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Ecological Impact Assessment for Bats, Nesting Birds, White-clawed Crayfish and The River Avon SAC

Barn at Meadow Farm, East Chisenbury

October 2023

This report is the responsibility of Abbas Ecology,

It should be noted, that whilst every effort is made to meet the client's brief,

no site investigation can ensure complete assessment,

or prediction of the natural environment

	Name	Date	Signature
Ecological Impact Assessment written by:	Simon Rayburn	01/09/2023	
Confirmation of mitigation location added by:	Simon Rayburn	15/12/2023	
Ecological Impact Assessment checked by:	Jennifer Chambler CIEEM	01/09/2023	

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Reference Number: AE 5325

Preliminary Survey:	01/02/2023
Activity Surveys:	02/05/2023, 23/05/2023, 13/06/2023
Location:	Meadow Farm, East Chisenbury, SN9 6AQ
Grid Reference:	SU 13739 52499
Client Name:	Mr M Hunt
Surveyors:	Preliminary survey: Simon Rayburn, Activity Surveys: Simon Rayburn and Pete Banfield
Report written by:	Simon Rayburn with input on White-clawed Crayfish from Stewart Burton

Executive summary

This report outlines the results of a preliminary bat and nesting bird survey, assessment of the proximity of a tributary of the River Avon SSSI and SAC, with additional consideration to White Clawed Crayfish, and the results of the recommended further bat activity surveys.

The building was found to be used by bats for foraging and as a feeding roost only, no day or night roosts were found.

The presence of White Clawed Crayfish in the tributary was assessed to be negligible given the lack of records from the data search.

There were no bird nests found within the building and no potential for use by Barn Owls.

A range of mitigation measures will be deployed including a construction method statement to protect the tributary of the River Avon and enhancements to achieve net biodiversity gain.

Proposal

The proposal is for the conversion of the thatched barn into a dwelling.

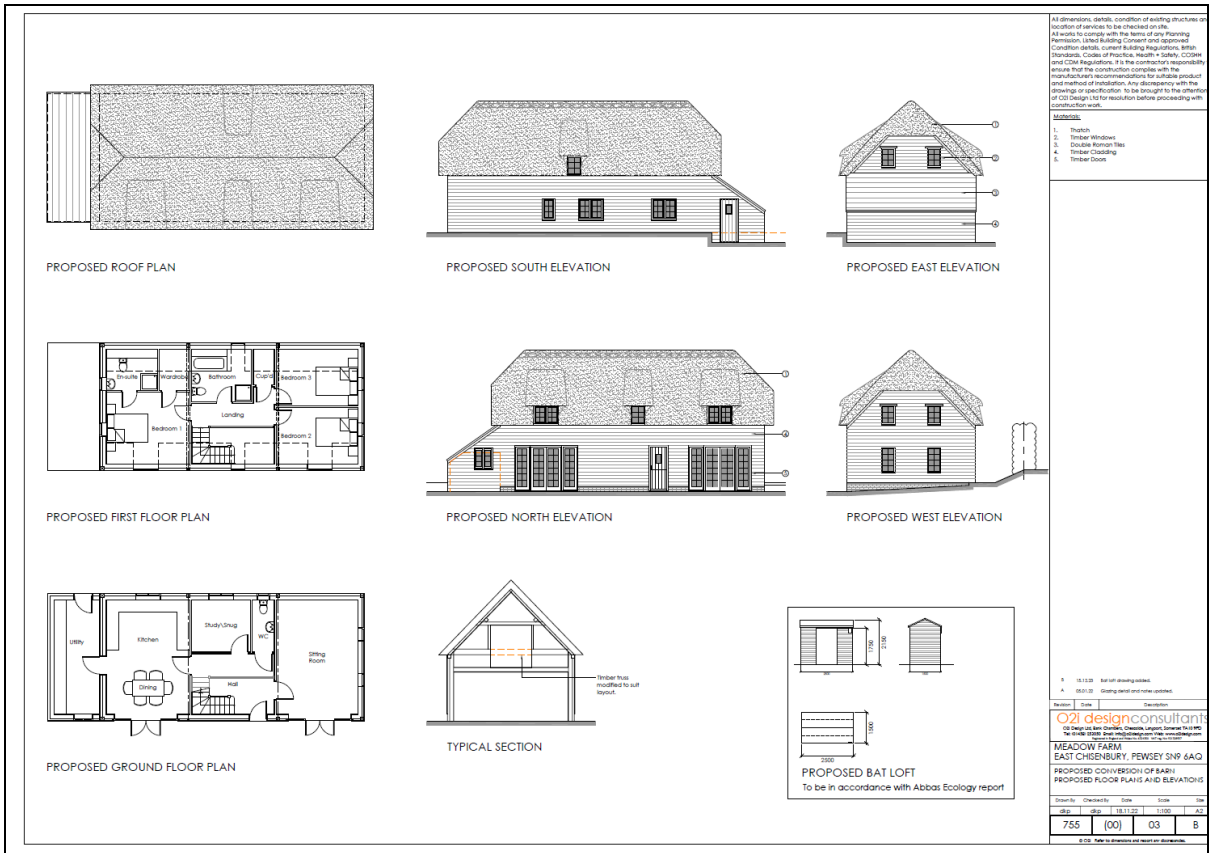


Fig. 1: Proposal plans	Copyright: O2i Design Consultants

Preliminary Ecological Appraisal

The Preliminary Roost Appraisal involved a thorough daytime inspection of the property with the aim of finding bats or evidence that they use the site. The proximity of the site to the stream was assessed along with the potential impact on the River Avon SAC as well as the potential for the stream to support any protected species.

Methodology

This consisted of searching for bat droppings, corpses, scratch marks, urine staining, grease marks and clean cobweb free areas around potential access points and crevice roosting sites within the structure and on its outside. Bats do make audible squeaks in the roost and these were listened out for during

the survey.

A consistent search effort for evidence of bats was applied to all parts of the site that are due to be impacted by the proposed works. The methodology used to search this site is consistent with the guidelines provided in the Bat Conservation Trusts Bat Survey Guidelines (2016).

The following was found:

- The barn was constructed of a timber framework with overlapping wooden planked walls and a thatched roof to a two-storey height. Glazed windows were present on all elevations at a second storey height.
- A small single storey section was present to the southern elevation which had a clay tiled roof.
- The wooden framework and walls of the barn were largely unsuitable for roosting bats as any gaps in the walls and round the window frames lead immediately to the open area of the interior, however there could be some suitable crevices in the corners where the largest uprights were present. There was some low roosting potential identified at these points.
- Some of the horizontal internal timbers had open mortise holes which could be used by crevice roosting bats, however the glazed windows make use of the interior of the building negligible by day roosting bats.
- The thatched roof was not suitable for roosting bats as thatching poses a risk of damage to the bats wings and is therefore avoided by them.
- The single storey section had potential roosting features in the gaps under the tiles which had a felt lining underneath and also in the lead flashing where the roof met the elevation.
- There were approximately 15 droppings identified as from bats found scattered individually across the interior of the barn, mostly on the garden machinery. These were sent off for DNA analysis and confirmed as being from Brown Long-eared *Plecotus auritus* and Natterer's *Myotis nattereri* bats. (see appendix 2).
- There were approximately 19 feeding signs in the form of butterfly wings and beetle wing cases scattered around the interior.

Survey Constraints

There were no constraints encountered to completing the preliminary survey.

Conclusion

After carrying out the preliminary bat and bird check; the surveyor concluded that the main section of the building had a confirmed bat roost used by Brown Long-eared and Natterer's bats and the lean-to had 'low' bat roosting potential. No bird nests were evident anywhere on or in the building.

Activity Surveys

Two activity surveys, one at dusk and one at dawn, were conducted and a static recorder was deployed in the interior of the main section of the building. The aim was to confirm the number of bats using the building, regularity of use, identify the access points, to identify if any other species were also using the building and to inform the licence required to carry out the proposed works. These were carried out on the 16/05/2023 and 01/06/2023 using two surveyors for each survey. The static recorder was deployed for 10 nights from 22/05/2023 to 01/06/2023 in a central position facing inwards. The surveyor and static deployment positions can be seen in Figure 2 below.

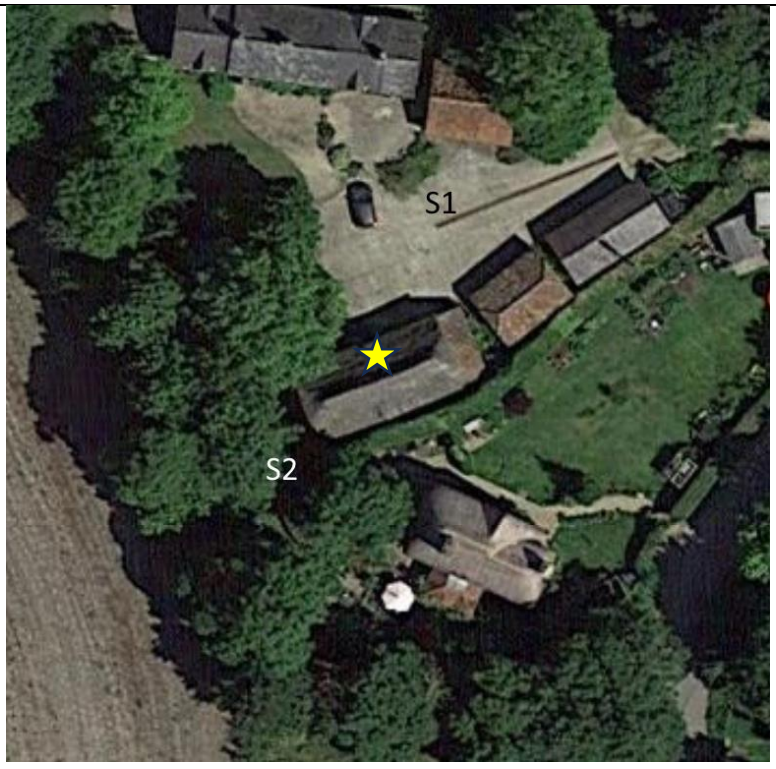


Figure 2: Positions of surveyors for both surveys. Static deployment location marked with a yellow star. Copyright Google Earth

Methodology

The methodology used to survey the site was consistent with the guidelines provided in the Bat Conservation Trust Bat Survey Guidelines (2016). The bat species were identified using sonograms from the recordings collected on the survey and static deployment. These were analysed using the software Sonobat30. Surveyor 1 used a camera in support with infra-red recording 'night-shot' capability and an infra-red lamp. Details of the survey are shown in Tables 1-3 below.

Date of Survey Visit	Start and end times and time of sunset	Structure reference/ location	Equipment used	Weather
16/05/2023	Start – 20:37 Sunset – 20:52 Finish – 22:22	Thatched barn	EMT2 Pro on Samsung Galaxy S9, Sony FDR-AX100E camera with Tracer BP2544 infra-red lamp, Anabat Scout	Start – 13˚C Finish – 11˚C 7/8 cloud 1/12 wind
Comments:	Surveyors – S1: Simon Rayburn with camera and S2: Pete Banfield.			

Table 1: Details of the emergence activity survey

Date of Survey Visit	Start and end times and time of sunset	Structure reference/ location	Equipment used	Weather
01/06/2023	Start – 04:57 Sunrise – 03:27 Finish – 05:12	Thatched Barn	EMT2 Pro on Samsung Galaxy S9, Sony FDR-AX100E camera with Tracer BP2544 infra-red lamp, Anabat Scout	Start – 10˚C Finish – 9˚C 8/8 cloud 3/12 wind
Comments:	Surveyors – S1: Simon Rayburn with camera and S2: Pete Banfield			

Table 2: Details of the return to roost activity survey

Activity Survey Results

No bats were seen to emerge or enter the building at any location during either of the survey visits. Some moderate foraging activity and occasional commuting passes were observed around the building during the dusk survey by Common Pipistrelle *Pipistrellus pipistrellus* and Soprano Pipistrelle *Pipistrellus pygmaeus* bats with some occasional passes by Serotine *Eptesicus serotinus*, Long-eared *Plecotus sp.* and Myotis *Myotis sp.* bats.

The dawn survey visit had a much lower level of activity with a small amount of foraging by Common and Soprano Pipistrelle bats plus two passes by an unidentified species of Myotis bat.

Date	Start and end time	Species	Roost type	Structure reference	Roost location	Access point
16/05/2023	Start – 20:37 Finish – 22:22	n/a	n/a	Thatched barn	n/a	n/a
Notes	No bats were recorded emerging from the building. Some foraging by Common and Soprano Pipistrelle bats, occasional Myotis and Serotine passes, plus a single pass by a long-eared bat heading towards the stream close to the house.					

Table 4: Results from the first emergence activity survey

Date	Start and end time	Species	Roost type	Structure reference	Roost location	Access point
01/06/2023	Start – 03:27 Finish – 05:12	n/a	n/a	Thatched barn	n/a	n/a
Notes	Low levels of foraging by Common and Soprano Pipistrelle bats plus occasional passes by Myotis bats.					

Table 5: Results from the return to roost activity survey

Static Recorder Results

The static detector recorded three species using the interior of the building which were Common Pipistrelle, Brown Long-eared bat (confirmed from social calls) and a species of Myotis bat. The nature of Myotis bat call structure in relation to the environment they're in at the time of recording makes them extremely difficult to separate to species by call analysis. In particular there is very high overlap of call structure in high-clutter environments, the interior of a building being exactly that. As such the audio recordings are recorded as Myotis sp. only.

There were 217 10s recordings of Common Pipistrelle bats, 62 recordings pf Myotis bats and 39 recordings of Brown Long-eared bats with bats recorded on all nights during the survey period.

Common Pipistrelle bats were recorded on every night with Myotis bats only absent on the 27th-28th May and Brown Long-eared bats only recorded from 27th-30th May. The number of recordings of all bats was fairly steady across the survey period with a slight increase in recordings on the 29th May.

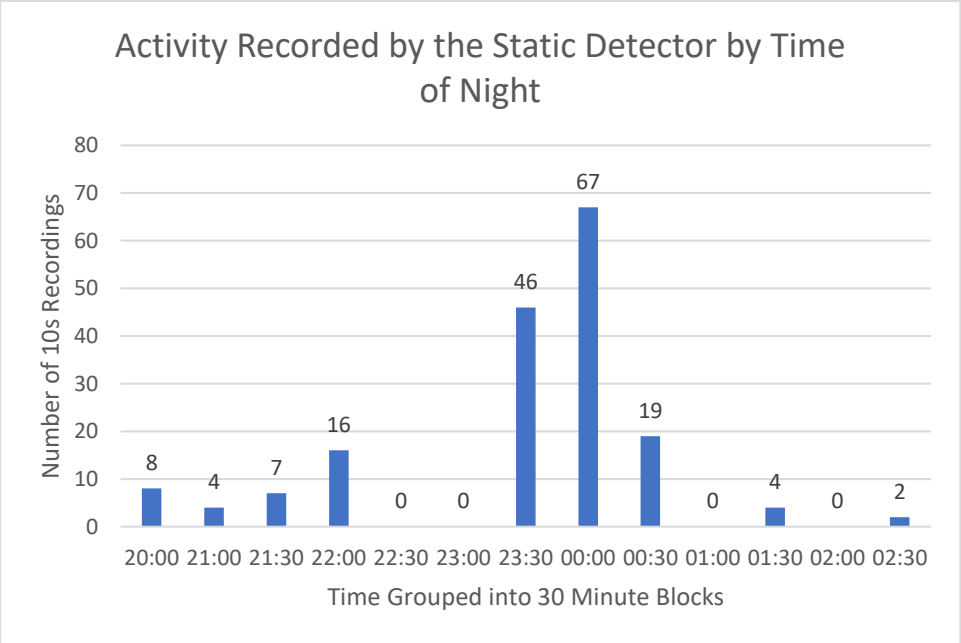
The times that bats were recorded using the building across the survey period were as follows: Common Pipistrelle bats were recorded between 20:24 and 02:39 with the Myotis bats recorded between the time 21:28 and 02:45 and Brown Long-eared bats between 22:11 and 01:26.

Activity was greatest between 23:30 and 00:30 with all three species recorded inside during this time period. This suggest a feeding/foraging pattern of activity only, with bats entering as they pass through the area, and is unlikely to be a night roost given the narrow period activity within the night across the survey period.

Table 6. Distribution of bat activity by date (start of night) across the survey period.

Night starting	Ppip	Myo	Paur	Total
22 05 2023	11	8	0	19
23 05 2023	9	20	0	29
24 05 2023	10	20	0	30
25 05 2023	21	1	0	22
26 05 2023	28	1	0	29
27 05 2023	26	0	10	36
28 05 2023	28	2	7	37
29 05 2023	45	3	4	52
30 05 2023	11	4	16	31
31 05 2023	28	3	2	33
Total	217	62	39	318

Graph 1. Distribution of bat activity by time of night across the survey period.



Desk Study

A two-kilometre data search for bats and 1km search for White-clawed Crayfish was requested from the Wiltshire Environmental Record Centre. Local sites data was not requested due to the absence of habitats within the site and impacts to adjacent habitats were identified.

Mapping information was looked at on the MAGIC Defra website. The following was determined:

- The River Avon SSSI and SAC lies 80m to the north. A tributary of the River Avon runs along the boundary of the site to the west, 8.8m from the base of the building. The River Avon is richer and more varied than in most chalk streams with over 180 species of aquatic plant having been recorded, one of the most diverse fish faunas in Britain and a wide range of aquatic invertebrates.
- Salisbury Plain SSSI lies 1.8km to the west & 2.2km to the east. The Salisbury Plains support the largest known expanse of unimproved chalk downland in northwest Europe and represents 41% of Britain's remaining area of this rich wildlife habitat.
- The following notes were found with regards to the nearby SSSI impact risk zones:
    - Discharges: Any discharge of water or liquid waste that is discharged to ground (ie to seep away) or to surface water, such as a beck or stream. If applicable, this would require further consultation with Natural England.
    - Notes 1: Strategic solutions for recreational impacts are in place. Please contact your Local Planning Authority as they have the information to advise on specific requirements.
    - Notes 2: NUTRIENT IMPACT AREA. For new development with overnight accommodation Reg 63 of the Conservation of Habitats and Species Regulations 2017 must be applied and additional measures required. LPA to refer to Natural England's Nutrient Neutrality advice.
- Priority Habitats close to the site included patches of Traditional Orchard, Deciduous Woodland plus Woodpasture and Parkland BAP habitat. None of these habitats were in or immediately adjacent to the site.
- The site lay within the Countryside Stewardship Priority Species zones for Brown Hairstreak butterflies and the birds Lapwing and Corn Bunting.
- The site lay within broad areas where Lapwing, Corn Bunting, Grey Wagtail, Turtle Dove, Stone Curlew and Grey Partridge have been recorded.

There was one protected species licence issued by Natural England within 2km of the site. This was for the following three bat species Common Pipistrelle *Pipistrellus pipistrellus*, Brown Long-eared *Plecotus auritus* and Serotine *Eptesicus serotinus*. The licence was issued in 2019 and was approximately 2km to the southwest

The data search from the Wiltshire Environmental Record Centre returned no records of White-clawed Crayfish. There were 97 records of bats of which 14 were of roosts, the remaining records were of commuting and foraging bats. The closest records were 450m away and the species recorded included Common Pipistrelle, Brown Long-eared and Natterer's bats, all of which were recorded using the building here. Additional species included Western Barbastelle *Barbastella barbastellus*, Serotine *Eptesicus serotinus* and Lesser Horseshoe bats *Rhinolophus hipposideros*.

Conclusion and recommendations

The building was found to have droppings from Brown Long-eared and Natterer's bats (appendix 2) from the preliminary survey and was found to be used as a feeding roost with activity recorded from within the building by Common Pipistrelle, Long-eared and Myotis bats. There were no emergences or returns to roost observed during either of the activity survey visits and the times of the recordings from the static deployment did not suggest any emergences or returns to roost during that period with the early evening Common Pipistrelle recordings being continuous foraging activity.

Common Pipistrelle bats don't typically use feeding roosts, whereby prey is caught, and the individual hangs up whilst consuming the prey, so are expected to be using the building for foraging only.

The findings confirm the use of the building as a feeding roost, no other roosts were found to be present.

The findings demonstrate that there will be a very low risk of disturbance or harm to bats as they are highly unlikely to be present in the building during the works, however potential roosting features remain which could be used opportunistically both by the bats using the building as a feeding roost and others, in the future. In the unlikely event that any bats should be found during the works at any time then the works must stop, an ecologist contacted, and a low-impact class licence applied for before proceeding.

The desk study did not return any records of White Clawed Crayfish within 2km of the site, so it is highly unlikely that they are present in the stream adjacent to the building.

There were no bird nests identified in the building and there were no suitable spaces for use accessible by Barn Owls.

There is a risk of pollution to the tributary of the River Avon SAC, therefore a construction method statement will be required.

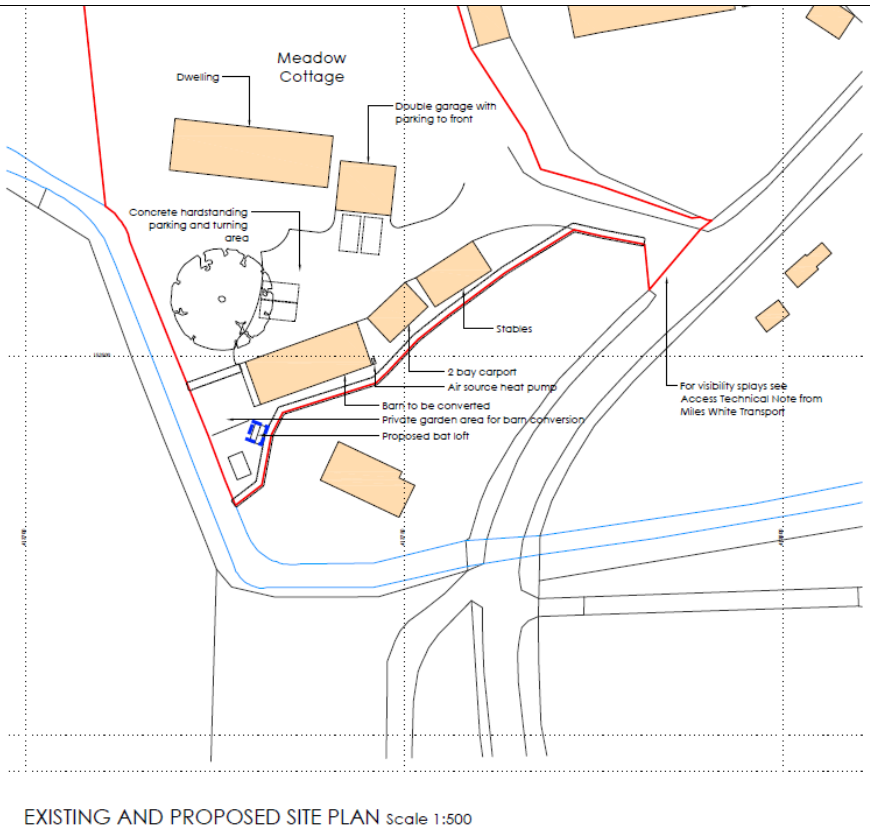
Mitigation

Bats

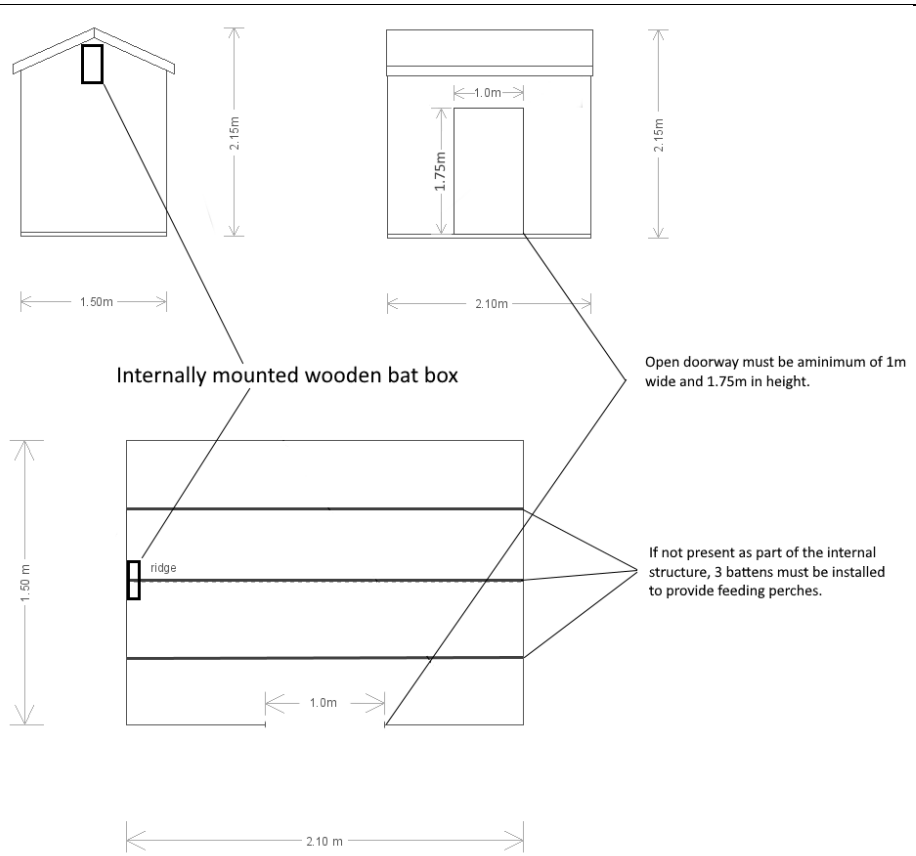
A replacement structure will be required to continue to provide a habitat suitable for use as a feeding roost for bats. This will be a garden shed type structure which will have an internal or external crevice roosting feature in the form of a wooden bat box as well as suitable roosting perches.

This design is derived from the Vincent Wildlife Trust Lesser Horseshoe bat night roost https://www.vwt.org.uk/download_category/lesser-horseshoe-bat/ to ensure a suitable size and features are present for use by bats. Brown Long-eared bats are also void-roosting bats and therefore have similar requirements to Lesser Horseshoe bats.

The structure will be located close to the existing building on as per figure 4 below, and the design will be as per figure 5 below.



Location of the bat roost highlighted in blue. Copyright O2i Ltd, annotated by Abbas Ecology.



The minimum specifications of the replacement bat roost.

Figures 4 and 5. The location and design for the replacement feeding roost with minimum sizes marked.

The internal bat box will be a simple wooden crevice Kent style box as per figure 6 below.



Figure 6. The internal bat box for the bat roost. This particular design can be bought from https://www.nhbs.com/nhbs-kent-bat-box-2

Monitoring of the replacement feeding roost will be carried out one year after installation to determine if the structure is successfully being used by bats. This will involve the deployment of a static recorder for a minimum of 10 days, a check for bat droppings to be confirmed by DNA analysis and placement of sheets during the static deployment period to check for fresh droppings.

A sensitive lighting scheme must be employed to ensure no disturbance to foraging and commuting bats along the river corridor. It will adhere with Bat Conservation Trust guidelines: Guidance Note 08/23 Bats and Artificial Lighting at Night (BCT & ILP, 2023) and will employ the following actions:

- All lighting must not illuminate the vegetation around the building, in particular the western elevation facing the river corridor.
- LED bulbs only must be used having 'warm white' (2700 Kelvin or lower) spectrum and having peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats, as per the guidance.
- Motion sensors (PIR) with short timers (maximum of 1 minute) should be installed for all external lighting.
- 0% upward light ratio must be adhered to e.g. through horizontally angled luminaires or by using screening hoods or cowls.
- There must be no lighting over the height of 2m.

Nesting Birds

Should any nests be identified within the hedgerows or trees around the building, or in the building itself, then a 5m buffer must be placed around the active nest within which no works can be carried out to ensure the nest is not abandoned. This must be checked by an ecologist to confirm nesting has finished, before works can resume.

The River Tributary

A buffer strip will be put in place a minimum of 6m from the top of the stream bank and will be demarcated using high visibility or Heras fencing. Full details of the application and management of the buffer strip can be found in the accompanying construction method statement. This includes instructions such as; Contractors must be briefed that no vehicles may enter the buffer strip, nor any materials be stored, or waste dumped within the buffer strip and no contractors may enter the watercourse.

Biodiversity Net Gain Requirements

In order to meet the biodiversity net gain objective of the National Planning Policy Framework (2019), the development will need to include at least the following enhancements:

- One 'Schwegler 2fn general purpose' bat box or, if not in stock, a 'Convex Bat Box' - to be mounted at a height of 3m or more on the building or a tree within the grounds of a suitable size and in a location where there are clear flight-lines below the bat box.
- One 32mm nest box, or similar, is to be mounted on one of the trees on site.

These enhancement features are available from https://www.wildcare.co.uk/, https://nhbs.com and other online shops. Features may be substituted for equivalent items if first agreed by the ecologist. Photographic evidence of the installed enhancement feature/s will be required post-development.

The findings of this bat check are valid for a period of two years.

Legislation relevant to these target species is outlined in appendix 1.

In the unlikely event of bats being found using this structure by anyone before or during the proposed development works then those carrying out the works must stop immediately and contact Abbas Ecology on 01305 889855 or 07500 781973.

Photographs (taken during the preliminary survey)



Photo 1. View looking towards the stream with a patch of grassland with woodland flowering plants.



Photo 2. View looking south along the stream.



Photo 3. The vegetable growing area between the barn and the stream.



Photo 4. The north and eastern elevations of the barn.



Photo 5. The interior of the barn looking west.



Photo 6. Some of the bat droppings found on the machinery inside the main area of the barn.



Photo 7. Some of the bat feeding signs found inside the main area of the barn.

Appendix 1: Legislation

All bat species are fully protected under section 9 (5) of the Wildlife and Countryside Act (WCA) 1981 (as amended). According to this act it is an offence to:

- Intentionally capture, kill or injure one of these animals
- Intentionally or recklessly damage, destroy or obstruct access to any structure or place used by one of these animals for shelter or protection
- Intentionally or recklessly disturb an animal whilst it is using this place
- sell, offer for sale or advertise for one of these animals live or dead

All bat species are fully protected under Annex IV of the EC Directive 92/43/EEC, which is transposed in UK law under the Conservation of habitats and Species Regulations (HSR) 2017.

Barn owls (Tyto alba) and other breeding birds are protected under Schedule 1 of the WCA (1981). This makes it an offence to disturb breeding birds.

The National Planning Framework has been revised in July 2021. Section 15, NPPF July 2021 states that planning policies and decisions should contribute to and enhance the natural and local environment.

Appendix 2: DNA Analysis Results

Order Number: 1856

Swift Ecology

srayburn@abbasecology.co.uk

Samples submitted

Sample Code	Multi-species?	Sample Type	Date Sample Found	Species Group	Site postcode/ post town /grid ref	Site description / comments (Optional)	Suspected identity of species
SEL-1856-1	No	Faecal	01/02/2023	C. Bats	Yeovil		

Analysis Results

Sample Code	DNA Extraction Code	Species Identified	ID Method	Ct value	% match
SEL-1856-1	EG-2023-0157	Plecotus auritus (Brown long-eared bat) and Myotis nattereri (Natterer's bat)	qPCR	20/20	

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