

Aberdaunant, Llanerfyl Bat Report

Prepared for Chrysalis Architectural Design

January 2022

Revision 01

TURNSTONE ECOLOGY LIMITED


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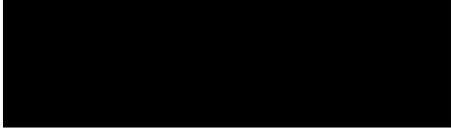
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Prepared by: 
Clare Knight
Senior Ecologist 25/11/2022

Checked and Approved 
For Issue by: Stephen Wilson
Principal Consultant 25/11/2022

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SURVEY AND REPORT VALIDITY

It is important that planning decisions are based on up-to-date ecological reports and survey data. However, it is difficult to set a specific timeframe over which reports or survey data should be considered valid, as this will vary in different circumstances. In some cases there will be specific guidance on this (such as for the age of data which may be used to support an EPS licence application) but in circumstances where such advice does not already exist, the Chartered Institute of Ecology and Environmental Management (CIEEM) has provided the general advice set out below.

<i>Age of Data / Survey / Report</i>	<i>Validity</i>
Less than 12 months	Likely to be valid in most cases.
12-18 months	Likely to be valid in most cases with the following exceptions: Where a site may offer existing or new features which could be utilised by a mobile species within a short timeframe; Where a mobile species is present on site or in the wider area, and can create new features of relevance to the assessment; Where country-specific or species-specific guidance dictates otherwise.
18 months to 3 years	A professional ecologist will need to undertake a site visit and then review the validity of the report. Some or all of the other ecological surveys updated.
Protected Species Licensing	Licence applications usually only possible using data less than 2 years old

The likelihood of surveys needing to be updated increases with time and is greater for mobile species or in circumstances where the habitat or its management has changed significantly since the surveys were undertaken. Factors to be considered include (but are not limited to):

Whether the site supports, or may support, a mobile species which could have moved on to site, or changed its distribution within a site;

Whether there have been significant changes to the habitats present (and/or the ecological conditions/functions/ecosystem functioning upon which they are dependent) since the surveys were undertaken, including through changes to site management;

Whether the local distribution of a species in the wider area around a site has changed (or knowledge of it increased), increasing the likelihood of its presence.

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1 INTRODUCTION

1.1 Purpose of Report

This report has been completed in connection with the proposed demolition and re-build of a derelict farmhouse at Aberdaunant, Llanerfyl, Powys (OS Grid Location SJ 018 095). The location of the proposed development site is shown in *Figure 1* and the proposed development plans are fully detailed in *Section 4*.

A Preliminary Roost Assessment was completed on 17th June 2021 and bat activity surveys were completed between June and August 2021. The potential presence of nesting birds within the proposed development site has also been assessed.

This report details survey and assessment methodology along with the results of a desk-based study and on-site surveys. It also provides an assessment of potential impacts and appropriate mitigation to offset any impacts associated with the proposal.

Figure 1. Location of proposed development



1.2 Ecological Context

The proposed development site is located in a rural location approximately 1.6 km west of Llanerfyl village centre (*Figure 1*). The site comprises of a derelict farmhouse with attached stone barn used for storing agricultural supplies and two outbuildings. Grazed fields border the farmhouse and access to site is via a track which crosses through fields grazed by sheep (*Figure 2*). The proposals involve the demolition of the existing farmhouse and construction of a new residential dwelling in its footprint. The agricultural barn attached to the eastern aspect of the farmhouse will be retained and will remain in use

as an agricultural barn. The two outbuildings will be demolished and a detached garage will be constructed.

The development site is immediately bordered by sheep grazed fields and a line of trees and small area of woodland which act as windbreaks for the property. The wider landscape is dominated by agricultural fields, woodland pockets and scattered residential houses and farms.

Figure 2. Proposed development site (red line boundary) (www.bing.com/maps accessed 17.11.2021)



2 METHODS

2.1 Desk-based Study

2.1.1 Informative

There are 17 species of bat which are currently known to breed in the UK. These species are shown in *Table 1* along with their UK status and roost preferences.

Table 1. UK breeding bat species

Species	UK Status	Main Roost Preferences
Common Pipistrelle (<i>Pipistrellus pipistrellus</i>)	Common	Buildings and trees
Soprano Pipistrelle (<i>Pipistrellus pygmaeus</i>)	Common	Buildings and trees
Nathusius' Pipistrelle (<i>Pipistrellus nathusii</i>)	Rare	Buildings
Daubenton's Bat (<i>Myotis daubentonii</i>)	Fairly Common	Buildings and trees
Bechstein's Bat (<i>Myotis bechsteinii</i>)	Very Rare	Trees, rarely buildings
Natterer's Bat (<i>Myotis nattereri</i>)	Uncommon	Buildings
Whiskered Bat (<i>Myotis mystacinus</i>)	Uncommon	Buildings
Brandt's Bat (<i>Myotis brandtii</i>)	Uncommon	Buildings
Alcathoe Bat (<i>Myotis alcathoe</i>)	Very Rare	Trees
Barbastelle (<i>Barbastella barbastellus</i>)	Very Rare	Trees, rarely buildings
Brown Long-eared Bat (<i>Plecotus auritus</i>)	Common	Buildings and trees
Grey Long-eared Bat (<i>Plecotus austriacus</i>)	Very Rare	Buildings
Greater Horseshoe Bat (<i>Rhinolophus ferrumequinum</i>)	Very Rare	Buildings
Lesser horseshoe Bat (<i>Rhinolophus hipposideros</i>)	Rare	Buildings
Noctule (<i>Nyctalus noctula</i>)	Common	Trees
Leisler's Bat (<i>Nyctalus leisleri</i>)	Uncommon	Trees and some buildings
Serotine (<i>Eptesicus serotinus</i>)	Uncommon	Buildings

All UK bat species are protected by law (full details in Section 5) with Greater Horseshoe, Lesser Horseshoe, Barbastelle and Bechstein's Bats species that can have Special Areas of Conservation (SACs) designated for them under Annex 2 of the Habitats Directive.

2.1.2 Designated Sites and Historic Records

Any relevant historic records within 2 km of the proposed development have been obtained from freely available information on the internet, such as planning portals and NBN Atlas (<https://nbnatlas.org/>) where unless stated otherwise, all records are provided to the NBN Atlas under licences CC-BY or OGL.

2.2 Preliminary Roost Assessment

The buildings were assessed for potential to support bat roosts. The assessment involves a consideration of various factors including;

Light levels;

Temperature regime and protection from weather;
Access to the interior of the building or to other suitable roost sites;
Potential roost sites;
Building construction;
Tree structure; and
Habitat context.

Based on these factors, an assessment was made of whether the buildings affected by the proposals might support bats and the type and number of roosts that might be present.

A detailed inspection was made of the exterior and, where possible, the interior of the buildings within the proposed development boundary for any evidence of bat use, such as live or dead bats, droppings, scratch marks, staining and prey remains, and in some cases the absence of cobwebs. Large quantities of cobwebs in roof voids or at access points tend to be suggestive of no bat use, although this evidence is not conclusive.

Features identified as possible bat access points or potential roosting locations were thoroughly searched where possible, using powerful torches and binoculars to facilitate the process. An endoscope and ladders were also used to enable more detailed inspection of cracks and crevices as far as access allowed.

The survey was undertaken in good light conditions. This type of survey can be completed at any time of year though the optimal time period for completion is at times when bats are most likely to be present in buildings (April-October). That said evidence of bats, if present in sheltered locations, is likely to persist well beyond this time period.

Buildings and trees are categorised according to their suitability for roosting bats as follows (taken from Bat Survey Guidelines, 3rd Edition):

Negligible – Negligible habitat features on site likely to be used by roosting bats

Low – A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (*i.e.* unlikely to be suitable for maternity or hibernation). Or a tree of sufficient size and age to contain potential roost features but with none seen from the ground, or features seen with only very limited roosting potential.

Moderate – A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only).

High – A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their

size, shelter, protection, conditions and surrounding habitat. They could be suitable for maternity roosts or hibernation sites.

Confirmed – Roosting bats confirmed as being present, either by the discovery of live or dead bats, droppings, prey remains, scratching or fur-staining.

Habitats were also assessed for their suitability for use by foraging or commuting bats. Areas of particular interest vary between species, but generally include sheltered areas and those habitats with good numbers of insects, such as woodland, scrub, hedges, watercourses, ponds, lakes and more species-rich or rough grassland.

2.3 Bat Activity Surveys

Evening emergence and dawn re-entry surveys are the primary methods for locating roosts in trees, buildings or built structures, as bats are not always found by internal and external inspection surveys (*e.g.* if the bats roost in areas that cannot be searched and/or leave little or no visible trace). These surveys can also give a reasonable estimate of the number of bats present.

The surveys were carried out by at least one principal ecologist and up to four ecologists from Turnstone Ecology who are experienced at completing bat surveys. The surveyors used Echo Meter Touch 2 Pros and noted information on time, species and behaviour onto survey forms. Bat calls were continually recorded for the duration of the survey to ensure all bat activity was saved. Audio tracks were downloaded and assessed using the appropriate software to confirm the identity of bats noted during the survey. An infra-red night-vision camera was also used to record bat activity during the dawn re-entry survey.

Five surveyors were considered sufficient to ensure that all suitable roosting features were fully covered during a survey. During each visit the surveyors were able to position themselves so that any activity associated with suitable roosting features could be clearly observed and general activity around the site could also be recorded from the surveyor's location. The 19th August dusk survey was completed by two surveyors covering the eastern barn section of the building only. The remaining building sections were covered by three surveyors on the 31st August 2021.

Figure 3. Surveyor locations (yellow stars) and infrared camera (green circle) (www.bing.com/maps accessed 17.11.2021)



The surveys were carried out during appropriate weather conditions (see *Table 1* for full details) and access was sufficient to successfully complete the surveys.

Table 1. Survey timings and conditions

	Dusk Survey 17/06/2021		Dawn Survey 22/07/2021		Dusk Survey 19/08/2021		Dusk Survey 31/08/2021	
	Start	End	Start	End	Start	End	Start	End
Time	21:25	23:10	03:48	05:18	20:15	22:00	19:39	21:48
Temp (°C)	14.0°	12.0°	12.0°	12.0°	16.0°	16.0°	12.0°	11.0°
Wind (Bft)	1	1	0	0	1	1	0	0
Cloud (Octas)	2	2	0	0	8	8	8	8
Precipitation	Dry		Dry		Light rain first 15 mins, then dry		Dry	
Sunset/rise	21:40		05:18		20:30		20:03	

2.4 Nesting birds

Habitat that might be used by nesting birds was identified and actively nesting birds or evidence of nesting birds noted where present. Special consideration was given to the potential presence of Barn Owl (*Tyto alba*), which is a Schedule 1 protected bird species.

2.5 Constraints

All surveys were carried out at a suitable time of year and during appropriate weather conditions and access was sufficient to successfully complete the surveys.

3 RESULTS

3.1 Desk Study

3.1.1 Designated Sites

One designated site is located within 2 km of the proposed development site. Bryn Coch Site of Special Scientific Interest (SSSI) is located approximately 1.1 km south-west of site and is designated for its botanical interest, with lowland fen and acid grassland habitats present which are scarce in Montgomeryshire.

3.2 Preliminary Roost Assessment

3.2.1 General

The proposed development site consists of a farmhouse with attached agricultural barn and two outbuildings. Grazed fields are present around the farmhouse and a woodland belt along the eastern and southern boundaries acts as a windbreak for the property. Grazed fields extend to the north, east and west and form the wider ownership boundary. The existing layout of the site is shown in *Figure 4* and existing elevations are shown in *Figure 5*.

Figure 4. Aerial view of affected building and outbuildings (outlined in red) and surroundings (www.bing.com/maps accessed 17.11.2021)



Figure 5. Existing front (south-east) and rear (north-west) elevations

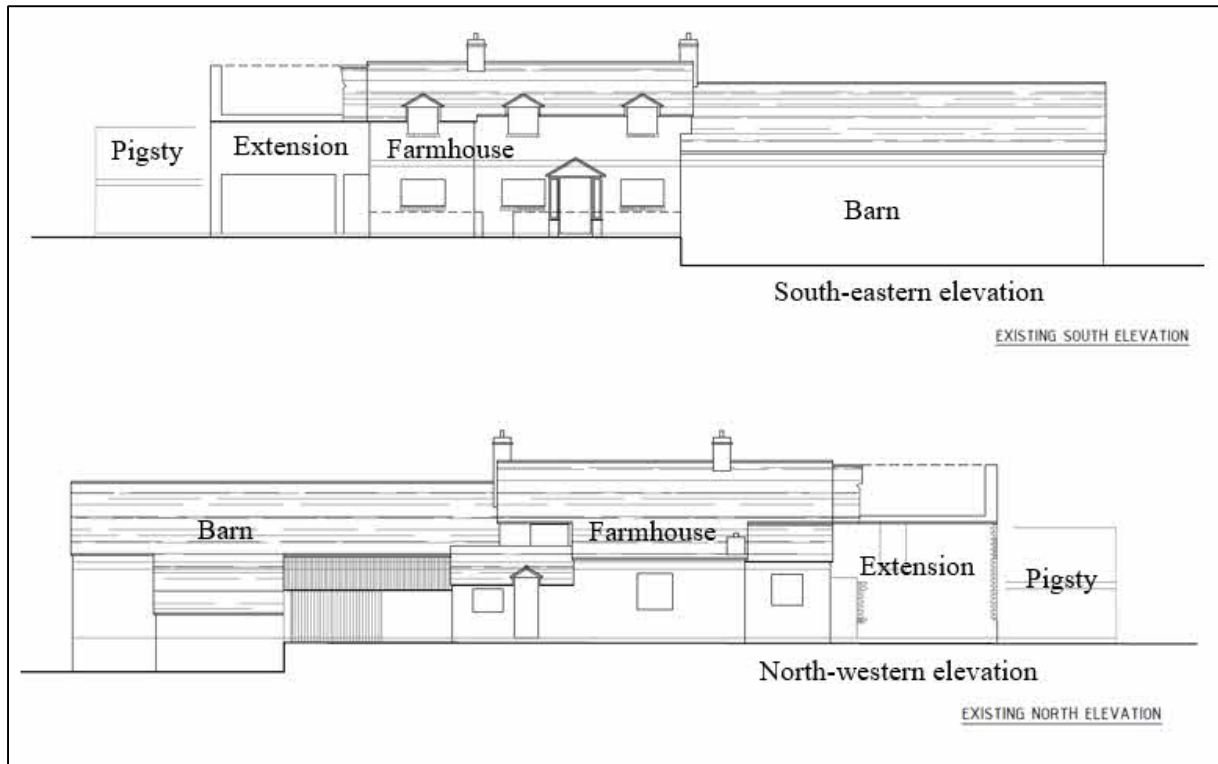
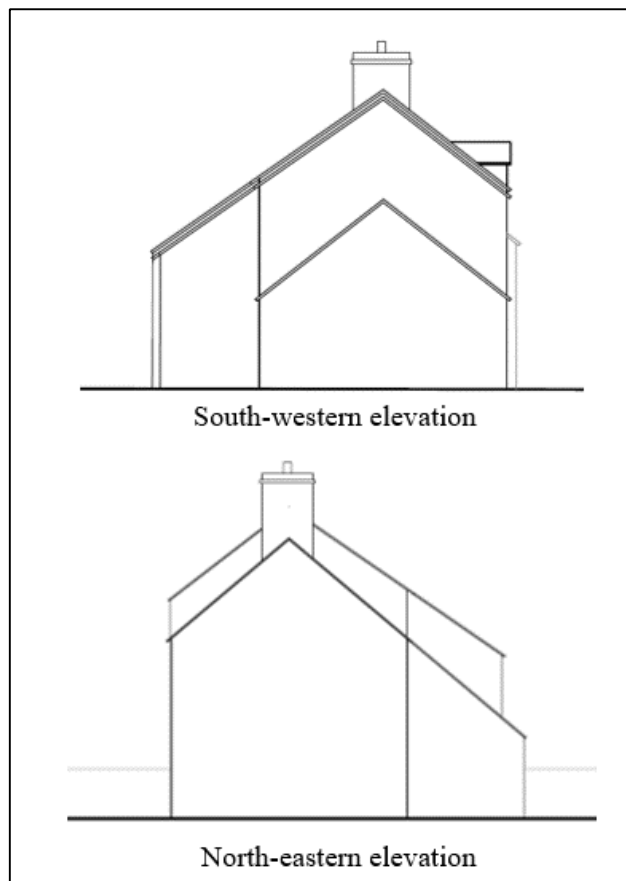


Figure 6. Existing north-eastern and south-western elevations



3.2.2 External building description

Farmhouse

The farmhouse at Aberdaunant is a two-storey white-rendered property with pitched, slate tiled roof and three brick chimneys. A porch, dormer windows and metal-framed windows, some of which contain broken panes of glass, are present on the southern aspect (*Plate 1*). The northern aspect has a sloping roof down to the ground floor level with a combination of timber, uPVC and metal framed windows and doors (*Plates 2 and 3*). Timber soffit boxes are located along the north-western and south-eastern elevations and timber barge boards are located on the north-eastern and south-western gable ends (*Plates 2 and 4*).

A two-storey stone and concrete block extension is present on the western aspect of the farmhouse, this is in poor condition with the majority of the corrugated metal roof missing and the windows in a poor state of disrepair (*Plates 2 & 3*). A single storey pigsty adjoins the western end of the extension. The pigsty has stone walls and a pitched, slate tiled roof with timber roof frame and a timber barge board on the western gable end. Two open doorways are present along the southern elevation of the pigsty and a low level retaining stone wall is located to the south (*Plates 2 and 5*).

Plate 1. South-eastern elevation of the farmhouse



Plate 2. North-western elevation of farmhouse, attached stone extension and Pigsty



Plate 3. North-western elevation of farmhouse



Plate 4. North-eastern gable end of farmhouse adjoining barn



Plate 5. South-western end wall of the stone extension and single-storey pigsty



Agricultural barn

Attached to the eastern aspect of the farmhouse is a single-storey agricultural barn which is currently used for household storage (*Plates 6 to 9*). The barn is constructed of stone with a pitched, slate tiled roof. The windows and doors are wooden with stable style doors present along the southern aspect of the barn and a timber barge board is located on the north-eastern gable end. Two single storey lean-to extensions are located along the northern elevation of the barn. These extensions comprise a small stone lean-to with sloping slate tiled roof and timber roof frame and a more modern tin sheeted lean-to.

Plate 6. South-eastern elevation of agricultural barn



Plate 7. North-eastern gable end and south-eastern elevation of barn

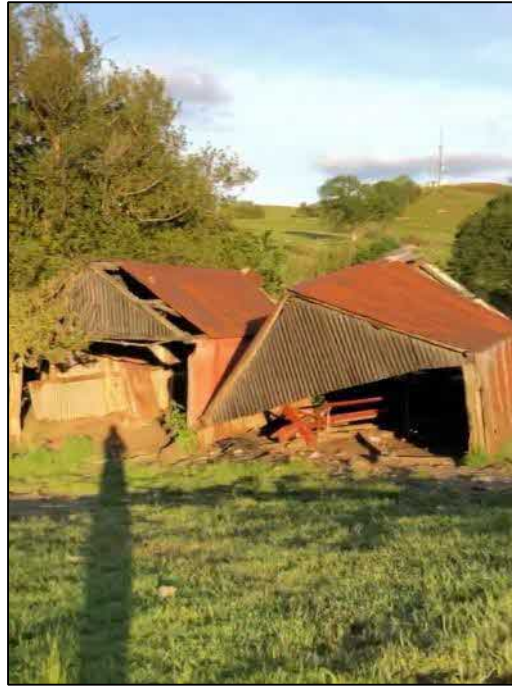


Plate 8. Northern aspect of agricultural barn and lean-to extensions



Outbuildings

The outbuildings to the south-west of the farmhouse comprises two open-fronted, simple timber framed buildings with corrugated metal roofs and walls (*Plate 9*). The roofs of the outbuilding have missing tin sheets and the outbuilding to the south-west has partially collapsed. Both structures are disused and in very poor condition.

Plate 9. Outbuildings**3.2.3 Internal building description***Farmhouse*

The first floor of the farmhouse comprises three bedrooms and a small side loft that runs along the northern side of the house accessed via a small open doorway on the first floor landing. A small window is located at the north-eastern end of the side loft which makes the majority of the space light. There is a small loft void (approximately 12m long x 0.5m height floor to ridge) at the apex of the roof and running the length of the farmhouse however there is no access into this void so an internal inspection was not possible. Small voids are present above the dormer windows along the southern elevation, the ceiling is damaged around one of these which has created an opening into the bedroom.

Agricultural barn

Internally the agricultural barn has exposed stone walls and a King post timber roof frame (*Plate 10*). Due to the shuttered windows and solid timber doors, the interior of the barn is dark with the exception of the southern gable end where there is a hole in the roof abutting the farmhouse. There is no enclosed loft space within the attached agricultural barn, the barn is open to the roof.

Plate 10. Interior of agricultural barn



3.2.4 Suitable roosting features and evidence

Farmhouse

During the Preliminary Roost Assessment small numbers of scattered bat droppings characteristic of a Pipistrelle species were recorded within the ground floor of the farmhouse. An accumulation of bat droppings (<20) characteristic of Brown Long-eared Bat and a small number of moth wings were recorded in a doorway on the first floor landing. During the August activity surveys accumulations of fresh bat droppings characteristic of Lesser Horseshoe (*Rhinolophus hipposideros*) were noted in two locations on the landing of the first floor (*Plate 11*) and within the side loft on the first floor. An individual Common Pipistrelle was also observed roosting on the wall of the ground floor sitting room (*Plate 12*).

Numerous features suitable for roosting bats were recorded in and around the farmhouse and associated extension and pigsty. These included gaps along the ridge line, lifted and broken roof tiles, gaps around the chimneys (*Plate 13*), gaps around the dormer windows, gaps under the barge boards (*Plate 14*), holes into timber soffit boxes (*Plate 15*), holes into walls and wall tops (*Plate 16*) and gaps under lifted lead flashing. There is open flight access into the farmhouse via an open window on the first floor and broken panes of glass on the ground floor along the south-eastern elevation (*Plate 17*).

Plate 11. Accumulation of Lesser Horseshoe droppings on landing within farmhouse



Plate 12. Common Pipistrelle within sitting room in farmhouse



Plate 13. Gaps in flashing and under lifted ridge tiles



Plate 14. Gaps behind barge board and around chimney on north-eastern elevation of farmhouse



Plate 15. Hole in soffit and under lifted roof tiles



Plate 16. Holes into walls of extension



Plate 17. Gaps by dormer windows (red circles), broken windows on ground floor (yellow rectangles), open windows on first floor, gaps at wall top (green rectangle) and lifted tiles around chimney (purple rectangle)



Agricultural Barn

Scattered bat droppings characteristic of Brown Long-eared Bat and a Pipistrelle species were recorded within the barn and an accumulation of fresh droppings (<20) characteristic of Brown Long-eared Bat were noted below a hole into a door lintel with small numbers of droppings (<10) observed within the hole (*Plates 18 and 19*).

Numerous suitable features were noted around the barn which included gaps in the stonework, gaps around window and door frames and lintels (*Plate 20*), gaps at wall tops and gaps under lifted roof and ridge tiles (*Plates 13, 18 and 19*). There is open flight access for bats into the barn via the hole at the south-western end of the barn roof (*Plate 21*).

Plate 18. Hole in door lintel in barn where droppings characteristic of Brown Long-eared Bat were recorded within and below



Plate 19. Droppings characteristic of Brown Long-eared Bat below door lintel in barn



Plate 20. Holes in window lintel on north-eastern gable end of barn



Plate 21. Hole in south-western end of barn roof



Outbuildings

No evidence of roosting bats or suitable roosting features were recorded within or around the outbuildings. The outbuildings were assessed as of *Negligible* suitability for roosting bats and therefore no further surveys were required of these buildings.

3.3 Bat Activity Surveys

Due to the results of the Preliminary Roost Assessment, dusk emergence and dawn re-entry surveys were completed to confirm numbers and locations of roosting bats. Summaries of the results of these surveys are shown below.

Dusk emergence survey – 17th June, sunset at 21:40

One Soprano Pipistrelle emerged from gable end above barn on north-eastern gable end at 21:51 (*Plate 22*)

One Soprano Pipistrelle emerged from under roof tile on south-west gable end 2-3 tiles from the eaves at 22:07 (*Plate 23*)

One Soprano Pipistrelle emerged from north-east gable end of house at 22:11 (*Plate 24*).

One Common Pipistrelle emerged from ridge tile of farmhouse at 21:57 (*Plate 26*)

One Whiskered/Brandts Bat emerged from ridge tile at centre of barn roof at 22:13 (*Plate 22*)

One Brown Long-eared Bat inside barn at 23:10

Plate 22. Emergence/re-entry location of Soprano Pipistrelles from north-eastern gable end (red circle), individual Common Pipistrelle and individual Whiskered/Brandt's Bat (green circle)



*Plate 23. Re-entry location of *Myotis* spp. (red circle), re-entry locations of two Soprano Pipistrelles (yellow circle), re-entry location of 3 Soprano Pipistrelles (blue circle), emergence location of individual Brown Long-eared Bat (green circle) and emergence location of an individual Soprano Pipistrelle (purple circle)*



Plate 24. Emergence and re-entry location of individual Soprano Pipistrelle



Dawn re-entry survey – 22nd July, sunrise at 05:18

Individual *Myotis* spp. re-entered a feature at the top of the south-west gable end wall (where there is no roof) at 04:10 (*Plate 23*)

2 Soprano Pipistrelles re-entered hole in bricks on south-west gable end wall between 04:35 to 04:42 (*Plate 23*)

3 Soprano Pipistrelle re-entered gap between timber and top of concrete wall at south-west end of farmhouse between 04:35 to 04:57 (*Plate 23*)

18 Soprano Pipistrelle re-entered under barge board on north-east gable end between 04:45 and 05:07 (*Plate 22, red circle*)

Individual Soprano Pipistrelle re-entered below slate tile at the top of boarding on north-east gable end at 04:48 (*Plate 24*).

Dusk emergence survey – 19th August, sunset at 20:30

One Soprano Pipistrelle emerged from the north-eastern gable end at 20:32, the same location as recorded during the 22nd July survey, shown in *Plate 22*.

One Brown Long-eared emerged house on south-east elevation by the south-west dormer at 20:33 (*Plate 23*)

One Common Pipistrelle emerged from lifted roof tile on barn on south-east side at 20:42 (*Plate 22*)

Dusk emergence survey – 31st August, sunset at 20:03

One silent bat (probable Pipistrelle species based on timing and presence of Common and Soprano Pipistrelle on site shortly after emergence) emerged from roof / top of wall on south-west gable end at 20:09 (*Plate 25*)

One Soprano Pipistrelle emerged from above red brickwork on south-west gable end at 20:12 (*Plate 25*)

Three Soprano Pipistrelle emerged from south-west gable end of pigsty at 20:14 (*Plate 25*)

One Soprano Pipistrelle emerged from south-west gable end roof / brickwork at 20:26 (*Plate 25*)

6 Soprano Pipistrelles emerged out of farmhouse via broken window on ground floor from **20:08 to 20:25** (*Plate 26*)

Two Brown Long-eared Bats inside barn at 21:48

One Common Pipistrelle inside ground floor of farmhouse at 21:52

Plate 25. Emergence location of probable Pipistrelle species and individual Soprano Pipistrelle (red circle) and individual Soprano Pipistrelles (blue circle)

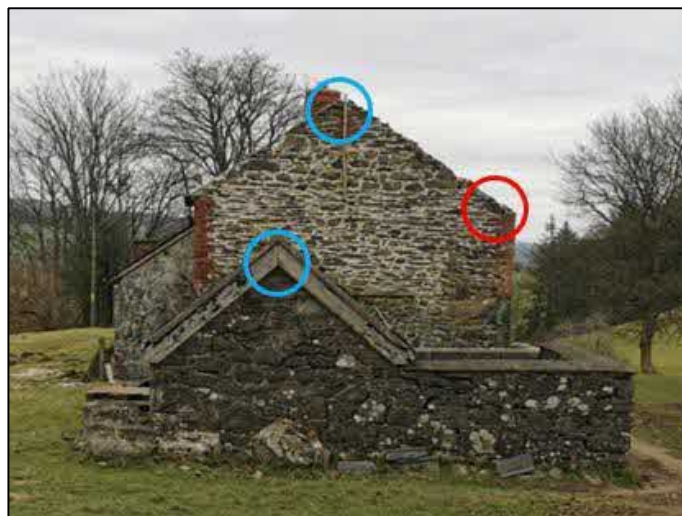


Plate 26. Location of emerging Soprano Pipistrelles via broken window (yellow rectangle) and location of emerging Common Pipistrelle from lifted ridge tile (green circle)



Common Pipistrelle, Soprano Pipistrelle, Whiskered, Daubenton's and/or Brandt's Bats and Brown Long-eared Bat were all recorded foraging or commuting around and over site and high passes of Noctule were also noted.

3.4 Nesting Birds

An active Jackdaw (*Corvus monedula*) nest was recorded within a void above a dormer window in the farmhouse. Disused Swallow (*Hirundo rustica*) nests were recorded on the beams inside the barn and other old bird nests were also recorded along the timber framework and within gaps in the stonework of the barn.

An individual Tawny Owl (*Strix aluco*) was observed within the barn during the initial PRA and during a subsequent activity survey. The large number of Tawny Owl pellets, droppings and feathers recorded in the barn indicate that the Tawny Owl uses the barn on a regular basis for roosting although no evidence of nesting was recorded.

The hole in the roof of the barn is large enough to allow access for Barn Owl (*Tyto alba*). Inside the barn are a number of timbers/ledges/areas suitable for Barn Owl to nest although no evidence of nesting Barn Owl was recorded during the PRA or subsequent activity surveys.

4 EVALUATION

4.1 Summary of Proposals

The proposed development involves the demolition of the existing farmhouse and construction of a new two-storey residential dwelling in its footprint. The adjoining agricultural barn will be retained and will remain in use as a storage barn and the existing outbuildings will be demolished and a new garage constructed (Figures 6-10).

Figure 6. Proposed south-western elevation of new dwelling



Figure 7. Proposed north-western elevation of new dwelling

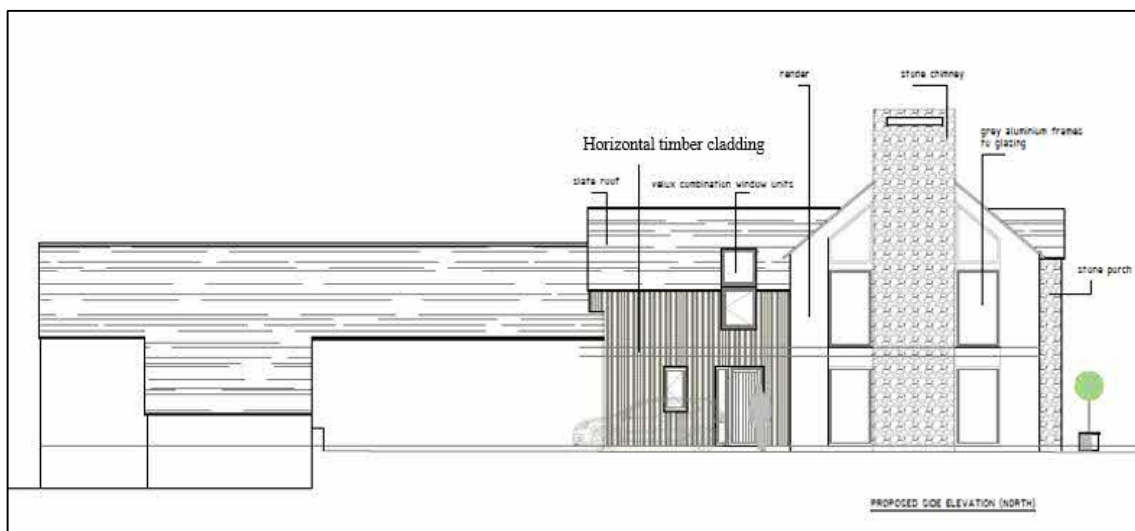


Figure 8. Proposed north-eastern elevation of new dwelling

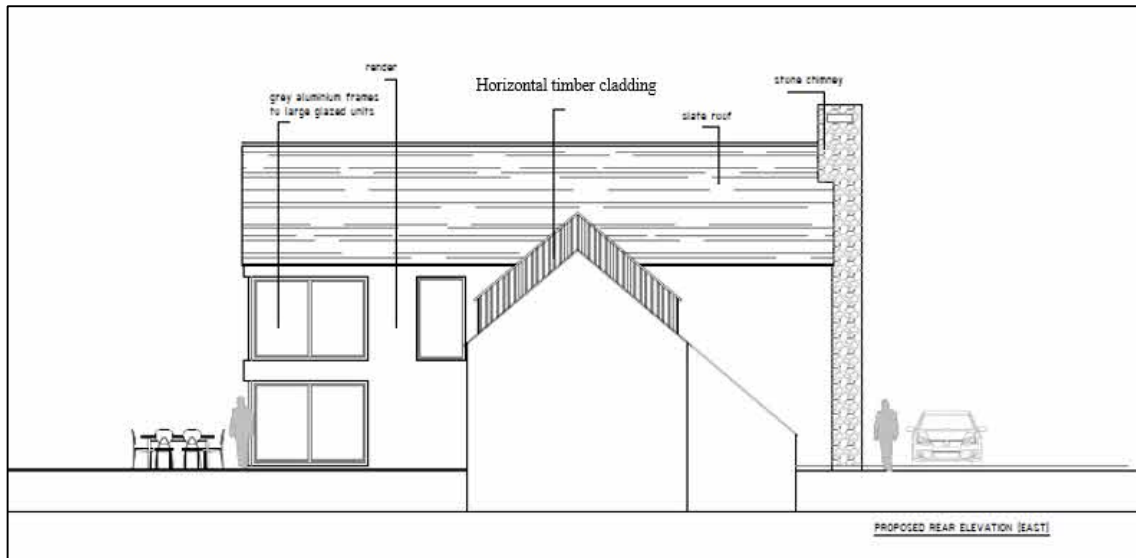


Figure 9. Proposed south-eastern elevation of new dwelling and retained barn

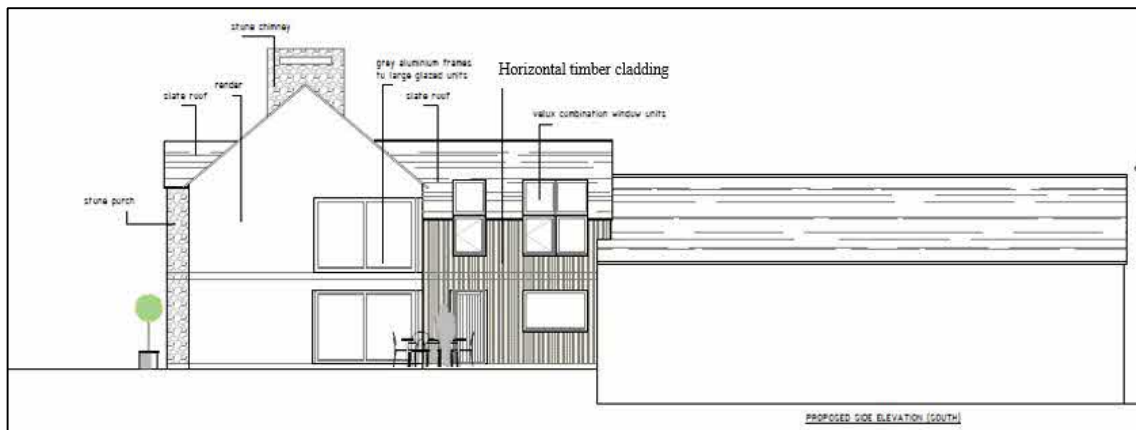
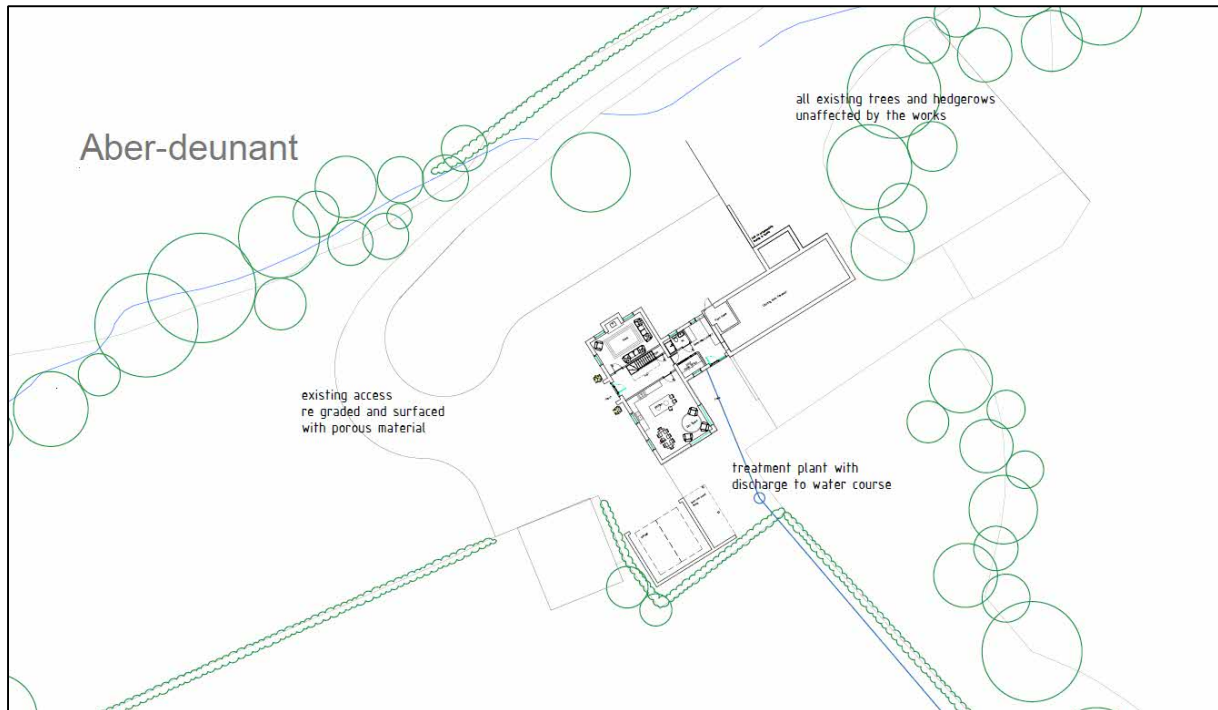


Figure 10. Proposed site layout



4.2 Summary of Results

4.2.1 Preliminary Roost Assessment

Evidence of roosting bats (<20 droppings characteristic of Brown Long-eared Bat and scattered droppings characteristic of a Pipistrelle spp.) were recorded within the farmhouse during the PRA. Droppings characteristic of Brown Long-eared Bat associated with a door lintel feature and scattered droppings characteristic of Brown Long-eared Bat and a Pipistrelle species were also recorded within the barn.

Suitable roosting features for bats in and around the farmhouse included gaps under lifted and broken ridge and roof tiles, gaps around the chimneys, gaps around the dormer windows, gaps under the barge boards, holes into timber soffit boxes, holes into walls and wall tops and gaps under lifted lead flashing. There is open flight access into the farmhouse via an open window on the first floor and broken panes of glass on the ground floor along the south-eastern elevation. Suitable roosting features are also present on the attached agricultural barn, including gaps in the stonework, gaps around window and door frames and lintels, gaps at wall tops and gaps under lifted roof and ridge tiles. There is open flight access for bats into the barn via the hole at the south-western end of the barn roof. The farmhouse and attached agricultural barn were considered to be of *High* potential for roosting bats with three activity surveys required to confirm the status of bats at the property.

4.2.2 Activity Surveys

Based on the results of the Preliminary Roost Assessment, the proposed works were considered to have the potential to damage or destroy bat roosts. Bat Activity Surveys were therefore completed to determine number and species of bats using the farmhouse and attached agricultural barn. These surveys found the following roosts:

Farmhouse

One maternity roost of up to 18 Soprano Pipistrelles under barge board and under lifted roof tiles by north-eastern chimney;

Seven day roosts of small numbers or individual Soprano Pipistrelles using various roost locations including lifted roof tiles, gaps at wall tops and gaps in the brickwork;

One day roost of up to 6 Soprano Pipistrelle roosting internally within farmhouse;

One day roost of an individual Myotis species in south-western gable end;

One day roost of an individual Brown Long-eared bat by south-western dormer window;

One day roost of an individual Common Pipistrelle under a lifted ridge tile;

One day roost of an individual Pipistrelle species at wall top of south-western gable end;

One night roost/feeding perch of individual/small numbers of Brown Long-eared Bat in the farmhouse; and

One night roost of small numbers of Lesser Horseshoe using three locations in the first floor of farmhouse.

Barn

One day roost of an individual Whiskered/Brandt's bat under a lifted ridge tile;

One day roost of an individual Common Pipistrelle;

One day roost of individual/small numbers of Brown Long-eared Bats in hole in door lintel; and

One night roost of up to two Brown Long-eared Bats.

Accumulations of fresh Lesser Horseshoe droppings were found within the first floor of the farmhouse during the activity surveys and although not recorded during the activity surveys, the presence of droppings indicate the farmhouse is used as a night roost by individual/small numbers of Lesser Horseshoe. In addition, the presence of droppings characteristic of Brown Long-eared Bat and moth wings in a first-floor doorway indicate the presence of a night roost and feeding perch of individual/small numbers of Brown Long-eared Bat.

Foraging Common Pipistrelle, Soprano Pipistrelle, Brown Long-eared Bat, Whiskered, Daubenton's and Brandt's Bats were recorded over site during each survey. Noctule were also recorded foraging high overhead.

4.3 Evaluation and Impacts

Based on the results of the Preliminary Roost Assessment and Bat Activity Surveys, the farmhouse and barn were found to support the following bat roosts:

Farmhouse

- A maternity roost of 18 Soprano Pipistrelle;
- Seven day roosts of individual or small numbers of Soprano Pipistrelles;
- A day roost of up to 6 Soprano Pipistrelle;
- A day roost of an individual Common Pipistrelle;
- A day roost of an individual Myotis spp.;
- A day roost of an individual Pipistrelle species; and
- A day roost of an individual of Brown Long-eared Bat
- A night roost/feeding perch of individual/small numbers of Brown Long-eared Bat;
- A night roost of an individual Common Pipistrelle; and
- A night roost of small numbers of Lesser Horseshoe.

The proposed demolition of the farmhouse would result in the long-term exclusion and loss of all day roosts, night roosts/feeding perches and maternity roosts present within the farmhouse and would cause the disturbance of and/or injuring/killing of the bats associated with these roosts.

Barn

- A day roost of an individual Whiskered/Brandt's bat;
 - A day roost of an individual Common Pipistrelle;
 - A day roost of individual/small numbers of Brown Long-eared Bats; and
 - A night roost of up to two Brown Long-eared Bats.
- The barn has features suitable for hibernating bats including gaps in the stone walls which will be disturbed as a result of the proposals.

The Bat Activity Surveys of the farmhouse and barn in 2021 have been completed during the maternity period and when maternity roosts would be evident if present. Bat species and numbers were consistent during each survey and it is considered that an appropriate level of data on bat activity at the site was obtained during the completed PRA and the three Bat Activity Survey visits.

The proposed demolition of the farmhouse would result in the short-term loss of the night roost of up to two Brown Long-eared Bat and short-term disturbance to the day roosts of individual/small numbers of Whiskered/Brandt's Bat, Common Pipistrelle and Brown Long-eared Bat within the barn.

Due to the proposed works resulting in the loss of the Soprano Pipistrelle maternity roost the demolition of the farmhouse must be completed outside of the maternity period (mid-May to August inclusive). The works will have a negative impact on the maternity roost, resulting in the loss of this roost which would be a *High* impact at site level.

Based on the type of features suitable for roosting bats, evidence found during the preliminary survey and the results of the Bat Activity Surveys, it is considered that the farmhouse is used by a maternity roost of Soprano Pipistrelle as well as day roosts of individual/small numbers of Common Pipistrelle, Soprano Pipistrelle, Brown Long-eared Bats and a *Myotis* species and night roosts/feeding perches of Lesser Horseshoe, Brown Long-eared Bat and Common Pipistrelle. The exclusion and loss of these roosts would be a *Moderate to High* impact at site level and *Low to Moderate* impact at regional level. The short-term loss of the night roost of Brown Long-eared Bat and disturbance to the day roost of individual/small numbers of Common Pipistrelle, Brown Long-eared Bat and Whiskered/Brandt's Bat would be a *Low to Moderate* impact at site level and *Negligible* impact at a regional level.

Common Pipistrelle and Soprano Pipistrelle are common bats in the United Kingdom with approximately 2,430,000 and 1,500,000 individuals estimated to be present¹ respectively. Brown Long-eared Bat are also a common bat in the United Kingdom with approximately 245,000 individuals estimated to be present¹. For the purpose of this project these species are considered to be common on a regional scale (with the scale stretching through common, rarer to rarest species). In accordance with the Bat Mitigation Guidelines the requirement for mitigation for the exclusion of day roosts of individual or small numbers of Soprano Pipistrelle, Common Pipistrelle and Brown Long-eared bat roosts as well as the loss of the Soprano Maternity roost includes;

Timing constraints (works affecting roosting locations to be done outside of May to August inclusive).

More or less like-for-like replacement. Bats not to be left without a roost and must be given time to find the replacement.

Monitoring for 2 years post-construction preferred.

Based on call recordings and the most likely species of *Myotis* species to occur on site and roost within a wall top are Whiskered Bat (*Myotis mystacinus*), Brandt's Bat (*Myotis brandtii*) or Daubenton's Bat (*Myotis daubentonii*). *Myotis* species such as Brandt's and Whiskered Bats are uncommon bats in Wales with approximately 7000 and 8000 individuals estimated to be present respectively, although they are thought to be under-recorded. The British pre-breeding population of Daubenton's Bat was estimated at 150,000 in 1995 (15,000 in Wales)¹. For the purpose of this project these species are considered to be rarer on a regional scale and in accordance with the Bat Mitigation Guidelines the requirement for mitigation for individual numbers of the *Myotis* bat species includes;

Provision of new roost facilities where possible. Need not be exactly like-for-like, but should be suitable, based on species' requirements.

Minimal timing constraints or monitoring requirements

¹ Harris S., Morris, P., Wray, S. & Yalden, D. (1995) *A review of British mammals: population estimates and conservation status of British mammals other than cetaceans*. JNCC, Peterborough.

4.4 Mitigation and Enhancement

Exclusion and disturbance of the bat roost locations can only be undertaken after Natural Resources Wales have granted a Protected Species mitigation licence. All agreed methods will be included in the licence application and appropriate mitigation and safe working methods can only be confirmed upon agreement of the licence. The methods (which may be updated upon confirmation of an accepted Licence application) are likely to include;

Works to the farmhouse to commence following receipt of a Bat Mitigation Licence from Natural Resources Wales.

Prior to the start of works a suitably qualified ecologist will deliver a toolbox talk to contractors and staff on site, informing them of the likelihood of encountering bats, what to do if they find bats and give a brief overview of the licence documents.

Prior to works commencing on the farmhouse, alternative roosting locations will be provided on site. The detached garage and associated bat loft and roosting features (see *Section 4.5* for full details) will be constructed prior to commencement of works on the farmhouse however if this is not possible then five bat boxes (comprising one Causa maternity bat box, one Schwegler 1FF bat box (suitable for summer and winter use) and three Schwegler 2F, or equivalents) will be erected on suitable mature trees to the east and south-east of the farmhouse or on undisturbed areas of the agricultural barn (*Figure 11*).

Wooden bird boxes to be placed adjacent to the bat boxes to try to ensure the bat boxes remain open for use by bats.

Works affecting the Soprano Pipistrelle maternity roost to take place outside of maternity season (May to August inclusive). Like-for-like alternative maternity roost location to be provided prior to any works commencing on the farmhouse and must be in place for a minimum of one month prior to start of maternity season. See *Section 4.4.1* for bat loft specifications.

Works affecting roosting locations to be undertaken when overnight temperatures consistently above 9°C.

Wooden bird boxes will be placed adjacent to the bat boxes to help ensure the bat boxes remain open for use by bats.

Pre-works check by a licenced ecologist of all known and potential roosting locations around the farmhouse will take place.

If the entirety of a feature can be searched and found to be empty these will be blocked (using newspaper or expanding foam). If the feature cannot be fully searched it will be excluded using folded acetate or similar to allow bats to leave the feature but not re-enter. If exclusions are used, they will be left in place for a minimum of 5 nights in suitable weather conditions. Following this they will be permanently filled using the same methods as above.

Removal of ridge and roof tiles, barge boards and soffit boxes will be completed under the watching brief of a licenced ecologist, with these features being removed carefully by hand.

If a bat is found during works, they will be caught by a licensed ecologist who will be wearing suitable gloves. The bat will be placed into a cloth bag and carefully placed in to a previously erected bat box.

A minimum of three integrated bat tubes, six lifted ridge tiles and one Schwegler 1FQ (or equivalent) bat box will be incorporated into the new dwelling (*Figures 12 to 15*). Where bat

boxes and/or roost features are positioned above windows the glazing will be set into a recess to deflect light spill down and away from the bat box.

Suitable gaps for roosting bats will be created behind the timber cladding on the north-eastern elevation (*Figure 14*).

Breathable roofing membranes (BRM) must **not be used** in the construction of the new dwelling due to issues with bat entanglement. Type 1F bitumastic felt should be used instead.

No lighting directed on known, potential or newly created bat roost access points and roosting features and only movement activated timed security lighting used outside of potential roosting locations.

Figure 11. Proposed bat and bird box locations (yellow star = Schwegler 1FF, or equivalent and hole fronted nest box; blue star =Schwegler 2F, or equivalent, and open-fronted nest box, purple star=Causa maternity box or equivalent)



Figure 12. Proposed bat access tiles (red rectangle), Schwegler 1FR bat tube (blue rectangle) and Schwegler 1FQ box and adjacent hole-fronted bird box/brick (yellow rectangle) on new dwelling and open-fronted nest box on barn (purple rectangle)

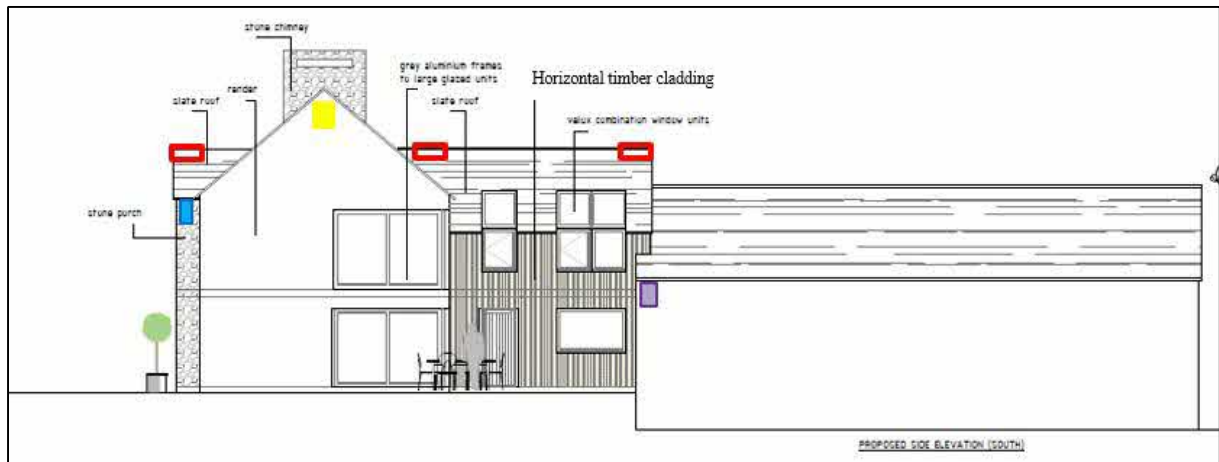


Figure 13. Location of Schwegler 1FR bat tubes (or equivalent) on south-western elevation of new dwelling (blue rectangle) and hole-fronted bird nest box/brick (purple rectangle)

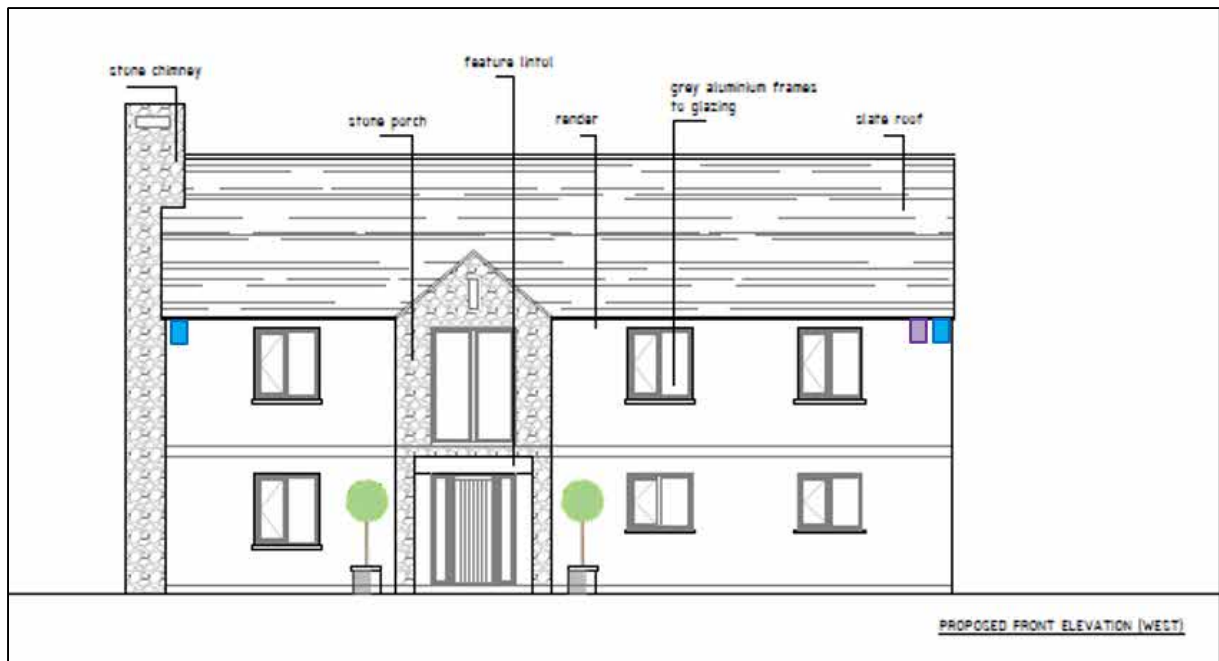


Figure 14. Gaps for roosting bats to be created behind timber cladding on north-eastern gable end (outlined in blue) and lifted ridge tiles (red rectangles)

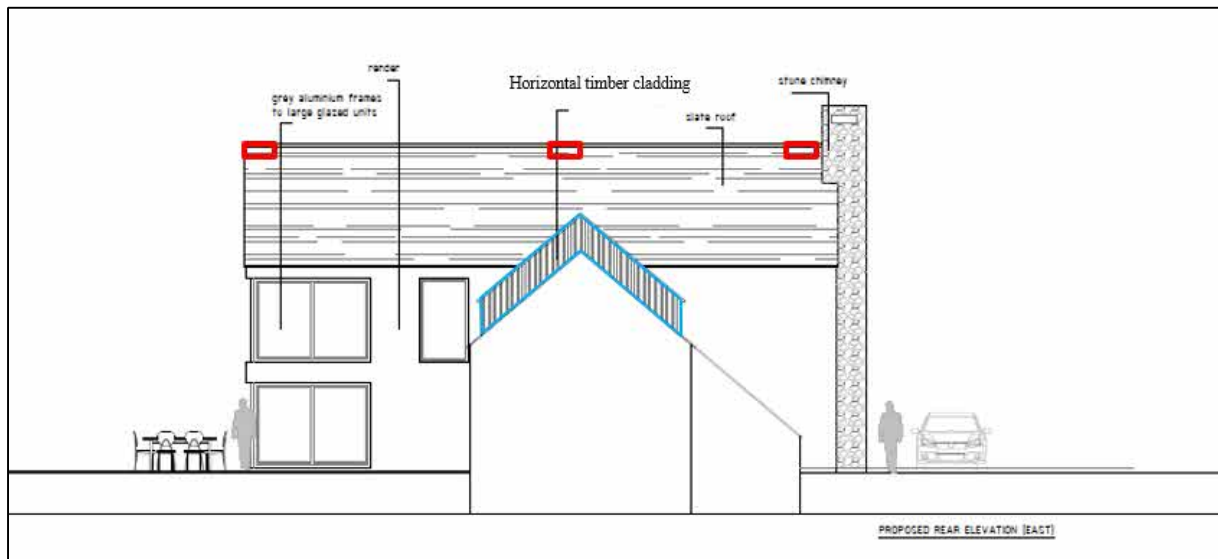
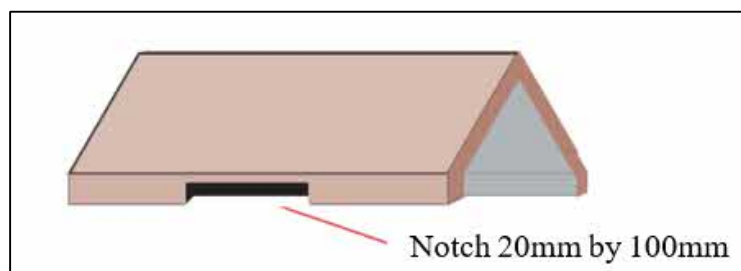


Figure 15. Creation of access and roosting opportunities under lifted ridge tiles in roof of new dwelling



4.5 Bat loft

Prior to the commencement of works on the farmhouse, a dedicated bat loft will be created within the new garage at the southern end of site (Figure 16).

The garage will have insulated, concrete block and timber clad walls and a pitched, slate tiled roof.

The loft will measure a minimum of 2.5m in height floor to ridge and 4m wide x 5m long and have an uncluttered flight space created using untrussed rafters and ridge beam.

Suitable roosting locations within the roof void will include a single “hot-box” (Figure 17) to accommodate species such as Brown Long-eared Bat. This will be constructed at the apex of the roof at the centre of the bat loft and will be approximately 1.5m long by 1m wide and approximately 60cm high. There will be an open flyway into this box which will be 30cm square, and the box will be constructed using 1cm thick ply-board to ensure it is adequately insulated.

Further internal roosting locations (suitable for Pipistrelle species, Brown Long-eared Bats and Myotis species) will also be provided by fitting shaped wooden baffles at the apex of the south-eastern gable wall. This will be triangular in shape and be roughly 450mm high by 450mm wide and be fitted to the wall using 28mm batten so that a narrow but tall gap is created. A

minimum of four false mortise joints will be created in the loft space and gaps into the walls/wall tops will be created within the loft space.

Old timbers with cracks, splits or holes can be fixed internally to the roof structure to create additional roost features but without forming part of the structural support for the garage.

A variety of entrance points to the loft space will be included, which will include small gaps for crevice roosting species (such as gaps under ridge tiles, gaps behind wooden cladding and/or at wall tops).

A Hopper flight entrance will be created into the bat loft to allow use of the space by Lesser Horseshoe (*Figures 18-20*). Hopper entrances are used for weather protection and to keep birds from entering and are typically a lead-lined wooden box to ensure weather proofing.

In order to allow monitoring to take place an entrance to the loft must be created from the internal room below.

Baffles will be installed using 30mm battens and wooden sheets to still allow access but to reduce the lighting into the loft space.

Breathable roofing membranes (BRM) **must not be used** in the bat loft or garage walls with 1F bitumastic felt used instead. This is due to issues with bat entanglement and reduced membrane performance if used in areas of bat use.

Dry ridge system **must not be used**, a traditional mortar ridge should be used instead due to issues with bat entanglement.

No lighting will be directed on known, potential or newly erected bat roost access points and roosting features and only movement activated timed security lighting will be used outside of potential roosting locations (*Figure 21*).

Two monitoring surveys of the Garage and new dwelling to be completed between June and August in the two years following completion of the works. The monitoring surveys will comprise an annual dusk emergence survey covering all suitable roosting features and a box check by a licensed ecologist.

Figure 16. Proposed bat loft above garage

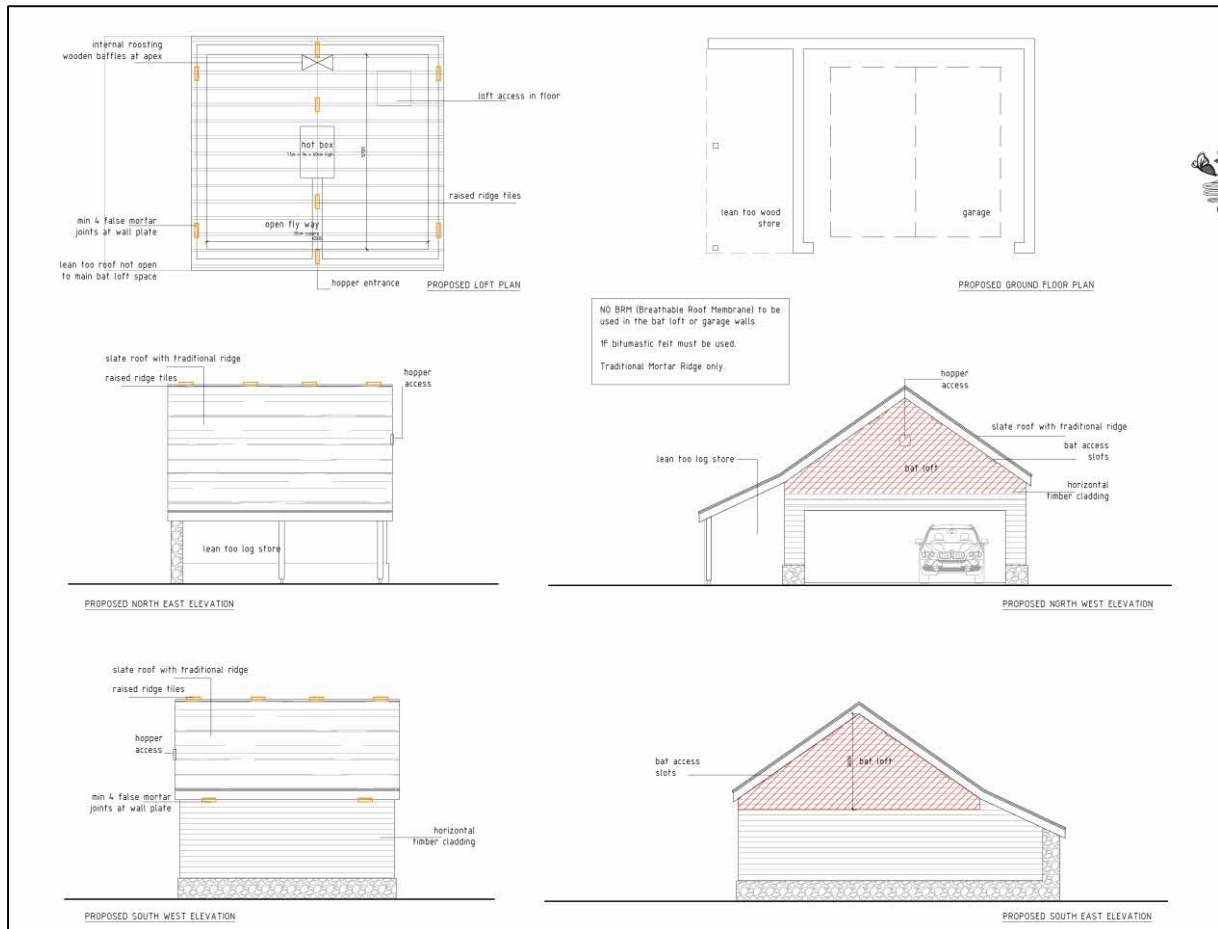


Figure 17. 'Hot-box' design

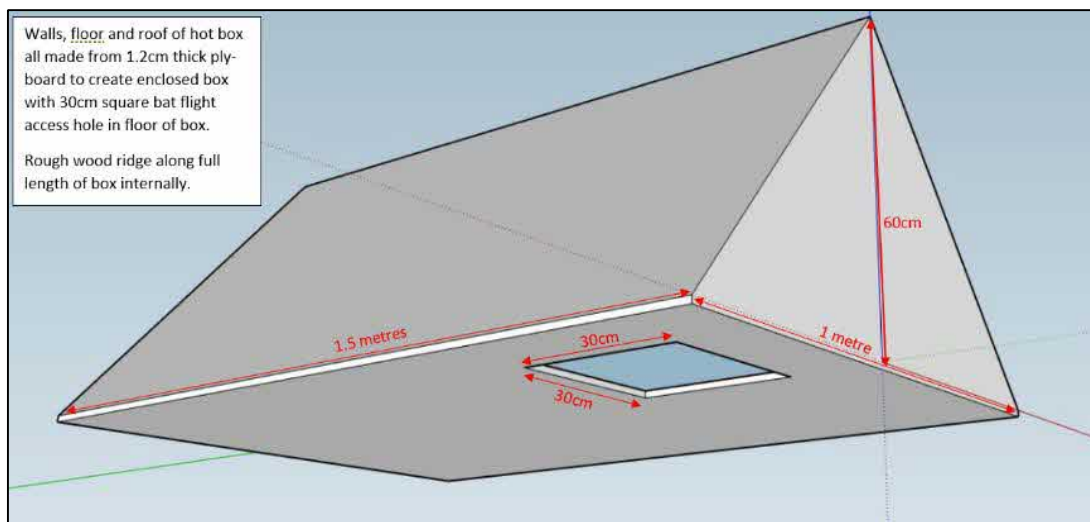


Figure 18. Hopper entrance (taken from The Lesser Horseshoe Bat Conservation Handbook – The Vincent Wildlife Trust)



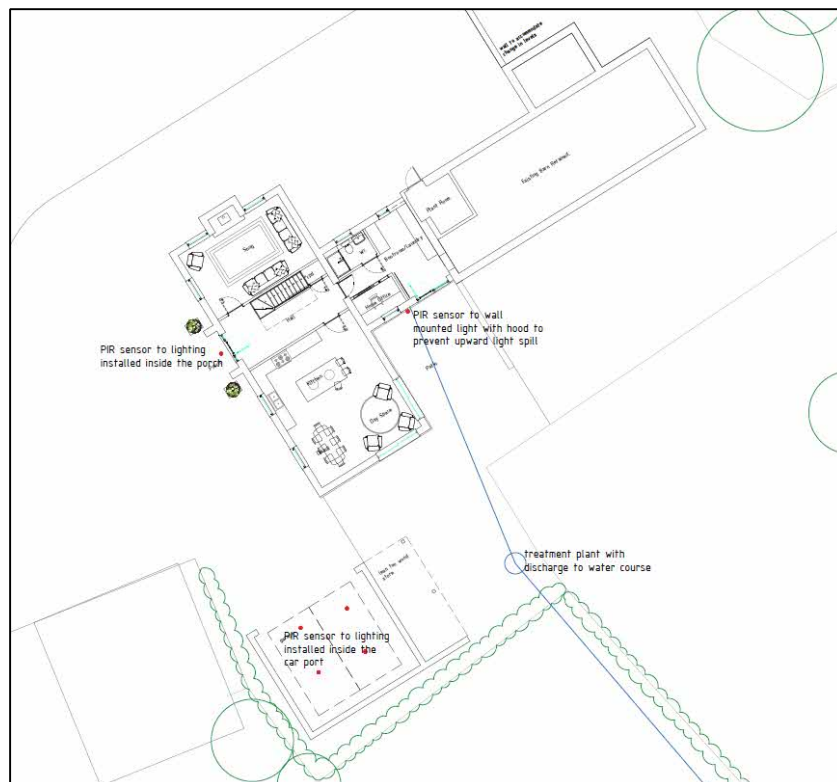
Figure 19. Hopper entrance (taken from The Lesser Horseshoe Bat Conservation Handbook – The Vincent Wildlife Trust)



Figure 20. Hopper entrance (taken from *The Lesser Horseshoe Bat Conservation Handbook – The Vincent Wildlife Trust*)



Figure 21. Lighting plan (new external light marked in red)



4.6 Nesting Birds

An active Jackdaw nest was recorded in the farmhouse and a roosting Tawny Owl and disused Swallow nests were noted within the agricultural barn at the time of the PRA survey.

Works affecting suitable bird nesting habitat should ideally be completed outside the breeding bird season (March – August inclusive). If this is not possible then a pre-construction bird survey will need to be completed by a suitably qualified ecologist and depending on the presence and location of nesting birds, breeding effort may have to be allowed to finish before works commence.

Replacement nesting features should be created as part of the proposals, and this will include one integrated open-fronted nest box and two integrated hole-fronted nesting boxes or bricks on southerly facing walls of the new residential dwelling (*Figures 11 and 12*). One large, open-fronted nest box suitable for Jackdaw will be erected on the trees to the south-east of the site, within the ownership boundary (*Figure 22*).

There are features that are suitable for nesting Barn Owl although no evidence of Barn Owl was recorded during the surveys. Barn Owls are known to occur in the area and it is recommended a Barn Owl box is erected on a suitable mature tree within the same land ownership as the development site (*Figure 22*).

Figure 22. Location of hole fronted nest box (green star), large open-fronted nest box (yellow star), and Barn Owl box (blue star) on boundary trees



5 LEGAL PROTECTION

This section briefly describes the legal protection afforded to the protected species referred to in this report. It is for information only and is not intended to be comprehensive or to replace specialised legal advice. It is not intended to replace the text of the legislation but summarises the salient points.

5.1 Bats

All species of British bat are protected by *The Wildlife and Countryside Act 1981* (as amended) extended by the *Countryside and Rights of Way Act 2000*. This legislation makes it an offence to:

- intentionally kill, injure or take a bat;
- possess or control a bat;
- intentionally or recklessly damage, destroy or obstruct access to a bat roost; and
- intentionally or recklessly disturb a bat whilst it occupies a bat roost.

Bats are also European Protected Species listed on *Schedule 2* of the *Conservation of Habitats and Species Regulations 2010* (SI 2010/490) under *Regulation 41*. This legislation makes it an offence to:

- deliberately capture, injure or kill a bat;
- deliberately disturb bats in such a way as to be likely to (a) impair their ability to: (i) to survive, to breed or reproduce, or to rear or nurture their young, or (ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate; or b), to affect significantly the local distribution or abundance of the species to which they belong; and
- damage or destroy a breeding site or resting place of a bat; and
- possess, control, transport, sell, exchange a bat, or offer a bat for sale or exchange.

All bat roosting sites receive legal protection even when bats are not present.

Where it is necessary to carry out an action that could result in an offence under the *Conservation of Habitats and Species Regulations 2017* it is possible to apply for a European Protected Species (EPS) licence from Natural England (NE). Three tests must be satisfied before this licence (to permit otherwise prohibited acts) can be issued:

Regulation 53(2)(e) states that licences may be granted to “preserve 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.”

Regulation 53(9)(a) states that a licence may not be granted unless “there is no satisfactory alternative”.

Regulation 53(9) (b) states that a licence cannot be issued unless the action proposed “will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range”.

5.2 Nesting Birds

All species of bird are protected under *Section 1* of the *Wildlife and Countryside Act 1981* (as amended). The protection was extended by the CRow Act.

The legislation makes it an offence to intentionally:

- kill, injure or take any wild bird;
- take, damage or destroy the nest of any wild bird while that nest is in use or being built; or
- take or destroy an egg of any wild bird.

Certain species of bird are listed on *Schedule 1* of the *Wildlife and Countryside Act 1981* (as amended) and receive protection under *Sections 1(4)* and *1(5)* of the Act. The protection was extended by the CRow Act. The legislation confers special penalties where the above-mentioned offences are committed for any such bird and also make it an offence to intentionally or recklessly:

- disturb any such bird, whilst building its nest or it is in or near a nest containing dependant young; or
- disturb the dependant young of such a bird.