

**Barn at Lower Hengoed, GLADESTRY, KINGTON,
HR5 3PL**

Bat survey with mitigation plan

For: Mr and Mrs Hughes

17 July 2021

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Gerald Longley Ecological Consultants

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1.0 INTRODUCTION

1.1 Background – Gerald Longley

Gerald Longley Ecological Consultants (GLEC Ltd) has been commissioned to undertake a Bat Survey for a proposed conversion of a barn at Lower Hengoed, GLADESTRY, KINGTON, HR5 3PL (national grid reference SO22625337). Gerald Longley has over three decades of experience of wildlife surveying and, prior to working as an independent ecological consultant, held posts as Conservation Officer with Montgomeryshire Wildlife Trust and Head of Shrewsbury Countryside Unit.

1.2 Background – This Survey

Works to renovate and convert the redundant building - a barn at Lower Hengoed to a dwelling with associated infrastructure and landscaping are proposed. The request for this bat survey comes from the client's need to ensure that if the building is being used by protected species, notably bats or nesting birds, their conservation needs are met and the law is not broken.

Under the law, a bat roost is any structure or place used for shelter or protection. "Structure" could be any building, wall, well, cave or mature tree. Bats use many roost sites and feeding areas throughout the year. These vary according to bat age, condition, gender and species, as well as season and weather. Since bats tend to re-use the same roosts for generations, the roost may be protected whether the bats are present or not. A full citation of the law with regard to bats and birds is given in the Appendices.

1.3 Report Summary

Barn at Lower Hengoed, GLADESTRY, KINGTON, HR5 3PL

Bat Survey with Mitigation Plan



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A Bat Survey based on Bat Conservation Trust guidelines (BCT, 2016) was carried out by GLEC Ltd on the barn. The surveys consisted of a thorough daytime inspection followed by one evening and two pre-dawn bat activity surveys plus passive monitoring for 6 nights between 24 and 29 May 2021. Works to renovate and convert the building into a dwelling are proposed.

Maximum counts of 5 common, 4 soprano pipistrelles, 9 brown long-eared and 2 Natterer's bats were recorded roosting in the barn. These surveys establish that the barn is a bat roost and the bats' presence is therefore a material consideration for any works or planning application.

No nests of swallows, barn owls or other birds using the building were found and there are no constraints with regard to birds.

The Mitigation Plan approach is to carry out works that may affect bats (e.g. roof stripping, dismantling or re-pointing of walls) in the period when bats are least likely to be present (October to April inclusive) and erect a new Dedicated Bat Building located within 40 metres of the barn, providing new bat mitigation features prior to bats being excluded from the existing building.

It is recommended that:

1. The presence of roosting bats in the barn is a constraint to the proposed works. If works were to go ahead without approved mitigation, it is likely that bats would be negatively affected, especially if works were carried out in the spring or summer.
2. For the works to be carried out, a Mitigation (European Protected Species) Licence with regard to bats will need to be applied for from Natural Resources Wales once planning consent has been granted.
3. A brief Bat Mitigation Plan, including a Method Statement, has been drawn up and is presented in this report. It includes such matters as:
 - a) Timing of works
 - b) Worker/contractor induction on bat presence.
 - c) Contingency for discovering bats.
 - d) Provision of bat boxes.
 - e) Protection of existing/creation of new bat roosts and entry/exit points.
 - f) Applicant to provide details of the mitigation on their elevation and plan drawings with their application.
 - g) Monitoring
4. Provision is made to enhance bird nesting sites as per Powys policies. Three swallow nest boxes (for example: <https://www.birdfood.co.uk/swallow-nest-box.htm#producttabs2>) will be placed inside outbuildings such as sheds or stables leaving a distance of at least 6cm between the top of the nest and the ceiling. There must be permanent access for birds through an open window, sky-light or similar. Two nest boxes designed for multiple house sparrow nests (see <https://www.birdfood.co.uk/house-sparrow-terrace> for an example) will be installed on a wall of the building avoiding locations directly over doors and windows.

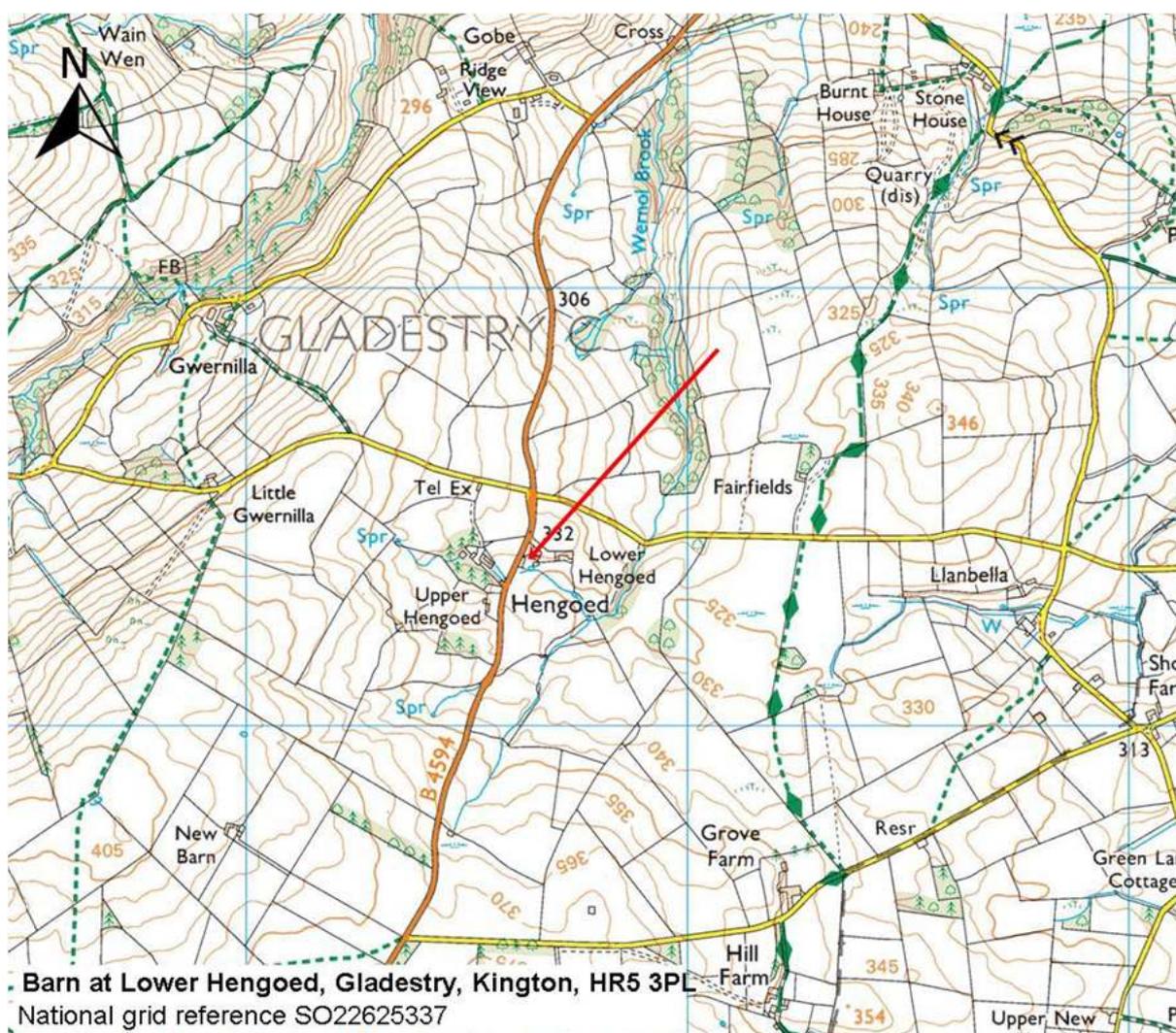
2.0 METHODOLOGY

2.1 Aims of the Survey

- To establish the actual or likely presence or absence of bat roosts and/or bat species in the barn.
- To establish the presence of any nesting birds in or on the building.
- To make recommendations accordingly.

2.2 Desk Study

The 1:25000 Ordnance Survey map covering the site, and aerial photos accessed from the internet, were scrutinised to initially assess the wildlife value of the proposed development site and surrounding habitat at a crude level. This looked for any semi-natural habitat that may be of value to wildlife, for example ponds, hedges, parkland, wetland, and woodland with interconnecting habitat links. Searches were made on MAGIC and the NBN Atlas for statutory designated sites coincident with or adjacent to the area of search and existing records of the keynote species within two kilometres.



2.3 Site Surveys

Surveys were designed by Gerald Longley using standard techniques based on the guidance and information in the Bat Conservation Trust Bat Survey Guidelines (2016). The surveys consisted of a thorough daytime inspection followed by one evening and two pre-dawn bat activity surveys plus passive monitoring for 6 nights between 24 and 29 May 2021. See the Appendices for a full list of equipment used. The pre-dawn bat detector survey looked for possible re-entry into the building by bats and the evening activity surveys looked for emergence from the building. The visits also provided checks to assess whether nesting birds used the building. The surveyors were Gerald Longley (Natural Resources Wales (NRW) Licence no. S089602/1) all dates, Mary Thornton (NRW licence no. SO87511/1) 24 May, and Lindsay Barton 19 June and 17 July 2021.

The external and internal survey of the building included an assessment for potential for nesting birds and bats and a search for evidence, such as pellets, dead bats, prey remains, droppings, urine marks and staining. Close-focusing binoculars were used immediately below potential roost areas. Droppings around the bases of and/or stuck to walls, on shelves, wall plates, purlins, etc. were searched for with the aid of a high-powered torch. Holes and cracks in the walls, purlins, beams etc. and behind any cladding were inspected with the colour video endoscope where they could be safely reached.



3.0 RESULTS

3.1 Desk Study

A 2km buffer desk study for sites and wildlife records revealed that there were no coincident statutory wildlife sites or SSSIs and none within 2km of the site. The Glascwm and Gladestry Hills SSSI was just beyond 2km to the northwest.

Relatively recent records for noctule (2015), Daubenton's (2019) and common and soprano pipistrelle bats (2018) were found in the buffer. Records for brown long-eared (2018) and lesser horseshoe bats (2006) were found for the same 10km grid square as the site (SO25) along with old (1980s) records for Natterer's and Natterer's bats.

It should be noted that the lack of records for a particular species in a particular location does not confirm that the species is absent.

3.2 Site Surveys

The grade II listed barn was adjacent to the farm house, also grade II listed, with a group of modern farm buildings beyond to the east. The B4594 was immediately to the west of the barn. The farm was in a very rural location at an altitude of approximately 330m on the south side of the Gladestry Hills and Hergest Ridge, approximately 1.7km south of the village of Gladestry and 7.4km southwest of Kington. The surrounding landscape was mainly improved pasture fields with some hedges, trees and larger patches of woodland and plantation mainly along streams and rivers.

Habitats immediately adjacent to the barn included small areas of ruderal vegetation with self-sown trees, a duck pond and grassy area used by the ducks, the garden of the farm house and an improved pasture field with two un-culverted stretches of stream.

The field to the south of the barn was an improved pasture field with small patches of soft rush. At the time of the survey it was grazed by sheep. The garden of the farm house consisting mainly of lawn was to the north of the barn. Ruderal vegetation including stinging nettle, broad-leaved dock and cleavers, was growing in the small space between the barn and the B4594.

Daytime inspection – 24 May 2021

No bats or signs of bats were found on the outside of the building.

No bat droppings were found on the floor of the barn either. This was not surprising since the barn floors all had a layer of straw, hay, dry old manure and some fresh manure (at the northern end). A substrate on which it is virtually impossible to find any bat droppings even if they are there.

Although the inside of the barn was cool and draughty from the many gaps in the walls, there were many potential roosting sites in more protected cracks and holes in the large cruck and box frame timbers.

No nests of swallows, barn owls or other birds using the building were found.

First evening survey

24 May 2021 – 20.55 to 22.44 (sunset 21.14 BST)

A cold, clear and breezy still evening. 9°C (start) - 6°C (end of survey). 1/8 oktas cloud cover. The surveyors were placed so as to view all elevations of the building.

No bat bats were recorded.

Total emergence counts for the first evening survey:

No bats were recorded

First dawn survey

19 June 2021 – 03.20 to 05.11 (sunrise 04.51 BST)

A still, dry, overcast cool morning. 10°C (start) – 11°C (end of survey). 8/8 oktas cloud cover. The surveyors were placed so as to view all elevations of the building.

From 03.55 to 04.25 common pipistrelle bats *Pipistrellus pipistrellus* which had been making passes around the barn then entered, **2** through the large opening in the west elevation and **3** through the most northerly doorway on the east elevation, to roost inside.

From 03.56 to 04.23 soprano pipistrelle bats *Pipistrellus pygmaeus* which had been making passes around the barn then entered, **1** through the large opening in the west elevation and **1** through the most northerly doorway on the east elevation, to roost inside.

From 03.57 to 04.07 brown long-eared bats **Plecotus auritus** made passes around the barn and in this time **6** entered through the large opening in the west elevation and **3** through the most northerly doorway on the east elevation, to roost inside.

Total entry counts for the dawn survey:

5 common pipistrelle, **2** soprano pipistrelle, **9** brown long-eared

Second dawn survey

17 July 2021 – 03.45 to 05.11 (sunrise 05.13 BST)

A mild, still, clear morning. 13°C (start) – 13°C (end of survey). 0/8 oktas cloud cover. The surveyors were placed so as to view all elevations of the building.

From 04.10 to 04.26 common pipistrelle bats made passes around the barn then entered, **3** through the large opening in the west elevation and **2** through the most northerly doorway on the east elevation, to roost inside.

At 04.25 soprano pipistrelle bats entered the barn, **4** through the large opening in the west elevation to roost inside.

From 03.57 to 04.07 brown long-eared bats made passes around the barn and in this time **4** entered through the most northerly doorway on the east elevation, to roost inside.

At 21.43 **2** Natterer's bats *Myotis nattereri* entered the most northerly doorway on the east elevation, to roost inside.

Total emergence counts for the second evening survey:

5 common pipistrelle, **4** soprano pipistrelle, **4** brown long-eared, **2** Natterer's bat

Passive survey

6 nights between 24 and 29 May 2021

An Anabat SD2 bat detector was used to carry out passive monitoring in the southern section of the building. The detector was located as far as possible with the microphone pointing into the building and away from gaps and openings. Unfortunately the batteries went flat after the night of 29 May and therefore the detector did not record on any further nights.

The bat species recorded on each night are in table 1. Four species of bat were recorded altogether. They were common and soprano pipistrelles, brown long-eared and Natterer's bat.

Common pipistrelle calls were recorded every night, soprano pipistrelle and Natterer's bat five nights and brown long-eared three nights of the six nights.

Table 1: Passive bat survey 2020 Barn at Lower Hengoed, HR5 3PL www.geraldlongley.co.uk				
Date	Ppip	Ppyg	Paur	Mnat
24/05/21	✓			✓
25/05/21	✓	✓		✓
26/05/21	✓	✓	✓	✓
27/05/21	✓	✓	✓	✓
28/05/21	✓	✓	✓	✓
29/05/21	✓	✓		
30/05/21	batteries were flat			

Key to bat species:

Ppip: (*Pipistrellus pipistrellus*)

Ppyg: soprano pipistrelle (*Pipistrellus pygmaeus*)

Paur: brown long-eared bat (*Plecotus auritus*)

Mnat: Natterer's bat (*Myotis nattereri*)

See 8.0 SITE PICTURES for entry and emergence points

3.3 Constraints of this survey

As with all wildlife surveys conducted, the data collected is only a representation of the species and species presence markers found during the actual dates of the survey. There are other seasons and many species are mobile or transitory.

There was one weather constraint. Temperatures were cold to cool on the first night of the survey 24 May 2021. They were 9°C start to 6°C at end of survey. They were below the optimum of 10°C or above. The forecast temperatures were higher than this or the survey would have been cancelled. There was no rain during this or any of the surveys. Bats were recorded entering the building on all the other surveys. This is probably the reason no bats emerged on that evening survey, not that there were no bats present

In the passive bat survey with an automatic bat detector left inside, unfortunately the batteries went flat after the night of 29 May and therefore the detector did not record on any further nights. This meant there was only six nights of recording when we aim for fourteen typically. Since there were bat records every night and even on the night following the first evening survey when no bats were recorded to emerge it is considered this small constraint did not affect the results.

Evidence for some crevice-dwelling bats, e.g. *Myotis* species, can be difficult to find. Brown long-eared bats are notoriously difficult to pick up on a bat detector as they call very quietly or not at all. They are also difficult to see during evening emergence, as it is getting very dark when they emerge. All counts of bats should be regarded as good estimates rather than precise numbers.

During the passive survey it is possible for a single bat to be recorded more than once, particularly in the case of species like brown long-eared, horseshoe and *Myotis* bats which make passes around the inside of the roost building to sample light levels before emerging. The number of recordings gives an indication of relative levels of activity rather than precise numbers of bats.

3.4 Interpretation/evaluation of survey results

The barn offered potential roosting habitat for a range of bat species among roof timbers, on tops of walls and in cracks in stone walls and was well connected to good bat foraging habitat in the surrounding area.

Four species of bat were recorded roosting in the building combining the results of the activity and passive surveys. They were common and soprano pipistrelle, brown long-eared and Natterer's bats.

A maximum count of approximately four soprano pipistrelles was recorded entering and emerging from the open door at the northerly end of the east elevation and the large opening in the west elevation. They were also recorded on all except one of the six nights of the passive survey. They were considered to be a summer day roost of non-breeding adults and/or juveniles. Since no clear, single roost site could be identified, probably roosting in small gaps between timbers and on wall tops.

A maximum count for common pipistrelles was five bats, again a day roost with such a small number and no single roost site identified, in various places among roof timbers and on wall tops in the building.

A maximum count of nine brown long-eared bats was recorded roosting in the building, most likely among roof timbers. A maximum count of this number was considered to be a day roost.

A maximum count of two Natterer's bats was recorded entering from the building during the second dawn survey only. Given they were recorded on five out of six of the nights of the passive survey including during the late night of the first and evening survey where no bats emerged and the weather was cool they were present all of the time not just at that one dawn. At this number they are considered to be a day roost.

The absence of nesting swallows, owls or other birds was surprising, and no constraints from birds to the works are present and mitigation should therefore be unnecessary, however Powys and the Welsh government recommend enhancement for this area consequently we recommend the provision of the bird boxes described in the recommendations.

Maximum counts of 5 common, 4 soprano pipistrelles, 9 brown long-eared and 2 Natterer's bats were recorded roosting in the barn. These surveys establish that the barn is a bat roost and the bats' presence is therefore a material consideration for any works or planning application.

No nests of swallows, barn owls or other birds using the building were found and there are no constraints with regard to birds.

All the bat species recorded and their roosts are legally protected in the UK and all bats are listed as European protected species under the Habitats Directive. In addition, common and soprano pipistrelle and brown long-eared bats are among the eight bat species included on the Welsh list of Species of Principal Importance for the Conservation of Biological Diversity (sometimes called Priority Species).

An assessment of the likely impact of the proposed works on bats if they were to go ahead without mitigation is in section 6 along with an outline Mitigation Plan.

The Mitigation Plan approach is to carry out works that may affect bats (e.g. roof stripping, dismantling or re-pointing of walls) in the period when bats are least likely to be present (October to April inclusive) and provide a new Dedicated Bat Building (DBB) located within 40 metres of the barn, providing new bat mitigation features prior to bats being excluded from the existing building. Mitigation for the bat species recorded requires a large loft. A European Protected Species (EPS) Mitigation licence will be required from Natural Resources Wales to carry out works to the building to be converted once planning consent has been granted.

4.0 RECOMMENDATIONS

It is recommended that:

1. The presence of roosting bats in the barn is a constraint to the proposed works. If works were to go ahead without approved mitigation, it is likely that bats would be negatively affected, especially if works were carried out in the spring or summer.
2. For the works to be carried out, a Mitigation (European Protected Species) Licence with regard to bats will need to be applied for from Natural Resources Wales once planning consent has been granted.
3. A brief Bat Mitigation Plan, including a Method Statement, has been drawn up and is presented in this report. It includes such matters as:
 - a) Timing of works
 - b) Worker/contractor induction on bat presence.
 - c) Contingency for discovering bats.
 - d) Provision of bat boxes.
 - e) Protection of existing/creation of new bat roosts and entry/exit points.
 - f) Applicant to provide details of the mitigation with their application.
 - g) Monitoring
4. Provision is made to enhance bird nesting sites as per Powys policies. Three swallow nest boxes (for example: <https://www.birdfood.co.uk/swallow-nest-box.htm#producttabs2>) will be placed inside outbuildings such as sheds or stables leaving a distance of at least 6cm between the top of the nest and the ceiling. There must be permanent access for birds through an open window, sky-light or similar. Two nest boxes designed for multiple house sparrow nests (see <https://www.birdfood.co.uk/house-sparrow-terrace> for an example) will be installed on a wall of the building avoiding locations directly over doors and windows.

5.0 REFERENCES

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6.0 MITIGATION PLAN

Barn at Lower Hengoed, GLADESTRY, KINGTON, HR5 3PL

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Bat Survey

Common pipistrelle day roost 5 bats
Soprano pipistrelle day roost 4 bats
Brown long-eared bat possibly day roost 9 bats
Natterer's bat day roost 2 bats

Objective: To ensure the bats remain at a favourable conservation status.

Impact assessment (in absence of this mitigation plan)

Proposed works

Works to restore and convert the barn to residential accommodation are proposed. Planning was at an early stage but it is likely that works will include stripping roofs and repairing/replacing roof timbers, re-laying slates/tiles, dismantling, rebuilding, repairing and re-pointing of walls and installation of new doors and windows.

Short-term impacts: disturbance

Adult and juvenile bats, and possibly pregnant, feeding and infant bats too, could be killed or abandon their roosts if works start while they are present in spring and summer. Any bats hibernating in cracks in walls could be killed or injured if works started while they were present during the winter.

Long-term impacts: roost modification

The proposed renovation and conversion works will result in loss rather than modification of roosts.

Long-term impacts: roost loss that is relevant

Roosts and flying space inside the building would be lost when it is converted into living space and doors and windows installed. Potential roosts among roof timbers and in holes in old timbers would be lost when these are repaired or are left exposed as part of the conversion works. Access under eaves to roosts on wall tops will be lost when roofs are re-laid. Roosts in cracks in walls would be lost when they are rebuilt or repointed.

Long-term impacts: fragmentation and isolation

Any loss of linear features such as hedges or tree lines, loss of foraging areas such as woodland and long grass, increased lighting, or severance of flight lines by open spaces would be negative.

Post-development interference impacts

The building was not in use at the time of the survey. Once it is renovated and converted there is likely to a significant increase in regular human and vehicle activity, particularly on summer evenings when people are likely to be active outside; sitting out or having barbecues for example. New lighting on and around the building could have an impact on any roosting and foraging bats.

Predicted scale of impact

The impact on the individual bats of all species concerned would be high and the impact on the numbers in the locality would be:

Common pipistrelle – low

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Soprano pipistrelle - low

Brown long-eared bat – moderate (if maternity roost) otherwise low

Natterer's bat - low

Land ownership – Barn at Lower Hengoed is in the ownership of Mr and Mrs Hughes

Method Statement

Barn at Lower Hengoed, GLADESTRY, KINGTON, HR5 3PL

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Bat Survey

Common pipistrelle day roost 5 bats
Soprano pipistrelle day roost 4 bats
Brown long-eared bat possibly day roost 9 bats
Natterer's bat day roost 2 bats

The Mitigation Plan approach is to carry out works that may affect bats (e.g. roof stripping, dismantling or re-pointing of walls) in the period when bats are least likely to be present (October to April inclusive) and provide a new Dedicated Bat Building located within 40 metres of the barns, providing new bat mitigation features prior to bats being excluded from the existing buildings.

a) Timing of works

Works to construct the Dedicated Bat Building (DBB) can be carried out at any time before other works to the buildings as it is on a new site distant enough not to cause disturbance while those works take place. It must be completed before 30 April following the period in the Autumn/Winter when works start on the existing buildings.

Carry out all the works that may affect bats to include all roof stripping, repairs to large timbers, taking down of any walls, re-pointing of existing walls, and creation of any new apertures in a **single period 01 October to 30 April**. Any works to take down, repair or re-point stone walls or create new apertures in walls are further restricted to take place in **October, November, March or April only** to avoid disturbance or harm to any hibernating bats. Works must be sufficiently advanced by the end of April for returning bats to be dissuaded from roosting.

b) Worker/contractor induction on bat presence

Provide a "Tool Box Talk" and Method Statement to site owners and all workers/contractors before works begin.

c) Creation of temporary roosts for any bats found during conversion

Erect at 3m to 4m height, prior to any works, three untreated timber bat boxes to BCT design, with a slot width 16 - 17mm within 20m of the building. They will be primarily a safe, temporary roosting site for the licensed ecologist to place bats in if any are found at the searches prior to and during the works.

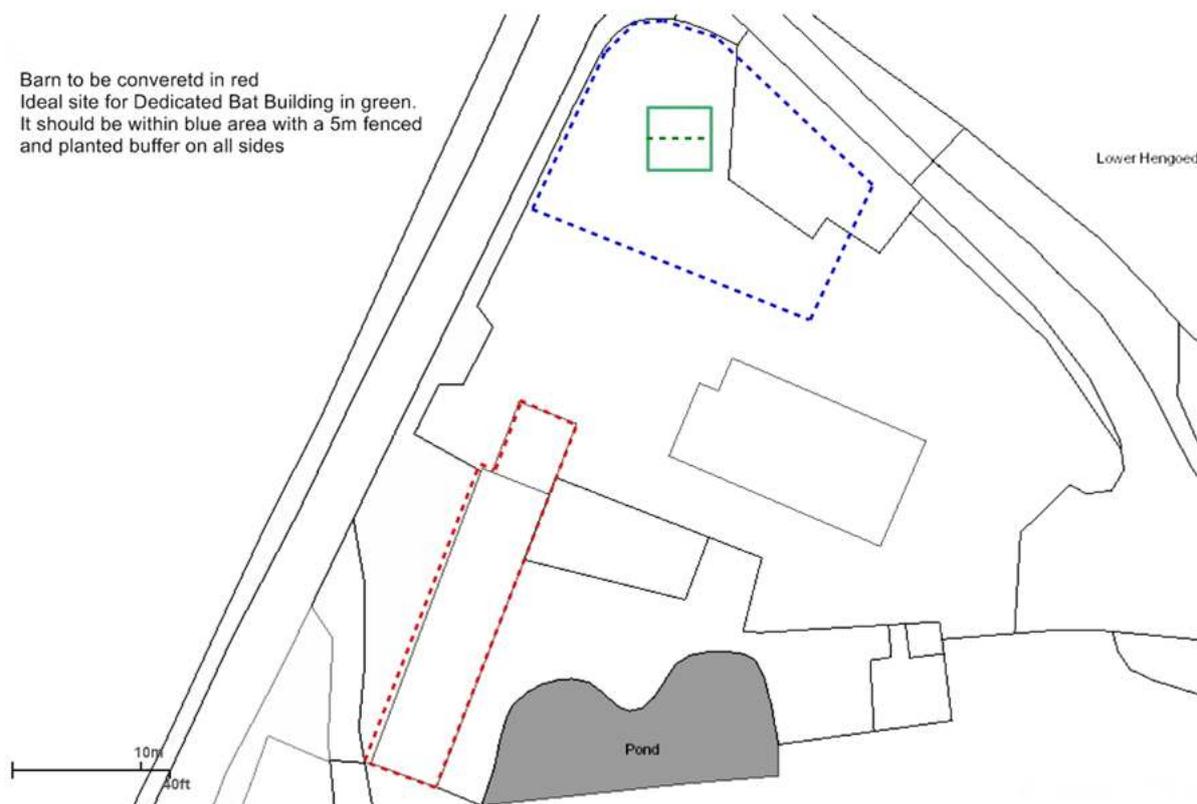
d) Contingency for discovering bats

The licensed bat ecologist will carry out a thorough search of the building for bats with an endoscope etc. immediately prior to any work starting and, if bats are found, consider delaying the works until the bats are not present. They will also provide a "watching brief" of work to strip and dismantle roofs and dismantle any walls. This will be by hand. If any bats are found, work will stop and the licensed ecologist will be contacted and will attend the site. Any bats found that do not fly will be released immediately at the site into the bat boxes already erected by the licensed ecologist. If this is not possible they will be rehabilitated at a suitable centre with later release at site.

e) New/existing bat roosting habitat

A new Dedicated Bat Building for maternity and night roosting and possible hibernation for a range of species, including horseshoe bats, with no human use (no storage, no electric power, lighting, solar panels or water installed)

- i) A new dedicated bat building is to be constructed for bats within 40m of the existing building. The design will provide an upper loft with a floor and “cool room” below with a range of temperature regimes within the building, but with a minimum afternoon, mid-summer loft apex temperature of at least 30°C. The loft will be subject to solar gain providing the energy for warm conditions in this part; the ideal roof pitch for this is 52°. The lower room will be much cooler with a floor left as earth for moist conditions and will be dug out below ground level to create a type of cellar of over 1m depth to provide more stable cool temperatures in the winter.

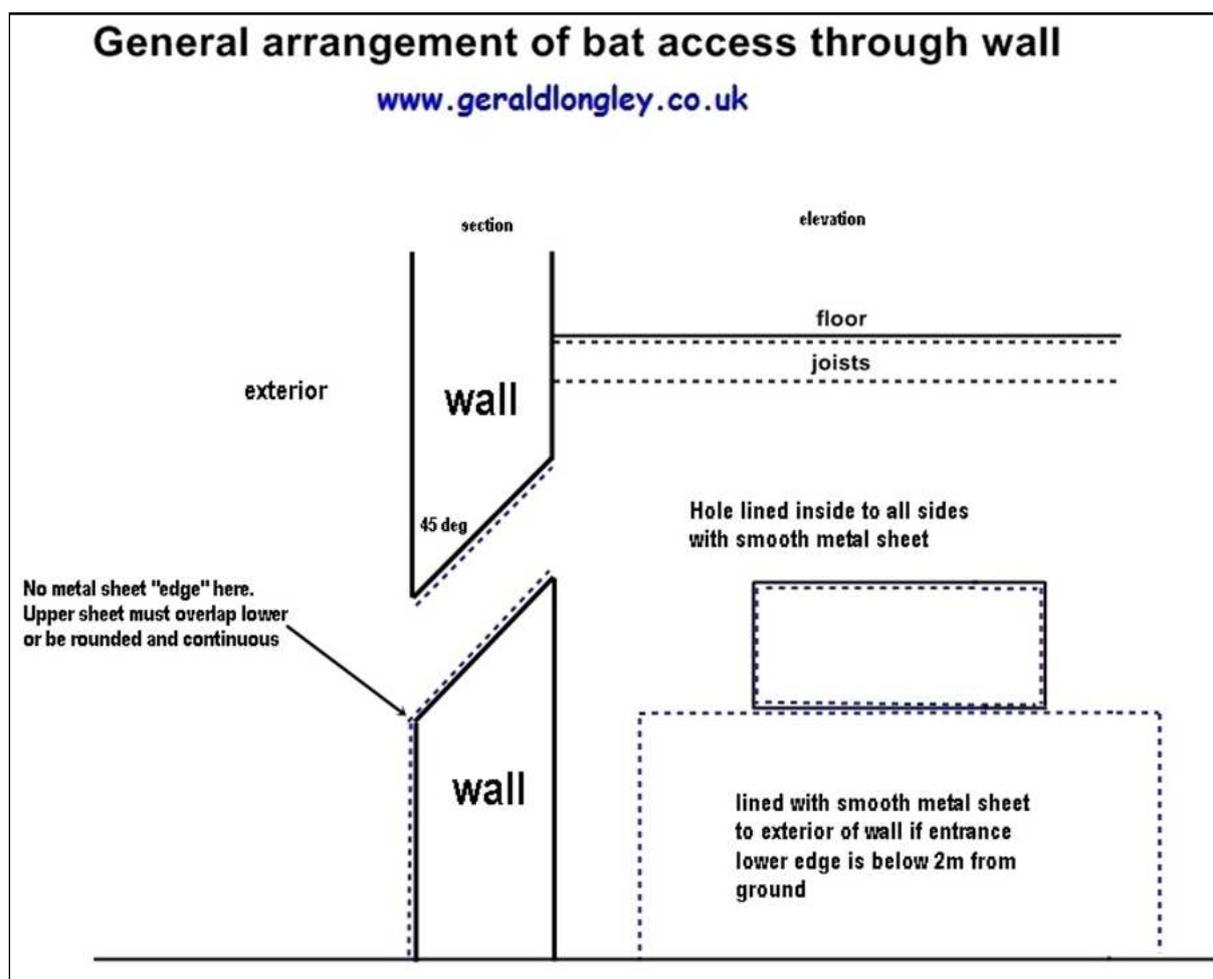


- ii) Of traditional gabled, “cut roof” construction with no trusses, the alignment of the roof ridge will be east-west or as close as possible. One roof pitch will have a southerly aspect to maximise solar gain to the loft space and ideally a roof pitch of 52°. The bat building will be close (within 3m) to existing shrubs/scrub/hedge if possible. New low shrubs/scrub or low hedges of native species must be planted at 2m spacing to join to existing vegetation to enhance the flight lines for bats and be planted in a stock-proof fenced buffer around the DBB of at least 5m on all sides. Tall tree species must NOT be planted as these will shade the roof and cause unwanted cooling. A list of suitable species is at the end of this section.
- iii) It will have a minimum loft height of 2.8m with minimum internal dimensions of 5m long, and width between 4m (roof pitch 55° for 2.8m high loft) to 5m (52° gives an loft height of 3.2m). Eaves’ height to the underside of the floor joists inside will be a minimum of 2.0m. It will ideally avoid having an A frame or similar to support its purlins and have a single, open loft. If the building is over 8m long it can have a hipped roof which focuses heat better.

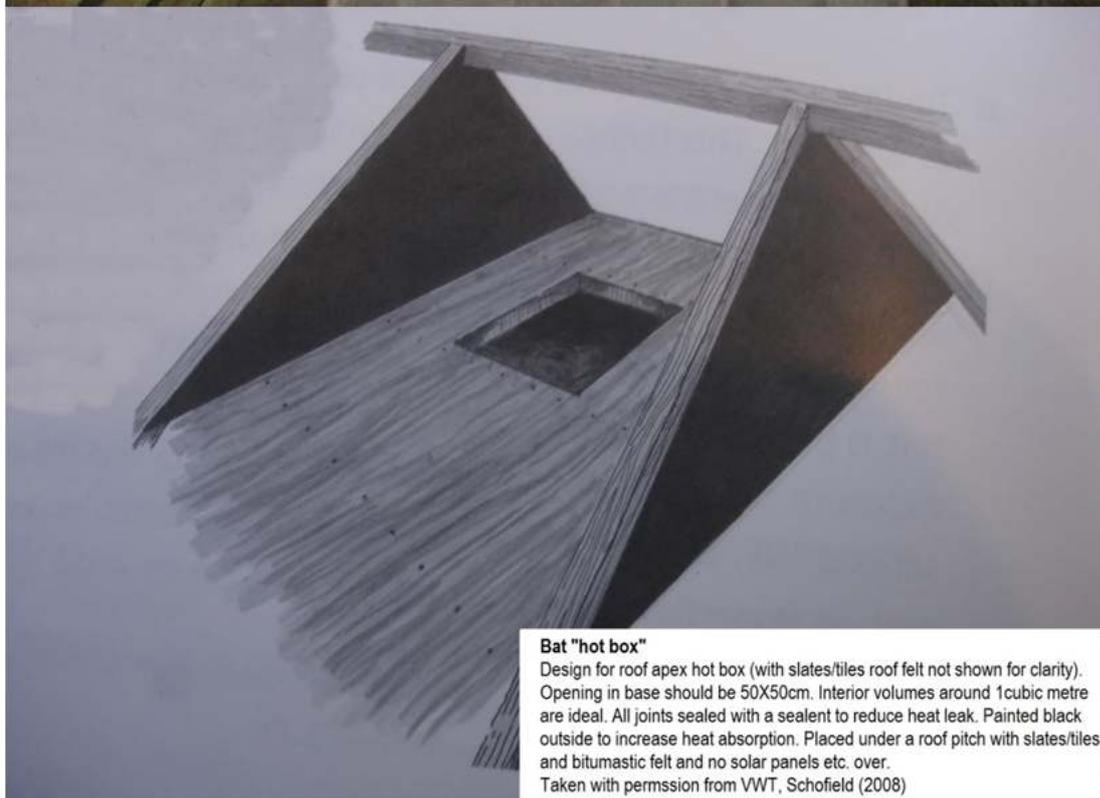
- iv) It is to be a permanent structure and will be constructed of concrete block, brick or stone and clad in horizontal timber weather boarding in Tanalyth E tanalised boards.
- v) The pointing mortar work on the inside of the stone, brick or block work walls will, in around 20 random places on each wall (i.e. 80 in total) above 1m height of its earth floor, be left out in small sections 150mm long and 100mm deep into the wall and mortar depth (not open to the exterior though).
- vi) The roof will be constructed with a traditional cut and pitch method to form an unobstructed open space using tanalised (Tanalyth E), rough sawn/un-planed timbers to aid bats to hang and grip. If timbers are planed when sourced they must be roughened with a wire brush before erection. Ancient timbers can be fixed in the roof structure with cracks, splits, open mortises, slots etc. in them. These do not have to be structural. It will be roofed with natural slate with traditional bitumastic, hessian backed roofing felt BS8747:2007 TYPE 1F under. Breathable 'Tyvek' type products must not be used. Ridge tiles will be dark or black coloured to absorb heat.
- vii) To the underside of the rafters on both pitches fix 6 number rough sawn battens, about 25mm x 25mm in dimension, the length of the building excluding in the hot box (see below). The highest placed within 100mm of the apex beam and the other 5 at approx. 200mm spacing down the roof pitches. The lower parts therefore have no underside battens.
- viii) Five evenly spaced ridge tiles (more on buildings longer than 5m) will be "notched" to their lower edges on both sides to provide a slot 100mm long and an effective depth, when the ridge tile is in situ, of 20mm (and no larger or smaller) to provide access for bats under the ridge tiles, with a cavity left inside at this point. The ridge will be a mortared not "dry system" ridge. See the photograph 'Example of notched ridge tile in situ' below.



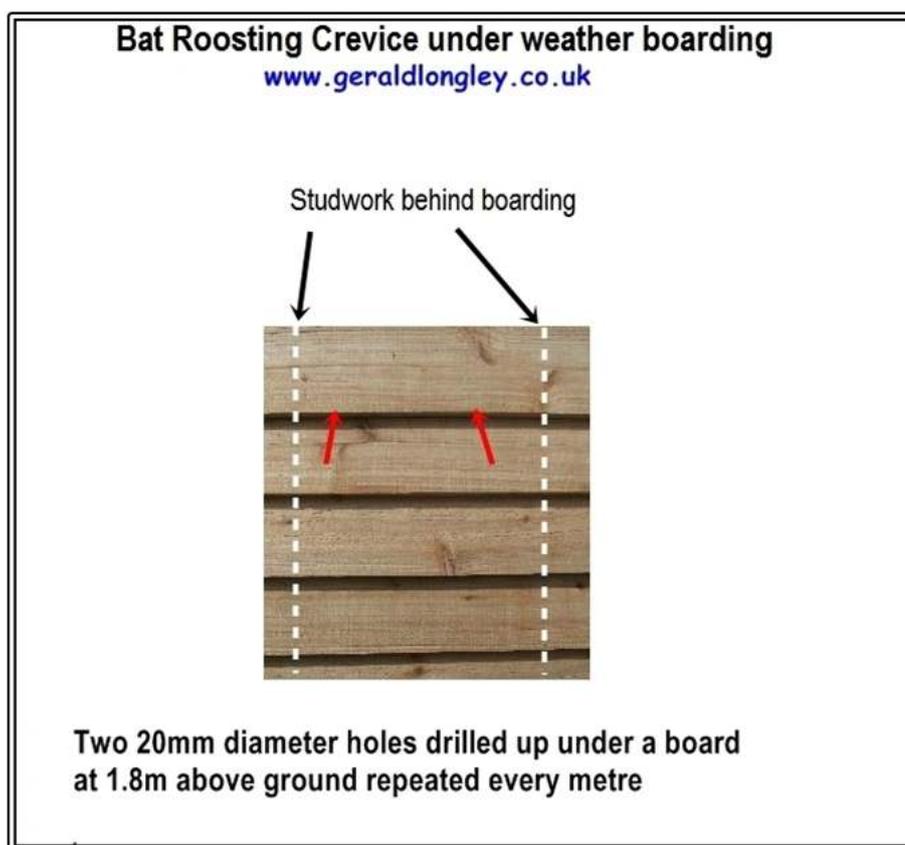
- ix) A rectangular bat entrance/exit will be provided as a hole in the east facing wall. The entrance will be 500mm in width and 200mm in depth. It will be angled up through the wall at 45° in section. It will be installed with its upper edge at about 1.7m from ground level. If the eaves' height is greater than 2m it can be higher. It is to enter the interior in the ground floor room (not into the loft) just below the loft floor. To deter cats jumping/climbing in the entrance, the bat entrance will be lined to all 4 sides in smooth metal sheeting. The area of exterior wall below the bat entrance will also be covered in a smooth metal sheet 1m wide over the timber cladding from ground level bending into the entrance hole with no "edge" there. The sheet will be as smooth as possible with any sheet overlaps being upper sheet over lower sheet. See the diagram 'General arrangement of bat access through wall' below.



- x) In the centre of the loft, a “hotbox “ will be constructed of sterling/OSB and untreated timber, to be approximately 2m long, and 1m deep, sealed with mastic at its joints, painted black on the outside with a bat access hatch through its “floor” of 45cm by 45cm. See photo of hotbox installed and a drawing with roof and slates removed for clarity (below).



- xi) An alternative bat entrance/exit slot, intended to be used in an emergency if the main bat access is blocked by a predator for example, must be provided in the opposite gable wall to the main entrance (west). A horizontal slot 300mm wide by 100mm high set with its upper edge 1.8m from the ground.
- xii) A human load bearing ceiling/floor will be installed at eaves level with rough sawn/un-planed timber joists and suitable timber flooring. An access hatch, 600mm by 600mm without a hatch door, no safety rail above and no access ladder will be installed in the centre of the ceiling/floor to allow bat access to the loft and human bat monitoring access.
- xiii) A secure, lightless exterior door will be provided on one of the walls that does not have a bat access hole for human access to monitor bats. This door must be kept locked and will be labelled: "This building has no access. The door is locked. This building must not be used for any human purpose e.g. no storage. It is a Dedicated Bat Building."
- xiv) The tanalised, horizontal exterior timber cladding will be on timber battens 50mm deep and will have pairs of holes, 20mm in diameter, at approx. 1m spacing, drilled up vertically at the bottom edge of a cladding board, at approx. 1.8m from the ground on each elevation to allow access for bats behind the cladding into the cavities between battens.



- xv) At the eaves and along the gables soffit boxes will be built with rectangular bat access slots at their wall edge about every metre. Similar slots will be made at the apex of the gables. All slots will be 100mm long and 20mm deep (and no larger) giving access to the soffit boxes and the wall tops. See the photograph 'Example of access slot in soffit box' below.



- xvi) The DBB will have no lighting inside it or fixed to the outside of it and will have no exterior lighting within 10m of it at all and no exterior lighting directed at it at all. No electrical power will be wired in or supplied to the building or water supplied to it. It will have no human use, i.e. no storage, animal housing or any other human use.
- xvii) It will have no solar panels of any sort placed over or on the roof or walls or contain any wiring, inverter or controller from any other panels nearby.
- xviii) It will be completed to the satisfaction of the ecologist prior to any works on the building/structure it replaces and where bats are to be excluded from. All works will be carried out under a Mitigation Licence issued by Natural Resources Wales.

Native Shrubs and Climbers		
www.geraldlongley.co.uk		
No. of Species	Scientific name	Common name
1	<i>Cornus sanguinea</i>	Dogwood
2	<i>Corylus avellana</i>	Hazel
3	<i>Crataegus monogyna</i>	Hawthorn
4	<i>Euonymus europaeus</i>	Spindle
5	<i>Frangula alnus</i>	Alder Buckthorn
6	<i>Ilex aquifolium</i>	Holly
7	<i>Ligustrum vulgare</i>	Wild Privet
8	<i>Lonicera periclymenum</i>	Honeysuckle
9	<i>Malus sylvestris</i>	Crab Apple
10	<i>Prunus padus</i>	Bird Cherry
11	<i>Prunus spinosa</i>	Blackthorn
12	<i>Rhamnus cathartica</i>	Buckthorn
13	<i>Rosa canina</i>	Dog rose
14	<i>Salix cinerea</i>	Grey Willow
15	<i>Sambucus nigra</i>	Elder
16	<i>Viburnum opulus</i>	Guelder-rose

f) Providing clear details and connection to Planning Permission/Listed Building Consent

The applicant will provide details of the mitigation on their elevation and plan drawings with their Planning Application.

g) Monitoring

As the works will take place under an EPS Mitigation licence issued by Natural Resources Wales (NRW) monitoring will be:

1. On completion of bat mitigation works, a report including photographs of the mitigation works will be written and sent to Natural Resources Wales by the ecologist.
2. Two post development bat surveys will be carried out in the two summers following completion of the renovation/conversion works to establish the presence or absence of bat roosts and/or bat species in the new mitigation and make recommendations accordingly. Surveys will include a day time inspection and bat emergence/re-entry activity surveys. They will be carried out with a minimum of two surveyors, using standard methodology as per Bat Conservation Trust (2016).
3. Any remedial works identified and required will form part of recommendations made in a report on the post development monitoring of bats to Natural Resources Wales and the licence holder.

7.0 APPENDICES

7.1 Relevant Legislation

Bats – Legislation

All British bat species receive legal protection in the United Kingdom under the Wildlife and Countryside Act 1981 (WCA) (as amended). The WCA 1981 was amended by the Countryside and Rights of Way (CRoW) Act 2000. All British bat species are listed under Schedule 5 of the 1981 Act, and is therefore subject to the provisions of Section 9, which makes it an offence to:

- Intentionally kill, injure or take a bat
- Possess or control any live or dead specimen or anything derived from a bat
- Intentionally or recklessly disturb a bat while it is occupying a structure or place which it uses for shelter or protection
- Intentionally or recklessly obstruct access to any structure or place which a bat uses for shelter or protection
- Sell, offer for sale, possess or transport for the purpose of sale or publish advertisements to buy or sell a bat

Bats are also included on Annex IV of Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora. As a result of the UK ratifying this directive, all British bats are also protected under the Conservation of Habitats and Species Regulations 2010. It makes it an offence to:

- Deliberately capture or kill a bat.
- Deliberately disturb a bat in such a way as to be likely to significantly affect i) the ability of any significant group of animals of that species to survive, breed or rear or nurture their young, OR ii) the local distribution of that species.
- Damage or destroy a breeding site or resting place of a bat.

Under the law, a roost is any structure or place used for shelter or protection. This could be any structure, for example any building or mature tree. Bats use many roost sites and feeding areas throughout the year. These vary according to bat age, condition, gender and species, as well as season and weather. Since bats tend to re-use the same roosts for generations, the roost may be protected whether the bats are present or not.

Birds - Legislation

Under Section 1 of the Wildlife and Countryside Act 1981 it is an offence to intentionally kill, injure, handle or remove any wild bird (with the exception of a few pest species); take or damage a nest whilst in use or being built; and take or destroy eggs. A person is not guilty of any offence if their action was the incidental result of a lawful activity and could not have been reasonably avoided.

A higher level of protection is afforded to those birds listed in Schedule 1 of the Act. It is an offence to disturb Schedule 1 species whilst it is building or sitting on a nest, in addition to damaging or destroying their nests or eggs.

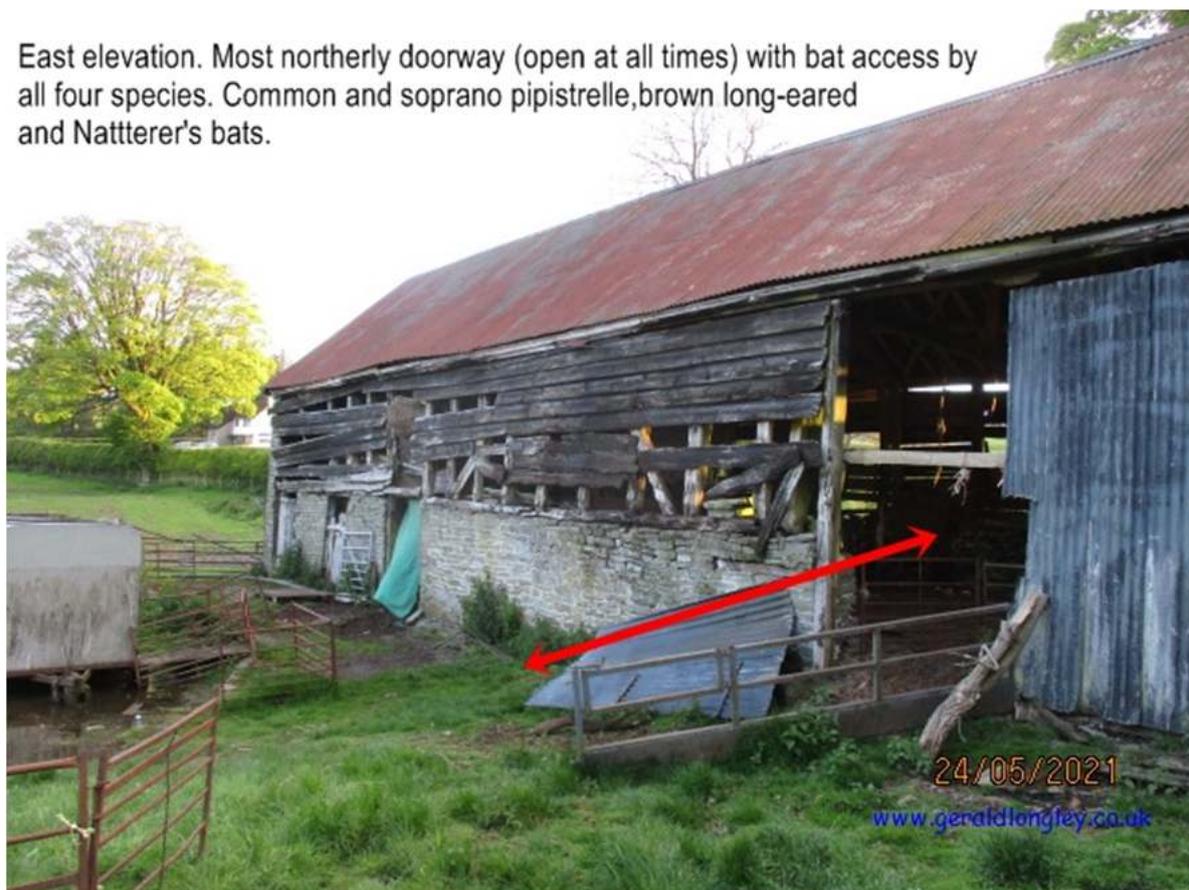
It is not an offence to disturb non-Schedule 1 species whilst they are building a nest or sitting on it. However, an offence may be committed if the bird is driven away from a nest by prolonged disturbance which results in the failure of eggs or death of dependent young.

7.2 Field equipment used for the survey:

Escort mini temperature data logger
Silva compass
Leica 8 x 42 close-focusing binoculars
Cluson Clubman 1 Million candle-power lamps
Access Cam Pro-Sight colour video endoscope (1m probe)
Telescopic mirror
Suunto clinometer
3.8-metre extendable ladder
8m extendable ladder
Anabat SD2 bat detectors with GPS and HP iPaq PDAs (active monitoring)
Anabat SD2 bat detector (passive monitoring)
AnalogW v4.1 (bat data analysis software)
Anapocket v2.5b (bat data analysis software)
Batbox Duet bat detector (frequency division and heterodyne bat detector)
SSF Bat2 bat detector (frequency division and heterodyne bat detector)
Two-way radios

8.0 SITE PICTURES

East elevation. Most northerly doorway (open at all times) with bat access by all four species. Common and soprano pipistrelle, brown long-eared and Natterer's bats.



West elevation. Large opening with bat access by three species. Common and soprano pipistrelle and brown long-eared bats.

