. 04:25 - An unknown bat (no call heard but likely a CP) was seen flying east from behind B1. 04:27 - An unknown bat (no call heard but likely a CP) was seen foraging over the roof of B1. 04:29 – An unknown bat (no call heard but likely a CP) was seen flying north-west from the direction of the roof of B1. 04:32 – A CP was seen flying east towards the surveyor then north towards the fields adjacent. 04:33 - An unknown bat (no call heard but likely a CP) was seen flying north parallel to B1 then west along the driveway. **04:34-04:50 – Multiple CP (a minimum of three) were seen foraging over the roof of B1, displaying re-entry behaviour until 04:50 where three re-entered the building around the ridge tile and the chimney**

		within the hipped roof within the north-east of the building (location shown in Appendix 1). One CP was also seen landing on the wall next to the window within the northern gable end of B1. This CP re-entered the building between the top right of the window frame and the wall.
B	As above	03:25-03:35, 03:48, 03:56, 04:00, 04:12, 04:16 – A CP was heard but not seen. 03:30 – A CP was seen foraging between B1 and the surveyor. 03:43, 03:45, 03:52, 03:58, 04:04 – A SP was heard but not seen. 03:48, 04:20 – A *Myotis* species was heard but not seen. 03:56 – A Noctule was heard but not seen. 04:10 – A BLE was heard but not seen. 04:26 – An unknown bat (either Leisler's *Nyctalus leisleri* or Serotine *Eptesicus serotinus*) was heard but not seen. 04:35 – Multiple bats (minimum of two) were seen foraging by the north-east of B1, no calls heard but likely CPs. 04:39 – Two CPs were seen flying east along B1. 04:42 – An unknown bat (no call heard) was seen flying west along B1. 04:44 – A CP (no call heard) was seen foraging over the north-west gable of B1 (main house). 04:46 – Two CPs were seen flying south-west over the single-storey part of B1. 04:49-04:53 – A CP was seen foraging over the main part of B1 (north-west gable in particular).
C	As above	03:18 – A Noctule was heard but not seen. 03:20 – Two SPs were seen foraging to the south of the surveyor. These SPs were also seen foraging by the main part of B1. 03:25 – A possible Serotine was heard but not seen. 03:32 – A CP was seen foraging by the main part of B1. 04:10 – A *Myotis* species was heard but not seen. 04:11 – A BLE was heard but not seen. 04:12 – A CP was seen foraging by the south of the surveyor. 04:17 – A SP was heard but not seen. 04:19 – A SP was seen foraging to the north-west of the surveyor.

		04:27 – A BLE was seen flying north-west behind the surveyor. **04:36-04:55 – Sixteen SP were seen swarming by the butterfly roof section of B1, before re-entering the building within the south-east corner underneath the soffit box. These bats were heard after re-entering, indicating a maternity roost.**
D	As above	03:14-04:20 – Pipistrelle species were heard throughout this time period, possible CP & SP, quick passes meant ID was difficult. 03:22 – A Noctule was heard but not seen. 03:39 & 03:43 – A *Myotis* species was heard but not seen. 03:44 – A CP was seen flying north behind B1 heading towards surveyor C. 03:59 – A CP was seen flying east in front of the surveyor. 04:24 & 04:25 – An unknown bat (no call heard but likely a CP) was seen flying by the roof of the main part of B1. 04:25 – A CP (no call heard) was seen flying north towards the main part of B1. 04:26 – Two CPs were seen foraging over the roof of the main part of B1 for a minute before suddenly disappearing. 04:28 – A CP was seen flying south over the single-storey of B1, from the main part of B1 over the head of the surveyor. 04:31 - An unknown bat (no call heard but likely a CP) was seen flying east past the surveyor. 04:33 – A CP was heard but not seen. 04:33 - An unknown bat (no call heard but likely a CP) was seen flying west over the roof of the main part of B1. 04:34 - An unknown bat (no call heard but likely a CP) was seen foraging over the roof of the main part of B1. This CP was then joined by another at 04:36. 04:37 – A CP was seen flying east from where the CPs were foraging. This bat flew under the eaves of the main roof before disappearing. 04:38 – A CP flew over the single-storey next to the surveyor, heading towards the foraging CP over B1.

		04:40 – A CP flew from where the CPs were foraging, heading east under the eaves of B1, heading towards the trees to the south-east of B1. Likely where the CP at 04:37 flew. 04:41-04:42 – A CP was seen foraging over the main roof of B1. 04:45-04:48 – A CP was seen foraging by the north of B1 before disappearing north-east of B1. 04:55 – A CP was seen foraging over the single-storey directly adjacent to the main roof of B1 before disappearing.
E	As above	03:22 & 03:27 – A Noctule was heard but not seen. 03:47 & 0352 – A Pipistrelle species was heard but not seen. 03:56 & 04:06 – A *Myotis* species was heard but not seen. 04:03, 04:15, 04:17, 04:21, 04:30 – A CP was heard but not seen. 04:23 – A CP was seen flying south over the roof of B2. 04:27 – A BLE was seen flying south past the east side of B2. 04:37 – A Pipistrelle species was seen flying south-east over B2. 04:52 – A CP was seen flying west past the front of B2 then south along the west side of B2.
F	As above	03:18 & 03:27 – A Leisler's was heard but not seen. 03:20, 03:31, 03:38, 04:17, 04:18 – A SP was heard but not seen. 03:24, 04:11, 04:55, 05:00 – A Noctule was heard but not seen. 03:44, 03:54, 04:00, 04:12 – A CP was heard but not seen. 04:21 – A CP was seen foraging at the back of B2, before flying north-east. 04:33 – An unknown bat (no call heard) was seen flying east past the surveyor and B2. 04:35 – An unknown bat (no call heard) was seen flying north towards the east side of B2. 04:36 - An unknown bat (no call heard) was seen flying south-west from the direction of the roof of B2. 04:38 – A SP was seen flying south along the west side of B2. 04:40 - An unknown bat (no call heard) was seen flying east over B2. 04:44 - A CP was seen foraging at the back of B2, before flying north-east.

		04:49 - An unknown bat (no call heard) was seen flying south past the front of the surveyor. 04:52 – Two SPs were seen flying north along the west side of B2. 04:56 – A SP was seen foraging at the back of B2, before flying north-east.
Conclusion: Three common pipistrelle were seen returning to roost within the hipped ridge within the north-east of B1. One common pipistrelle was seen returning to roost within the window lintel within the north gable end of B1. Sixteen soprano pipistrelle were seen returning to roost within the south-east corner of the butterfly roof of B1.		

4.0 Conclusions, Discussion and Recommendations

The following section details the conclusions, discussion and recommendations in the context of the proposed works.

Conclusion and Discussion

On the first (dusk) survey, no bat activity was observed associated with the buildings.

On the second (dawn) survey, three common pipistrelle were seen returning to roost within the hipped ridge within the north-east of B1, one common pipistrelle was seen returning to roost within the window lintel within the north gable end of B1 and sixteen soprano pipistrelle were seen returning to roost within the south-east corner of the butterfly roof of B1.

The findings suggest the presence of a summer roost for a low number of male and/or female common pipistrelle bats within the main part of B1; as well as a maternity roost of soprano pipistrelle within the butterfly roof of B1. It is also known (from previous surveys) that a brown long-eared feeding perch is present on the west side of the main part of B1.

Bat activity levels on site were found to be moderate, although heavier use of the tree-lined boundaries was identified.

Potential Impact

As the proposal calls for conversion of the existing building, the roosts present within it would be destroyed, with the potential for direct harm to any bats present during works.

Bat activity levels on site were found to be moderate, although heavier use of the tree-lined boundaries was identified. Any increased lighting levels on these areas would have the potential to disrupt bat foraging and/or commuting routes.

Recommendations

A European Protected Species Mitigation Licence (EPSML) from Natural England will be required in order to legally carry out the proposed works. This will require a detailed method statement / mitigation plan; in line with the accompanying document: *Offa House site plan - mitigation measures*. Agreement and subsequent implementation of which should be made a condition of any planning consent. A brief summary of the proposed mitigation/compensation measures is as follows:

- Supervision of the stripping of the existing roofs by a suitably experienced and licensed Ecologist
- Replacement roosting provision for the common pipistrelle roost that will be lost; in the form of crevice bat boxes (made from woodcrete or similar) and bat-adjusted tiles on the main building

- Provision of an artificial feeding roost for the brown long-eared bats, in replacement of the existing one, which will be lost

These are illustrated on the accompanying document: *Offa House site plan - mitigation measures*.

It is recommended that any lighting design follows the protocols outlined in the Institute for Lighting Engineers document "*Guidance Note 08/18 "Bats and Artificial Lighting in the UK: Bats and the Built Environment Series" (2018)*" to minimise disturbance and sky-glow across the site; and northern boundary in particular. Through implementation of these protocols, impacts on bat foraging/commuting can be avoided.

Compensation for impacts to the soprano pipistrelle maternity roost, and enhancement of the site for bats in general, will be provided through the construction of a bat loft; specifically one suitable both for pipistrelle maternity roosts, and for brown long-eared bats (see accompanying document: *Brown long-eared mitigation*). The bat loft (as shown on the accompanying document: *Offa House site plan - mitigation measures*) measures approx. 4m x 4.5m, and approx. 2m in height.

5.0 References

- Collins, J. (ed), (2016), Bat Surveys for Professional Ecologists: Good Practice Guidelines 3rd Edition, BCT.
- Mitchell-Jones, A.J. (2004), Bat Mitigation Guidelines, English Nature, Peterborough
- National Planning Policy Framework, 2012 http://www.communities.gov.uk/publications/planningandbuilding/nppf
- Office of the Deputy Prime Minister (2005). Circular 06/2005: Biodiversity and Geological Conservation. Para.99 http://www.communities.gov.uk/documents/planningandbuilding/pdf/147570.pdf

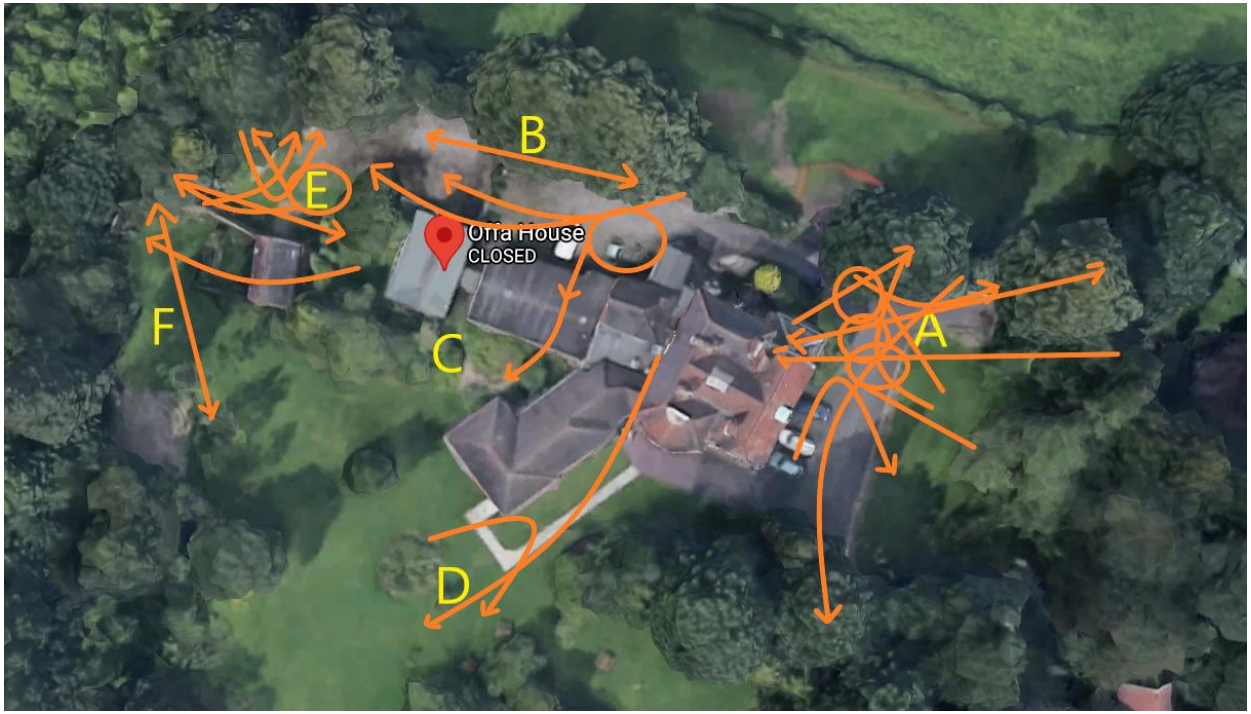
Appendix 1: Activity Maps

28/06/2021 - Dusk emergence

A - Surveyor Locations

- Bat flight path

- Re-entry/ Emergence location



Bat Dawn – 26/07/2021

A - Surveyor Locations

- Bat flight path

- Re-entry/ Emergence location

Re-entry locations within the main part of B1:

Re-entry location within the butterfly roof of B1: