



Cambrian Ecology Ltd
5 Tan y Bwlch
Maentwrog
Gwynedd
LL41 3YU

chris@cambrianeecology.com
07765 254035 (Chris Hall)

Bwlch y Groes Faen, Machynlleth

Proposed Building Extension & Demolition Bat Surveys

5th July 2023



Report by: Chris Hall ACIEEM

Clients: Simon & Lizzie Frost, Glebe Cottage, Church Street, Upton Grey, Hants, RG25 2RB

Planning Authority: Powys County Council

Grid Reference: SN 73808 99678

CONTENTS	Page No
1. Summary	3
2. Introduction	4
3. Methodologies	5
4. Results	8
5. Survey Limitations	16
6. Conclusions	17
7. Ecological Impacts	18
8. Mitigation & Recommendations	20
9. Biodiversity Enhancement	31
10. Legal Implications	32
11. References	33
12. Appendices	34
12.1 Site Photographic Record	
12.2 Examples of sonograms taken from Anabat	
12.3 Advice regarding NRW licencing	
12.4 Review table	

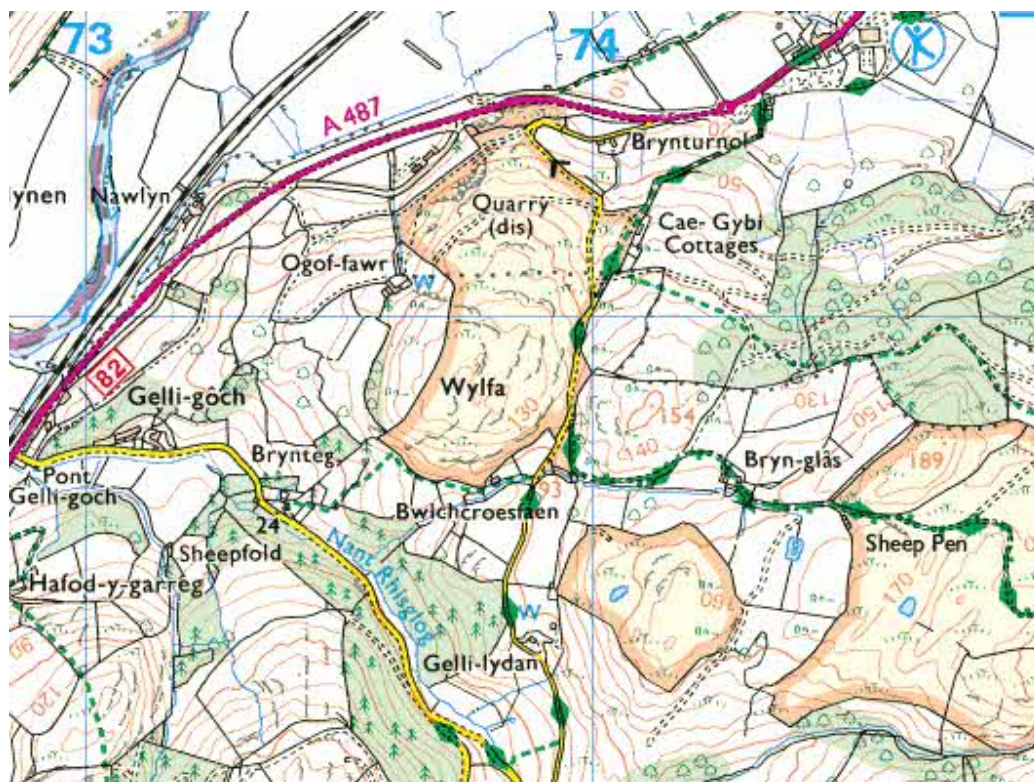


Figure 1: Site location

Bwlch y Groes Faen, Machynlleth

Proposed Building Extension & Demolition Bat Surveys

5th July 2023

1. Summary

A suite of bat and protected species surveys was carried out by Cambrian Ecology Ltd at Bwlch y Groes Faen near Machynlleth.

It is proposed to submit a planning application to extend and alter the current building which will involve the demolition of later, inappropriate flat roofed extensions on the western side of the property. It is also intended to construct a new garage/plant room to the west of the property on what is currently a lawn.

As part of the site assessment process, a biological records search was carried out with the Local Records Centre (LRC) to enable the proposals to be assessed in the context of the wider landscape, and to enable any impact on designated sites to be assessed.

Preliminary and internal surveys were carried out on 11th May 2023. During these surveys, droppings were found to be present on a wall inside a woodshed located in one of the later flat roofed extensions. The rear of this part of the building extends to beneath a pitched slate roof where there is a former hay-loft door which has been bricked up from the inside. The location of these droppings suggested that the bats were then accessing an area between the wall top and the slate roof covering.

As a consequence of this observation, combined with the high quality of the surrounding woodland habitats, the proposed works were assessed as having 'High' potential to have a negative impact on the 'Favourable Conservation Status' (FCS) of the species present. Following the current guidance (Collins 2016), the full suite of three emergence surveys was carried out.

These surveys were carried out during May, June and July 2023 to ensure that the important maternity period was covered. All three surveys were positive with a maternity roost of brown long eared bats; (*Plecotus auritus*) found to be present along with small numbers of individual soprano pipistrelle bats; (*Pipistrellus pygmaeus*) and common pipistrelle bats; (*P. pipistrellus*).

Due to the fact that the building proposed for alteration and extension has been identified as a bat roost, a licence from Natural Resources Wales (NRW) will be required to be obtained prior to work commencing.

Conditions that will be attached to the licence will include the provision of new roosts prior to the existing roosts being lost.

Recommendations are provided in regard to the installation of any new exterior lighting associated with the proposed works, in order to prevent any negative impact on bats through habitat fragmentation.

No other protected species or biosecurity issues were recorded during the survey, but some precautionary measures have been proposed due to the presence of a small, un-named watercourse on the site which has the potential to act as a transmission vector for any pollution incident occurring on the site. This could have the potential to extend the ‘zone of influence’ of the proposed development far beyond the site boundary. This watercourse was also surveyed for the presence of otters; (*Lutra lutra*).

The data search only revealed the presence of one statutory designated site relating to bats within the 10km radius search area. The lesser horseshoe bat; (*Rhinolophus hipposideros*) is a feature of this site but it is concluded that it is not feasible for the proposed development to have any negative impact on this site, see Section 8.

Under Chapter 6 of Planning Policy Wales 11, planning authorities must seek to maintain and enhance biodiversity in the exercise of their functions. In this case it is recommended that ‘bee bricks’ for solitary bees are included in the project design along with bat tubes to provide additional accommodation for the crevice-dwelling bats species recorded foraging during the surveys, see Section 9.

Key Messages:

- 1. All three of the emergence surveys were positive, with a maternity colony of brown long-eared bats found to be present along with individual pipistrelle bats, see Section 4.**
- 2. Due to the protected status of bat roosts whether the bats are present or not, a licence will be required from NRW to carry out the proposed works.**
- 3. Conditions that will be attached to the licence will include the provision of new roosts prior to the existing roosts being lost, see Section 8.1**
- 4. Recommendations are provided in regard to the installation of any new exterior lighting in order to avoid a negative impact on bat movements, see Section 8.1.**
- 5. Precautionary measures will be required due to the potential for a pollution incident to occur during the construction phase, see Section 8.2.**
- 6. Biodiversity enhancements on the site will be achieved through the provision of bee bricks and bat tubes, see Section 9.**

2. Introduction

A suite of bat and protected species surveys was carried out by Cambrian Ecology Ltd at Bwlch y Groes Faen near Machynlleth.

It is proposed to submit a planning application to extend and alter the current building which will involve the demolition of later, inappropriate flat roofed extensions on the western side of the

property. It is also intended to construct a new garage/plant room to the west of the property on what is currently a lawn.

The relevant planning authority is Powys County Council, which requires ecological survey reports to be submitted as an integral part of the planning application.

Bwlch y Groes Faen is located in a rural position at Grid Reference: SN 73808 99678.

3. Methodologies

The surveys were carried out by licensed bat workers Chris Hall (Bat Licence No.: S085724-1, Otter Licence No.: S089662-1). Chris has been working as an independent ecologist for 18 years and has held a bat license from the Countryside Council for Wales (CCW) now NRW for 27 years and an otter licence for 22 years. He is an associate member of Chartered Institute of Ecology & Environmental Management, (CIEEM). Additional experienced surveyors were utilised to ensure coverage of all potential emergence points during the surveys.

3.1 Bats

Objectives of the bat surveys at Bwlch y Groes Faen were:

- Identify any signs of the presence of bat species within the building.
- Assess the potential of the building to support roosting bat species.
- Identify any crevice-dwelling species roosting within internal or external features of the building and identify the features they are using.
- Identify any void-dwelling species roosting within the building.
- Assess the status of any bat roosts present.
- Identify any emergence points to ensure they are either retained or replicated.
- Assess the levels of potential disturbance and loss of roosting opportunities due to the proposed works.
- Gather detailed evidence to support any ensuing development license application to NRW.
- Recommend mitigation and compensation measures to ensure the continued ecological functionality of the site for bats.
- Identify any other protected species issues associated with the development proposals.
- Identify any bio-security issues associated with the proposals, including the presence of any non-native species.

3.1.1 *Preliminary Building Survey*

The preliminary building survey was carried out on 11th May 2023. During the building survey, all crevices and other likely roosting areas were methodically searched for signs of bat occupation, such as droppings, feeding remains and marks on timbers from oils in the animal's fur. A Voltcraft BS-10 USB endoscope was available to investigate any accessible cracks or crevices within the roof void. High powered lights, including Cluson Clulite Clubman CB2 and LED lenser torches were used to examine fascias, barge boarding and slates on the exterior and search for signs of bat occupation. All

'Potential Roosting Features' (PRFs) were noted to ensure effective coverage during the emergence surveys.

3.1.2 *Emergence Surveys*

Three emergence surveys were subsequently carried out on 11th May, 13th June and 4th July 2023. Five surveyors were present for each survey, which ensured a clear view of all elevations, roof pitches and PRFs identified in the preliminary survey.

The emergence surveys commenced half an hour prior to sunset, continuing for at least 120 minutes after sunset due to the potential for late emerging void dwelling species to be present.

The surveyors each utilised an Anabat SD1/SD2 unit or an Anabat Scout unit. Any calls recorded were later analysed using Analook and Insight to confirm field identification. A FLIR E40bx thermal imaging camera was used once it became too dark to see emerging bats.

Weather conditions were appropriate for the surveys, see table below.

Table 1: Environmental conditions during emergence surveys

Date	11 th May 2023	13 th June 2023	4 th July 2023
Dusk temperature °C	11.9	23.9	13.3
Cloud cover %	30%	0%	90%
Wind	No breeze	No breeze	No breeze
Rain	None	None	None
Sunset time	20.58	21.41	21.40

3.1.3 *Remote Monitoring*

Seven consecutive nights of remote monitoring inside the wood store were carried out to establish whether or not any other species such as night roosting lesser horseshoe bats were present. An Anabat Express unit was used for this purpose and the monitoring took place between 13th & 20th June to cover the most sensitive part of the maternity period.

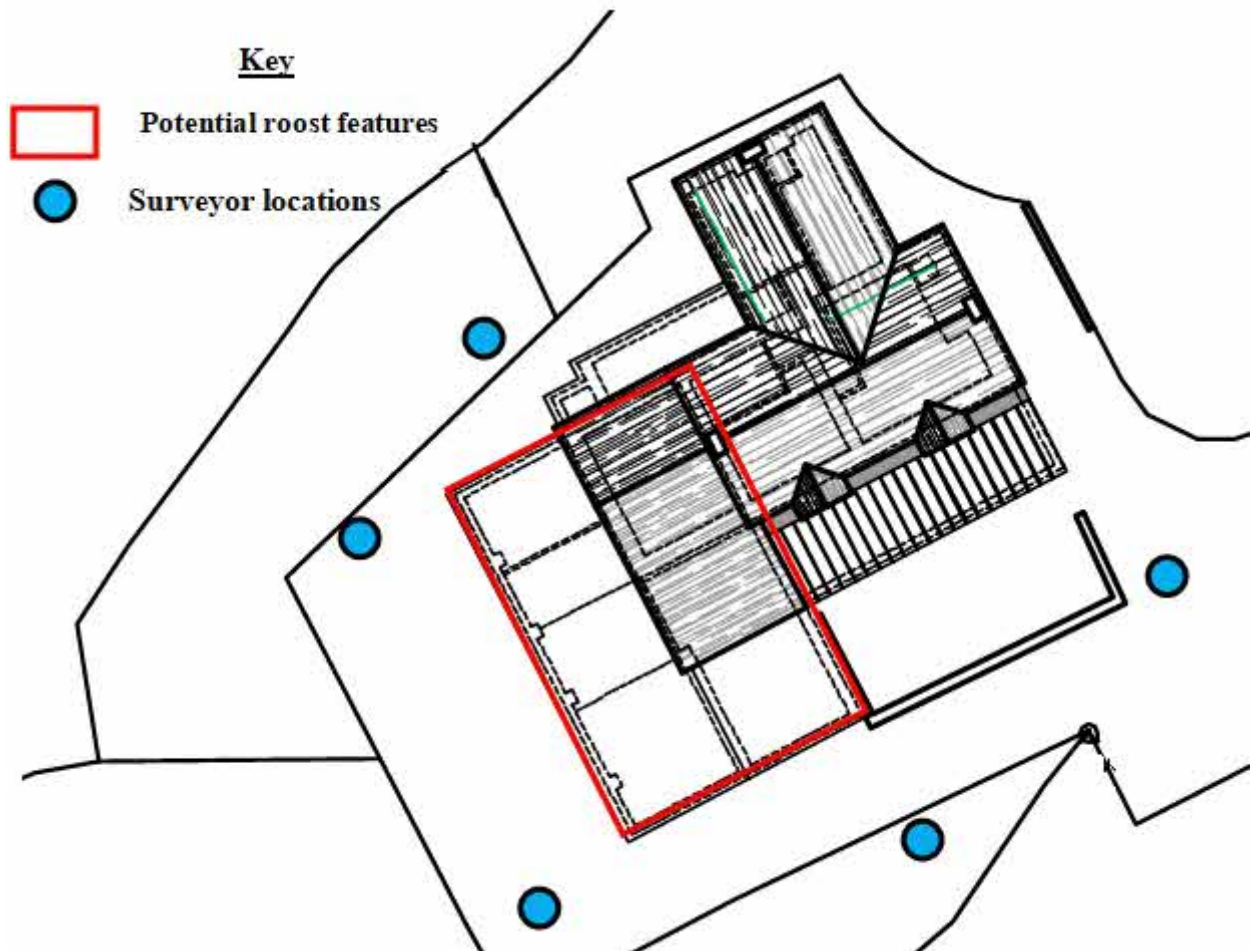


Figure 2: Location of surveyors in relation to PRFs at Bwlch y Groes Faen

3.2 Other Ecological Issues

In accordance with the guidelines from CIEEM, the presence of any other protected species was also recorded. In particular, this building was searched for signs of breeding birds, including droppings and nests. Any potential bio-security issues such as the presence of invasive plant species were also recorded.

3.2.1 *Badgers*

A survey for a minimum of 30m radius from the proposed works was carried out for any evidence of the presence of badgers, including setts, latrines, evidence of foraging, (snuffle holes) and hairs caught on wire or vegetation where animals were breaching field boundaries.

3.2.2 *Otters*

Due to the presence of a small, un-named watercourse on the site, the site was surveyed for evidence of otter presence including spraints, (droppings) footprints, prey remains and actual or potential holts.

3.3 Desk-based Study

A biological records search was carried out with BIS for all bats and designated sites relating to bats as recommended in the guidance from CIEEM. This enables the proposed development site to be assessed in a wider context and a potential wider 'zone of influence' of the development to be taken into account. The search parameters were 10km from the survey site area for protected sites with specific relevance to bats and 2km for bats.

4 **Results**

4.1 Preliminary Bat Survey

Bwlch y Groes Faen comprises of three distinct sections; the original main house, an original pitched roof extension attached to the west facing gable end, and later flat roofed extensions. There is also a pitched roof linking the woodshed with the exterior wall of the original extension.

4.1.1 *Original Main House*

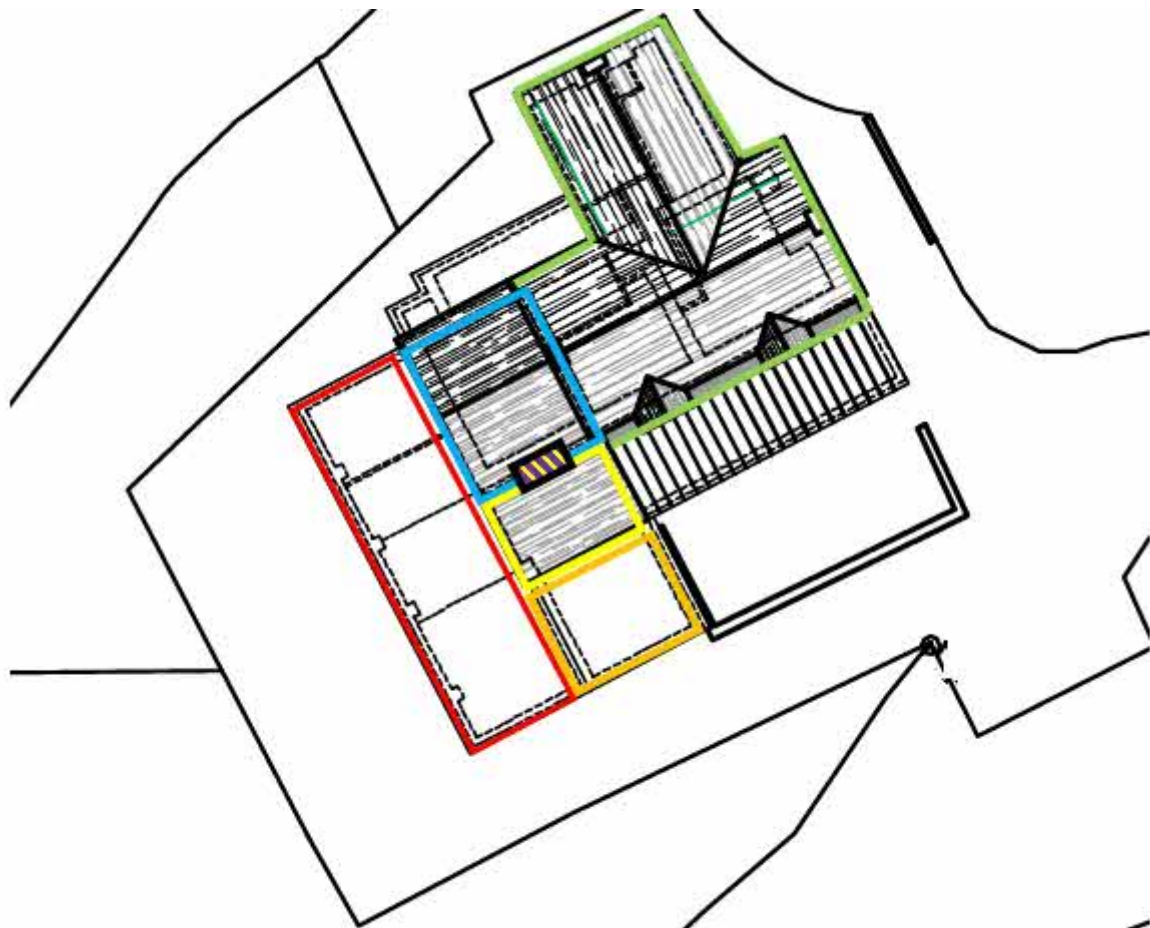
The majority of the main part of Bwlch y Groes Faen is in excellent condition. The exterior walls are rendered which effectively seals the masonry and the soffits and fascias are all sealed with no potential bat access points. The roof is also in very good condition with no gaps under slates or ridge tiles. On the interior, there are three separate roof voids. The underside of the slates is lined with a 'Tyvek' breathable membrane indicating relatively recent roof replacement. There is no potential bat access to any of these roof voids.

The only roosting potential on this part of the building is in defects in the exterior timberwork on the west facing gable end where there are small gaps behind the soffit.

4.1.2 *Original Pitched Roof Extension*

The original pitched roof extension is a two-storey structure slightly lower than the main house. The roof is largely in good condition having been replaced at some point and lined with traditional 1F felt. There are however gaps on the west facing gable end where the edges of the slates are unsealed. There was originally a window on the south facing elevation which has been sealed with blockwork from the interior. This window is now under the cover of the pitched roof link between this part of the building and the flat roofed woodshed. As the blockwork is not as thick as the original stone wall, this has resulted in a recess in the wall covered by the roof link so that it is now inside the woodshed.

On the interior, there is no separate roof void, the underside of the roof is lined with F1 felt and there is no potential bat access to the interior of this part of the building.



Key







	Original Main House
	Original Pitched Roof Extension
	Flat Roofed Garage
	Flat Roofed Woodshed
	Pitched Roof Link between Woodshed & Original Extension
	Location of Roost

Figure 3: Site layout

4.1.3 *Flat Roofed Woodshed*

The woodshed is a later roofed structure linked to the original extension by a pitched roof. This roof is in very poor condition and appears to have some structural issues resulting in very large gaps appearing under the slates. This roof is unlined.

Droppings were found in the recess on the outside of the blockwork in the location of the sealed window which were consistent in both size and appearance with those of the brown long-eared bat. The location of the droppings, combined with no bats being visible at the time of the survey, suggested that the bats are landing on the rough surface of the blockwork and crawling up between the wall tops and the slate roof covering.

On the exterior, there are no potential roosting crevices but there is a large gap at the top of the wall on the south facing elevation which, combined with an equally large gap behind the fascia board, gives excellent potential bat access to the building interior. There is also a large gap on top of the wall dividing the woodshed from the adjoining garage.

Due to the known presence of bats, the proposed works were assessed as having 'High' potential to have a negative impact on the FCS of the species present.

Following the current guidance (Collins 2016), the full suite of three emergence surveys was subsequently carried out.



Figure 4: The recess created by sealing the original window

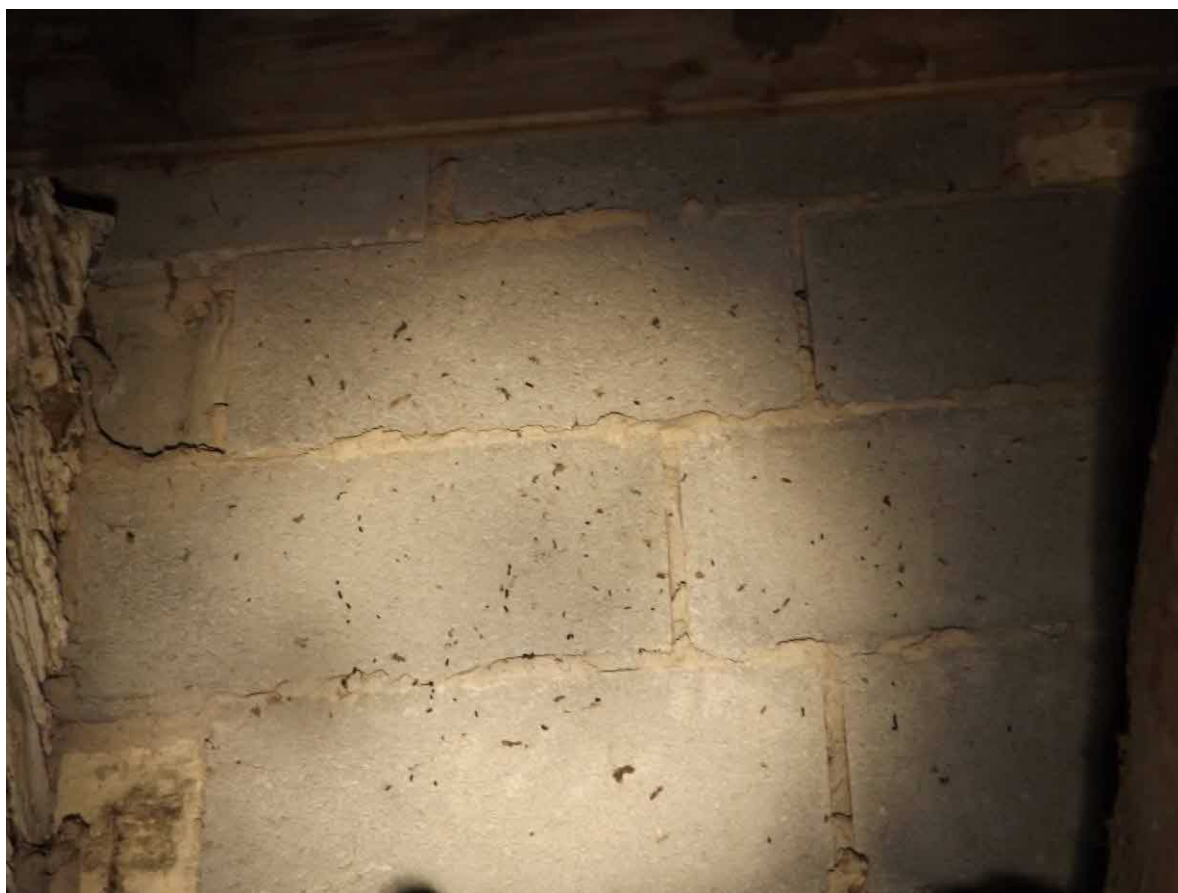


Figure 5: Droppings stuck to the blockwork inside the recess

4.1.4 *Flat Roofed Garage*

The flat roofed garage also has no potential roosting crevices on either the interior or exterior of the building but has a large gap at the top of the wall on the south facing elevation which, combined with an equally large gap behind the fascia board, gives excellent potential bat access to the building interior.

4.2 Habitat

Bwlch y Groes Faen is situated in a very rural location and is surrounded by broadleaved woodland and trees.

There is very good connectivity with habitats in the wider landscape which include extensive areas of both broadleaved and coniferous woodland. This could be described as optimal foraging habitat for most British bat species.



Figure 6: The habitat immediately surrounding Bwlch y Groes Faen



Figure 7: Bwlch y Groes Faen in relation to the wider landscape

4.3 Emergence Surveys

11th May 2023

During the first emergence survey, a total of eight brown long-eared bats emerged from behind the gap in the fascia board on the south facing elevation of the garage. An internal investigation with a thermal imaging camera revealed that the bats were emerging from the recess in the wall at the rear of the woodshed and flying through the gap at the top of the dividing wall between the woodshed and garage, before exiting via the gap behind the fascia on the south facing elevation.

A further two brown long-eared bats emerged from a large gap in the slates on the pitched roof link between the woodshed and original extension.

13th June 2023

During the second emergence survey, brown long-eared bat numbers had risen to fifteen with all bats emerging from the gap behind the fascia board on the south facing elevation of the garage.

A total of three soprano pipistrelle bats and two common pipistrelle bats were also recorded emerging from a combination of unsealed slate edges on the original extension and from the defect in the soffit on the west facing elevation of the main house.

4th July 2023

During the final emergence survey of 4th July 2023, brown long-eared bat numbers had risen further and 21 bats were present, with all emerging from above the top of the wall on the south facing elevation of the garage.

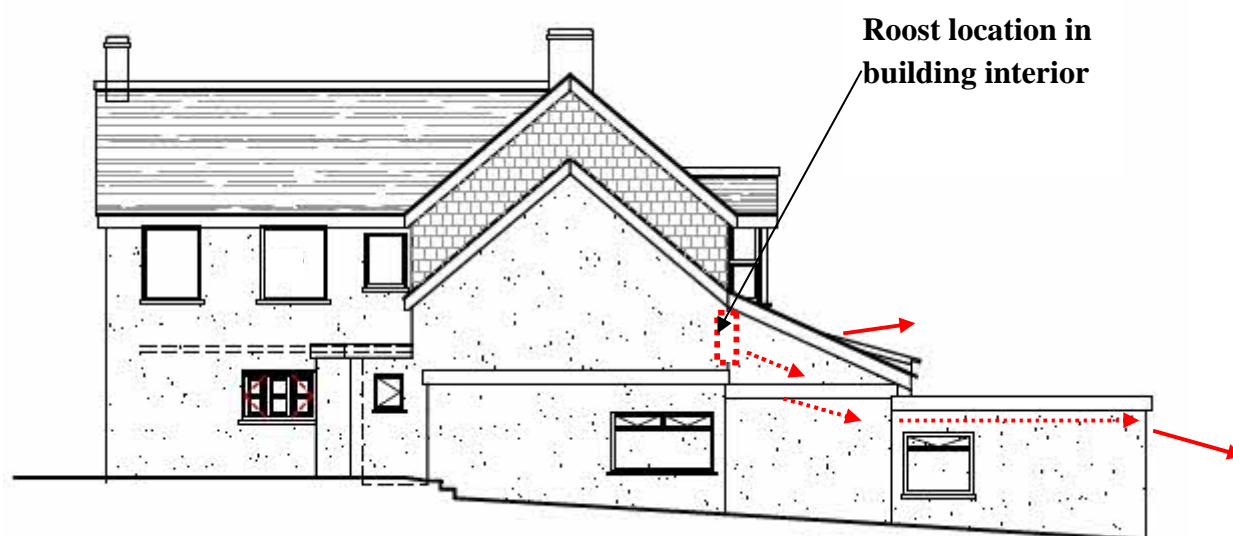




Figure 8: Brown long-eared bat route through the woodshed and garage interior before emerging from above the top of the south facing elevation of the garage.

Pipistrelle bats were also still present in small numbers with three soprano pipistrelles and one common pipistrelle recorded emerging. The locations of pipistrelle bat emergence are shown below in Figure 9.

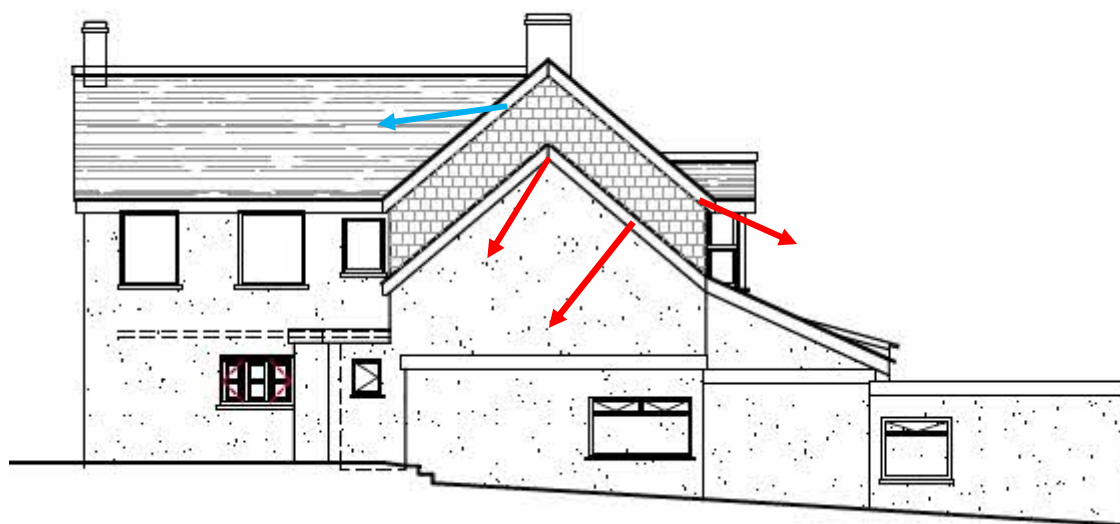


Figure 9: Pipistrelle bat emergence locations: Blue = common pipistrelle and red soprano pipistrelle

4.4 Remote Monitoring

The remote monitoring revealed that the only species present within the wood-store was the long eared bats previously identified,

4.5 Other Ecological Issues

Badgers

The badger survey was negative with no setts recorded and no evidence of badgers accessing the site.

Nesting Birds

No nesting activity was recorded during the surveys but there is the potential for birds to nest in vegetation in the vicinity of the proposed works. There is also the potential for birds to gain access to the interior of the garage and woodstore.

Otters

There was no evidence of otter presence on the un-named minor watercourse flowing through the site.

4.6 Desk-based Study

Protected/Designated Sites

There is only one statutory designated site relating to bats within the 10km radius search area and this is the Cadair Idris Site of Special Scientific Interest, (SSSI), the nearest boundary of which lies approximately 8km to the north-west.

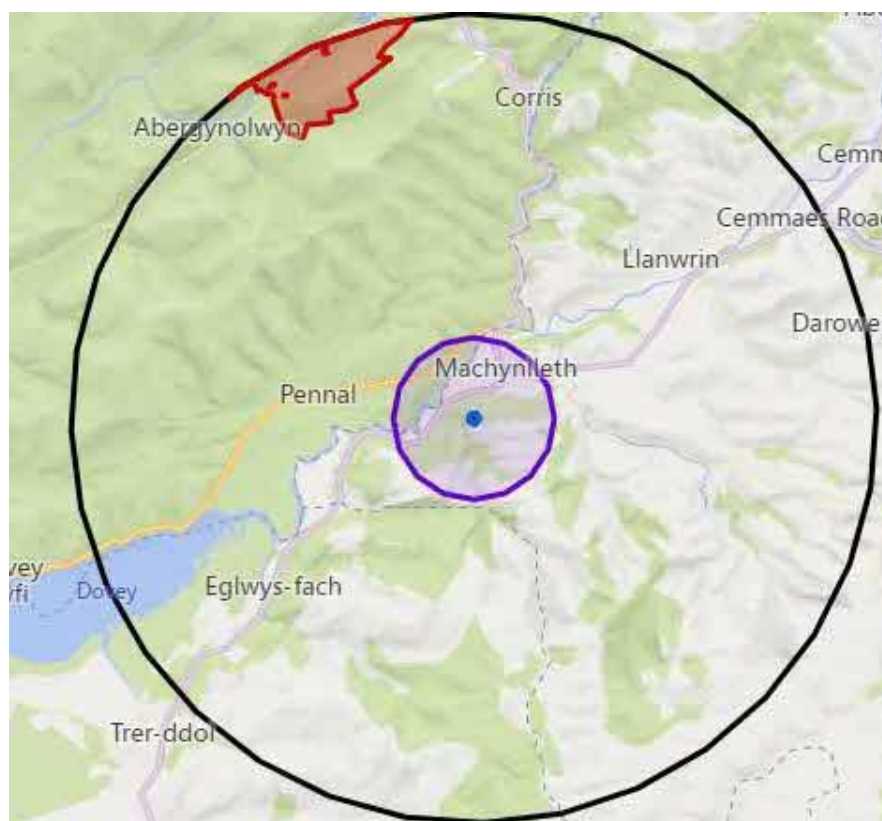


Figure 10: Location of the Cadair Idris SSSI

Protected Species

In relation to relevant protected species records, there are records of nine different bat species within 2km of the site as detailed in Table 2 below.

Table 2: Bat species within the 1km radius search area

Common Name	Zoological Name	No of Records
Brown long eared bat	<i>Plecotus auritus</i>	6
Bat (unknown species)	<i>Chiroptera</i>	7
<i>Myotis</i>	<i>Myotis spp</i>	4
Brandt's bat	<i>M. brandtii</i>	1
Daubenton's bat	<i>M. daubentonii</i>	2
Pipistrelle	<i>Pipistrellus spp</i>	18
Pipistrelle (common)	<i>P. pipistrellus</i>	1
Pipistrelle (soprano)	<i>P. pygmaeus</i>	2
Noctule bat	<i>Nyctalus noctula</i>	4

5 Survey Limitations

5.1 Badgers

Badgers are territorial animals, and the death or debilitation of the dominant boar could feasibly lead to a change in territorial boundaries and new sites becoming occupied. An assessment of the suitability of a site to support badgers is therefore important in determining the likelihood of this occurring. The results presented in this report were accurate at the time of survey.

5.2 Bats

Bats are highly mobile animals, and some species move roosts on a regular basis. It is possible that bats could move into any structure/tree after the survey has taken place. An assessment of the suitability of a tree or structure to support roosting bats is therefore important to establish the likelihood of this occurring.

On occasions it is appropriate to carry out a dawn re-entry survey, this was not considered to be necessary in this instance. There was a clear and uncluttered view of all potential bat roosting features from the surveyor locations and the use of thermal imaging equipment enabled any emerging bats to be clearly observed in total darkness.

5.3 Otters

Otters are known to occupy extensive territories of up to 30 – 40 kilometres, (Green et al 1984), in which they pursue a semi-nomadic existence, moving from one holt to another to exploit seasonally available food sources when they are present in sufficient biomass for hunting to be efficient. It is

therefore possible that the site will be used by otters but not visited for some considerable time. In this case there is a possibility of no field signs being present when the survey is carried out.

6 Conclusions

6.1 Bats

It is concluded that the woodshed in the building proposed for alteration and extension is used as a roost by a colony of brown long-eared bats. Due to the number of bats present during the breeding season, it is concluded that this is a maternity colony and that the roost will be lost as a result of the proposals. This part of the building will be demolished as part of the proposals.

Bwlch y Groes Faen is also used as a roost by a small number of pipistrelle bats. Due to the very small number of pipistrelle bats present, it is concluded that these species are not breeding on the site. All of the pipistrelle bat roosting locations on this building are associated with defects on the roof and will also be lost as a result of the proposals.

It is also concluded that it is feasible to successfully provide alternative roosts for the species present prior to the existing roosts being lost, preserving the 'Continuous Ecological Functionality' (CEF) of the site, ensuring that there is no negative impact on the species.

Due to the fact that bat roosts are protected by UK & EU legislation whether the bats are present or not, a development licence will be required from NRW to carry out the proposed works which will have an impact on the bats and their roosts.

Any potential impacts on the movement of the brown long-eared bats and other species present in the area as a result of inappropriate lighting must also be taken into account with regards to any external lighting installed.

6.2 Other Ecological Issues

6.2.1 Badgers, Hedgehogs & Otters

Although the badger and otter surveys were negative, there is the potential for these species to be present during the construction phase due to suitable habitat, including a watercourse, in the vicinity of Bwlch y Groes Faen. This will be required to be taken into account in the mitigation strategy with precautionary measures in place to prevent any negative impact during the construction phase, see Section 9.2.

6.2.2 Nesting Birds

The surveys identified the potential presence of nesting birds on the site in vegetation in close proximity to the proposed works.

The timing of the proposed works must take this into account as all birds, with the exception of some 'pest species' which can be controlled under licence are protected while nesting.

7 Ecological Impacts

7.1 Bats

7.1.1 Short term: Disturbance

Brown Long-Eared Bats

In the absence of mitigation, the works may cause disturbance due to noise, dust and vibration.

Due to the fact that breeding is taking place on this site, there is the potential for this disturbance to have a negative impact on the FCS of the brown long eared bats at a regional level.

Pipistrelle Bats

In the absence of mitigation, the works may cause disturbance due to noise, dust and vibration.

Due to the very small number of pipistrelles present, with breeding not taking place on the site, any negative impact would be minimal and would be expected to be restricted to a local level.

7.1.2 Long term: Roost modification

N/A

7.1.3 Long term: Roost loss

Brown Long Eared Bats

It has been established that breeding by brown long eared bats is taking place in the building proposed for renovation & re-roofing. Any impact could therefore extend to a regional level.

This impact can however be avoided via the provision of new roosts prior to the existing roost being lost.

Pipistrelles

Due to the very small number of pipistrelles present, combined with the fact that breeding is not taking place on this site, any impact as a result of roost loss would be minimal and restricted to a local level.

7.1.4 Long term: Fragmentation/isolation

No trees will be removed as part of the works and no habitat fragmentation or isolation in the vicinity of the building will occur as a result of the proposed works, therefore there will be no impact due to vegetation loss.

Inappropriate exterior illumination can however have a similar negative impact on bat movements to physical fragmentation and can cause a ‘light barrier’ effect in some species, in particular, *Rhinolophus*, *Plecotus* and *Myotis* species. All of which were either recorded during the surveys, or are known to be present from the results of the data search.

Even species such as *Pipistrellus* can be discouraged from flying across brightly lit spaces and any illumination of roost entrances could result in the abandonment or failure of uptake of a roost.

Key flight paths identified in studies, (BCT 2018) include hedgerows, woodland edges and river corridors.

The habitat fragmentation caused by inappropriate exterior illumination can potentially result in a negative impact at a regional level as the impact can extend to roosts some distance from the proposed development site.

7.1.5 Post development interference impacts

Brown Long Eared Bats

The proposed new replacement brown long eared bat roost in the new garage/plant room building will be kept securely locked and not used for any other purpose.

No negative impact at any level is therefore anticipated as a result of post development interference.

Pipistrelles

The new pipistrelle roosts will all be located in crevices high on the new garage/plant room and as a result will not be susceptible to post development interference. No impact as a result of interference is therefore considered likely.

7.1.6 Predicted scale of impact

Due to the fact that breeding is taking place in the building proposed for renovation, in the absence of mitigation any impact could potentially extend to a regional level.

Provided all lighting recommendations are adhered to there will be no impact as a result of habitat fragmentation on other roosting/foraging/commuting bat species.

7.2 Other Ecological Issues

7.2.1 Badgers, hedgehogs & Otters

No setts or holts will be damaged or disturbed and there will be no significant loss of foraging habitat as a result of the proposals. There will therefore be no negative impact on badgers, hedgehogs or otters as a result of these factors.

Bwlch y Groes Faen lies in close proximity to a minor, un-named watercourse. While there will be no direct physical impact on this watercourse as a result of the proposals, there is the potential for a pollution incident to occur during the construction phase which could result in a reduction in prey biomass some considerable distance from the site. This could extend the 'zone of influence' of the proposals far beyond the planning boundary and have a consequent negative impact on otters and other species and habitats. Precautionary measures to minimise this risk are recommended in Section 9.2.

Construction sites can also be hazardous places for these, and other species with entrapment in open excavations being the primary risk. Some simple precautionary measures have therefore been recommended, see Section 9.2.

7.2.2 Nesting Birds

Any disturbance to nesting birds which results in the failure of the brood, has the potential to have a negative impact on birds at a local level.

It is however considered that any negative impact can be avoided via the timing of any vegetation clearance works.

7.3 Protected Sites

Due to the distance of Bwlch y Groes Faen from the Cadair Idris SSSI, combined with the lack of lesser horseshoe bat records on the BIS database, and the fact that this species was not recorded on this site during the suite of emergence surveys and remote monitoring, no negative impact on this statutory designated site is considered feasible. The recommendations made with regards to lighting due to the presence of the brown long-eared bat maternity roosts will however also ensure that there is no inhibition of bat movements as a result of habitat fragmentation.

8 **Mitigation & Recommendations**

8.1 Bats

There is currently a maternity roost of brown long-eared bats present at Bwlch y Groes Faen along with other roosts of individual pipistrelle bats, all of which will be lost as a result of the proposed works.

There is the potential for disturbance of bats during the proposed works, in addition to the loss of roosts and wider impacts from additional lighting associated with the proposed works.

Some ‘Reasonable Avoidance Measures’ (RAMs) are recommended for during the works to avoid these potential risks and to ensure CEF of the site.

The works will need to be carried out under an EPS license from NRW due to the fact that bats and their roosts are protected from disturbance by both UK & EU legislation. The RAMs outlined here will need to be included within the method statement written to accompany the license application to NRW. If the measures are followed, it should ensure that there is no disturbance and CEF is maintained.

- Prior to works commencing, all contractor personnel will receive a robust, ecological induction, covering the potential locations of roosting bats and the legal issues associated with roosting bats.
- Prior to works commencing, the proposed new roosts will be completed and successfully audited by the site ecologist.
- The removal of slates and other materials, or works in other areas identified as bat roosts, can then be carried out under the supervision of a licensed bat ecologist.
- It may be necessary to temporarily capture individual bats by hand during the supervised roof removal, and safely translocate them to the new roosts.
- Due to the fact that breeding is taking place on the site, NRW will only issue a licence for works that could impact the bats or their roost to take place between October and April.
- Once the proposed works are completed, a further audit will ensure that no inappropriate lighting has been installed.

8.1.1 Capture and Exclusion

It may be necessary to temporarily capture individual bats by hand during the supervised removal of the current roof materials.

These animals will be immediately translocated to the new roosts in the new garage/plant room.

It will not be feasible to exclude the bats from the roosts due to the poor condition of the building in the location of the roosts.

8.1.2 Bat Roosts and Habitat

In-situ retention of roosts

N/A

Modification of existing roosts

N/A

New roost creation

Brown Long-Eared Bats

A new roost will be constructed in the proposed new garage/plant room in the location shown below in Figure 11.

The new roost will be built to the following specifications, all of which must be clearly shown on the architect's drawings submitted with both planning and licence applications.

- The roost will be in the roof void of the new plant room in the location shown below in Figure 11.
- This new roost will be required to be completed and successfully audited prior to any works commencing that could impact on the existing roosts.
- The roost will be a minimum of 5m x 5m x 2.8m in height to comply with the dimensions recommended in the current guidance for the species known to be present (English Nature, 2004)
- The roof will be a traditional purlin and rafter construction.
- The rafters must be rough-sawn timber to provide perches for bats.
- The roof will be clad with slate.
- If roofing felt is used, this must be the traditional 1F felt. NRW will not approve the use of breathable membranes in bat roosts.
- To prevent the roost from becoming too hot, the south-east facing pitch will be insulated between the rafters, ensuring to leave enough of the rafter protruding to provide perches for bats.
- The north-western roof pitch will remain un-insulated.
- Access for the long-eared bats will be provided by creating an access point through the south-west facing gable end wall near the apex in the location shown below in Figure 12.
- This gable end will be in a 'dark emergence zone' as it will be unaffected by any light-spill from the main house.
- This location is also adjacent to dense vegetation cover which will be retained.
- This access gap will be 50mm in depth and 250mm in width to resemble the current access above the top of the wall of the wood store and garage.
- Battens 50mm in thickness will then be attached to the wall above the access and down both sides extending for 150mm below the bottom of the bat access point.
- A fascia board will then be attached to the battens to prevent light incursion and access by unwanted species.
- These must be the final dimensions so must take into account any rendering that is required on the exterior of the building.
- Any rendering in the location of the access point must be rough to ensure that the bats can land on the wall to crawl into the roost.

- To provide alternative roosts for the crevice-dwelling pipistrelle bats currently roosting on the site, a total of two bat tubes (as shown in Figure 14) will be incorporated into the fabric of the new building.
- These tubes will be high on the south facing gable end where they will be in the very dark emergence zone.
- These bat tubes will have the access points on the **exterior** of the building.
- Brown long-eared bats were found to be present during the surveys. While this is a ‘void dwelling’ species, it prefers crevices within that void. To accommodate this species, four bat tubes will be located with their access points on the roost **interior**. Two will be located as high as possible on the north-east and south-west facing **internal** gable ends.
- Long-eared bats also like to roost in an environment where they are in contact with wood due to the thermal properties of this material. To accommodate this requirement, an additional timber will be attached to each side of the ridge board to create a crevice between the timbers.
- The additional timbers will extend for a minimum of 100mm below the lower edge of the ridge board leaving a 25mm gap between the timbers as shown below in Figure 15.
- An access hatch into the roof void roost will be provided for future monitoring purposes and this hatch must be kept locked and only accessed in the presence of a licenced bat worker.
- No lighting will be installed that could illuminate any of the new roost entrances.

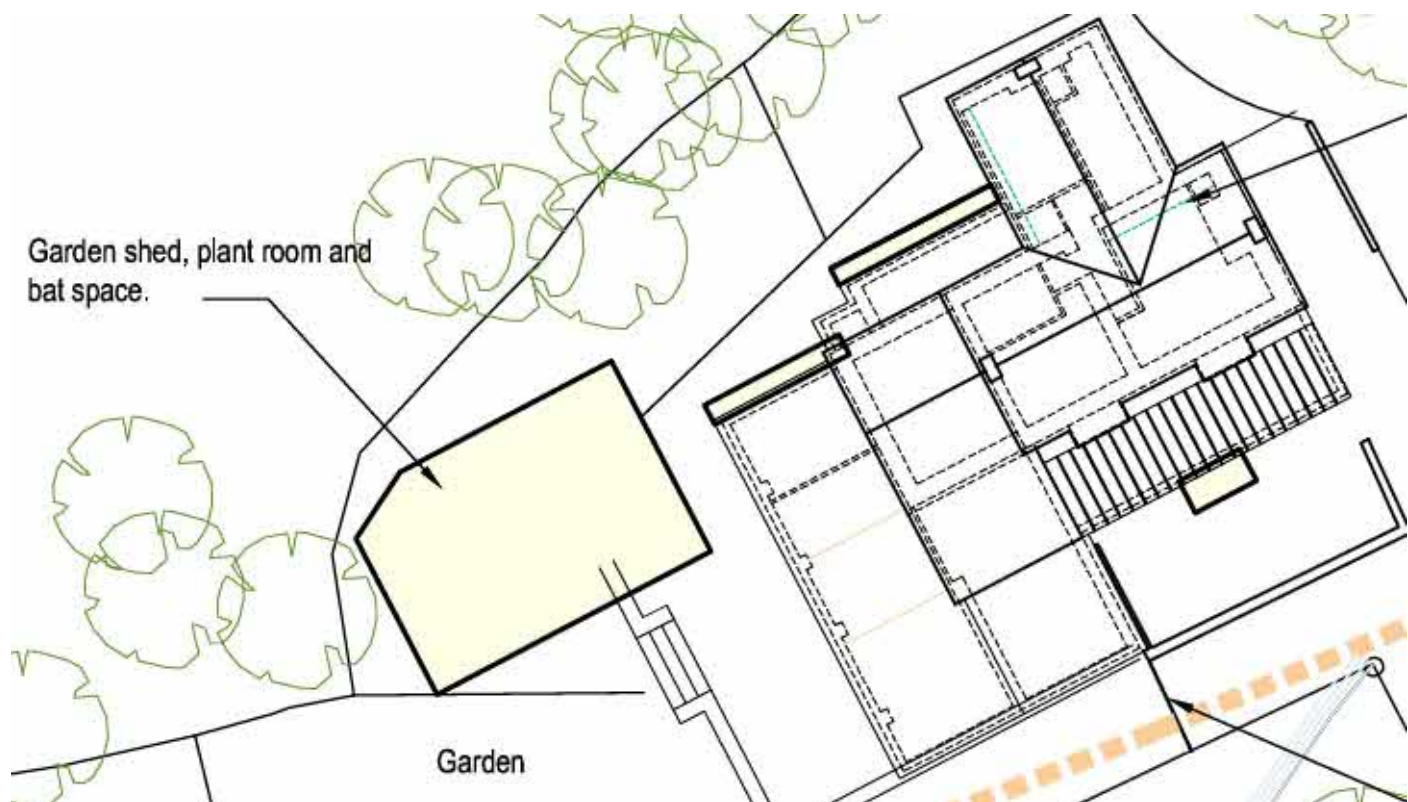


Figure 11: Location of the new bat roost.

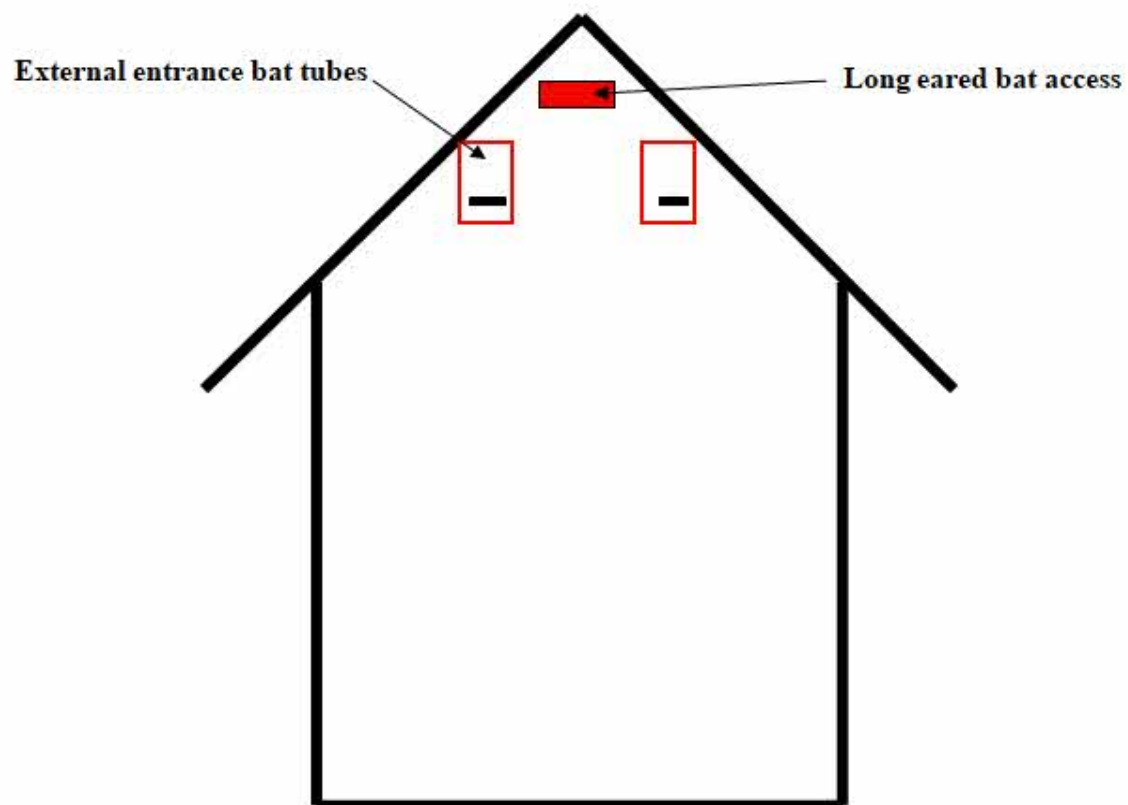


Figure 12: Location of new roost access and external entrance bat tubes

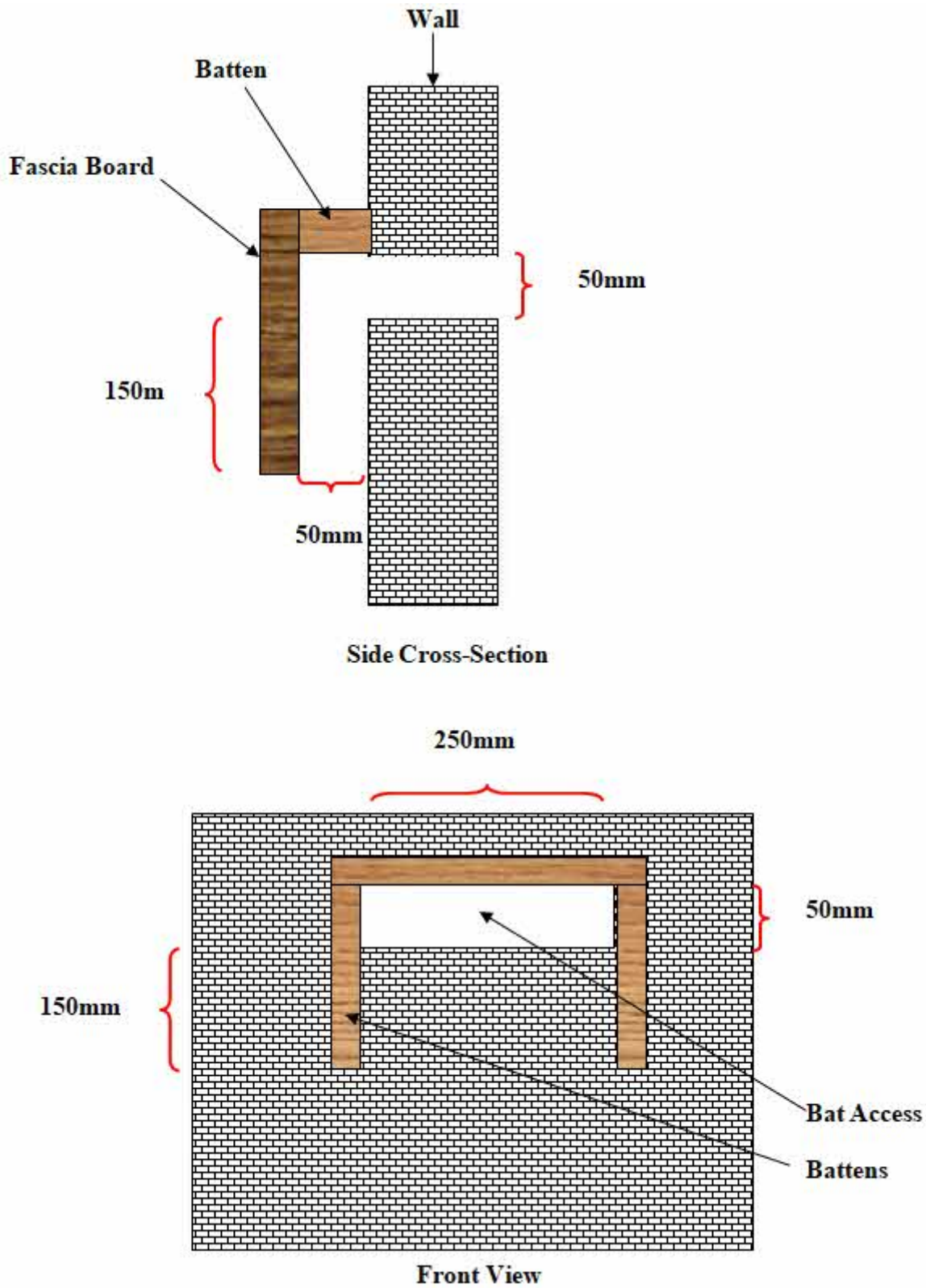


Figure 13: Long eared bat access point design



Figure 14: Example of an integral bat tube

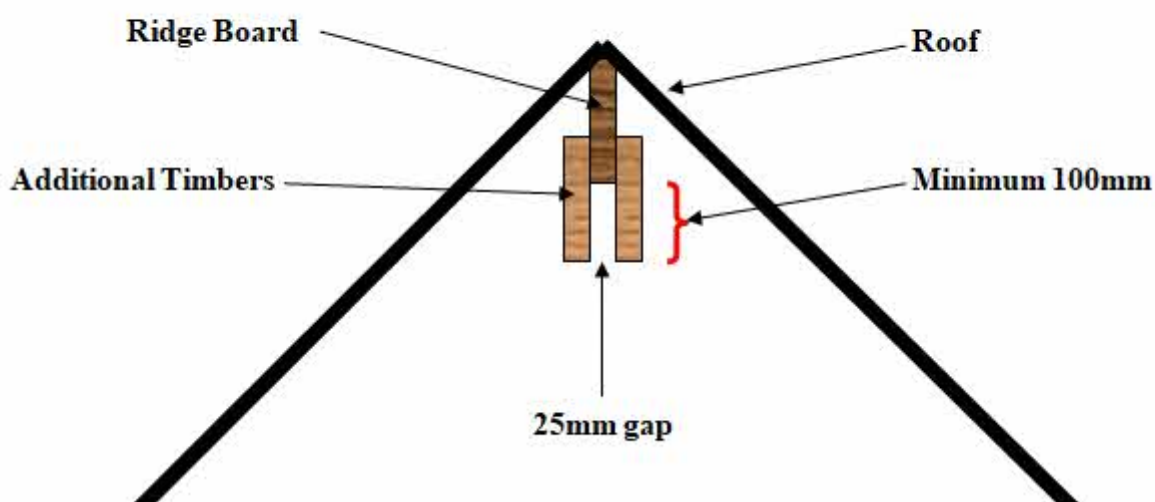


Figure 15: Ridge board roost design for long eared bats.

Maintenance and/or modification of new and existing habitat

It will be the responsibility of the client to maintain the new roosts and continue to ensure no negative impacts due to lighting.

The following recommendations are made with regards to any installation of exterior lighting on the building, which conform to current guidelines (BCT, 2018).

- All exterior lighting will be ‘low level’ and will be movement activated.
- The illumination used will be ‘Light Emitting Diodes’ (LEDs).
- The illumination will be directional and downward facing to avoid illumination of the wider area. This is easily achieved when using LEDs.
- There must be no upward illumination in any direction where it could inhibit bat movements to or from the new roosts.
- There must be no illumination of the woodland edge to the west.
- All luminaires will lack any UV component.
- Luminaires with a ‘warm white’ spectrum should be used, (ideally <2700 Kelvin) to reduce blue light component.
- Luminaires should feature peak wavelengths higher than 550nm to avoid the light component most disturbing to bats.
- The location of exterior lights must be clearly shown on the architect’s drawings submitted with the planning application.

8.1.3 Mechanisms for ensuring delivery of mitigation and compensation measures

- The contractor induction will ensure that all personnel are familiar with the requirements under the terms of the license.
- The site ecologist will audit the new roosts prior to re-roofing commencing to ensure that they have been correctly constructed.
- The removal of the existing roof and re-roofing works will be required under the terms of the licence to take place between October and April to prevent disturbance to bats during the sensitive maternity period.
- A further site audit will be carried out by the site ecologist on completion of the conversion works which will include ensuring the installation of any exterior lighting conforms to all recommendations.

8.1.4 Mitigation Contingencies

If any species previously unrecorded are encountered during the works, the mitigation strategy will be reviewed and NRW consulted. It may be that an amendment to the Method Statement will be submitted to NRW at this stage.

8.1.5 Biosecurity Risk Assessment

White Nose Syndrome (*Pseudogymnoascus destructans*)

The below relates to Ecologists that come into direct contact with bat species, i.e. handling. The fungal disease is associated with hibernation sites and conditions and is not considered a risk on this site.

There are currently no confirmed cases of White Nose Syndrome in the UK bat population, but this fungal disease has caused widespread mortality in bats in the USA. Cases have been confirmed in some areas of Europe but the disease in this region does not appear to cause high levels of mortality.

Transmission in the UK is most likely to arise due to the increasing trend of ‘International Bat Work’ with bat ecologists from the UK travelling to other countries where the disease is known to be present. The fungal spores can be persistent on equipment and clothing.

White Nose Syndrome Risk Assessment

Risk	Transmission Vector	Level of Risk	Consequences	Control Measures
Introduction of White Nose Syndrome to the bat population.	Bat ecologists, their equipment & clothing.	High if ecologists have taken part in bat work in areas of known infection outside the UK. Low if ecologists have not taken part in bat work in areas of known infection outside the UK.	The spread of the disease throughout the bat population. Due to bats being very mobile animals the infection could eventually spread throughout the UK.	The most effective way of preventing the spread of white nose syndrome is to use ‘site specific’ equipment such as gloves and holding bags. Avoid capturing and/or handling bats unless absolutely necessary. The Bat Conservation Trust Guidelines for reducing the risk of transmission of white nose syndrome will be adhered to at all times.

Invasive None-Native Plant Species:

Currently no INNS have been recorded on the site.

8.1.6 Post Development Site Safeguard

Habitat/site management and maintenance

All management of the site and its habitat will be the responsibility of the property owner.

Population monitoring, roost usage etc.

Future monitoring of the use of the new roosts will need to be carried out by licensed bat workers, who will be appointed by the licensee. This monitoring will be required as a condition of the necessary EPS development license. It is recommended that this monitoring continues on an annual basis, until such time as the monitoring objectives are met, or five years is complete.

The monitoring will take the form of an emergence survey of the new roosts by two experienced bat workers during the recognised bat maternity period.

During the surveys it was established that the Bwlch y Groes Faen is currently being used as a roost by a maternity colony of brown long-eared bats, along with small numbers of pipistrelle bats in other locations associated with defects in the roof. The RAMs and mitigation strategy will be judged to have been successful if the following are achieved:

- The works were completed and successfully audited with the new roosts correctly constructed.
- The new roosts are used for roosting by brown long eared bats and pipistrelle bats.
- Breeding by brown long eared bats is recorded on the site by year three.
- Any exterior lighting that has been installed continues to comply with the specifications in this report.

8.1.7 Post development mitigation contingencies

During the monitoring surveys, if by Year 3 it is found that the site is not being used by breeding brown long eared bats, a full assessment of access to the situation will be made and NRW consulted.

8.1.8 Mechanism for ensuring delivery of post-development works

There are no post-development works required.

8.1.9 Order of works

Order of Works	Description of Works
1	Successful Planning Application
2	Successful NRW license application for conversion works
3	Construction of new roosts
4	Audit of new roosts
5	All site personnel to be given an ecological site induction by the site ecologist
7	Supervision of roof removal works by site ecologist between October and April
9	Final audit of any new lighting
10	License reporting
11	Monitoring

Once planning consent has been granted for the proposed works, a separate license application can be made to NRW for the conversion works, which will involve an audit of the new roosts, the induction of site contractors prior to works commencing to ensure everyone is familiar with the legal

implications regarding the presence of bats. There will be an audit of the site on completion of the works to ensure compliance with these recommendations.

Summary of mitigation and rationale

Summary of Mitigation and Rationale		
<i>Task</i>	<i>Mitigation</i>	<i>Rationale</i>
Licensing and auditing	An NRW development license will be obtained prior the works commencing.	Destruction of bat roosts and disturbance of bats are illegal activities.
	Site ecologist to audit the new roosts prior to works commencing	To ensure compliance with the conditions of the licence
	Site ecologist to audit the site on completion of the works	To ensure compliance with lighting restrictions
Supervision	Site ecologist to give an ecological induction to all construction staff prior to works beginning.	To ensure everyone is familiar with the method statement and legal issues regarding bats. Requirement of the license.
	Site ecologist to supervise any works affected the locations of any of the bat roosts identified during the surveys.	To ensure that any bats present can be safely translocated to the temporary receptor site.
Monitoring	Monitoring surveys will be a condition of any NRW license.	To ensure that the mitigation has been successful.

8.2 Other Protected Species

8.2.1 Badgers, Hedgehogs & Otters

Development sites are hazardous places for foraging badgers, hedgehogs and wandering otters with the potential for animals to become trapped in open excavations for footings etc. Exposed pipe systems such as storm drains, sewage pipes etc can potentially lead to the entrapment of animals. The simple precautionary measures below have therefore been recommended.

- Escape ramps must be fitted to any excavations left open overnight to allow animals to escape.
- These excavations must be checked for the presence of animals prior to work commencing each morning.
- Any exposed pipe systems must be capped at the end of each working day and never left open overnight.
- Site hygiene with regards to food waste must be enforced to reduce the chances of animal being tempted to stray onto the construction site overnight.

To minimise the risk of a pollution incident occurring during the course of the works, the current guidance for working in proximity to watercourses must be adhered to. This can be found at:

https://www.netregs.org.uk/media/1418/gpp-5-works-and-maintenance-in-or-near-water.pdf?utm_source=website&utm_medium=social&utm_campaign=GPP5%2027112017

8.2.2 *Nesting Birds*

To prevent any disturbance to nesting birds, any vegetation clearance works must take place outside the bird nesting season, recognised as 1st March – 31st August.

If this is not possible, a thorough survey for active nests must be undertaken by a suitably experienced ecologist prior to works commencing. If any active nests are found to be present, works must be delayed until such time as the young have fledged.

8.3 *Protected Sites*

Cadair Idris SSSI

The Cadair Idris SSSI is designated primarily on the strength of its lesser horseshoe bat population. Provided that the mitigation measures detailed in this report with regards to lighting are adhered to, there will be no negative impact on the site or the lesser horseshoe bats as a feature. No additional mitigation measures are therefore considered necessary.

9 **Biodiversity Enhancement**

Under Chapter 6 of Planning Policy Wales 11, planning authorities must seek to maintain and enhance biodiversity in the exercise of their functions. This policy addresses the Section 6 Duty of the Environment (Wales) Act 2016 and results in the likelihood of planning applications being refused unless they can show a positive impact on biodiversity.

The following recommendations are therefore made.

- The provision of ‘bee bricks’ for solitary bees
- The provision of bat tubes in the new extensions

Bee Bricks

These products only attract solitary bees and do not therefore cause any problems to the householder. Solitary bees have no queen or honey to protect and as a result are non-aggressive and won't sting. Many of these solitary bees are becoming increasingly rare and the inclusion of ten bee bricks in the south facing elevations of the new extensions should represent a significant biodiversity gain. These bricks should be installed in areas where they will be high enough to be less prone to interference.



Figure 16: Examples of bee bricks.

Bat Tubes

It is also recommended that two bat tubes are installed as an integral part of the fabric of the north-west facing elevations of the new extensions which face the adjacent woodland habitat.

This will provide additional accommodation for the crevice-dwelling bat species recorded foraging on the site during the emergence surveys.

10 Legal Implications

10.1 Badgers

Badgers and their setts are protected by the Protection of Badgers Act 1992. Under this Act it is an offence to damage, destroy or obstruct access to a badger sett, and also to disturb a badger whilst it is occupying a sett.

Undertaking an activity within 30 metres of a badger sett, which could result in damage to the sett, obstructing access to it or disturbance of any occupying badgers, may constitute an offence. This distance may be extended to 100 metres if the activity involves blasting or pile-driving.

NRW, the statutory conservation authority, are empowered under the 1992 Act to issue a licence permitting potentially damaging or disturbing activities to be undertaken within 30 metres or 100 metres of a badger sett depending on the nature of the activity undertaken as part of a local authority consented development.

10.2 Bats

Bats are protected under UK law by the Wildlife and Countryside Act 1981 (as amended) and also under European law by the Conservation of Habitats and Species Regulations 2021. Under these laws it is an offence to deliberately kill or injure a bat, to disturb a bat or to damage, destroy or block

access to a roost. Bat roosts are protected under these laws whether the animals are present at the time of survey or not. NRW are empowered to issue licences to carry out work to bat roosts for reasons of overriding public interest.

10.3 Hedgehogs

The hedgehog is a priority species across North Wales, including Gwynedd and is included in Section 7 of the Environment Wales Act (2016) as a species of importance to the maintenance and enhancement of Biodiversity in Wales.

10.4 Nesting Birds

Under the Wildlife and Countryside Act 1981, all nesting birds and their nests are protected. Once a bird places a single piece of material then it constitutes a nest. It is then an offence to cause damage to the bird, nest, eggs or chicks and immediate habitat which is likely to result in damage by causing the bird to desert its nest. This covers all bird species, with the exception of a small number of ‘pest species’ which can be controlled by special license.

In 2000, the Countryside and Rights of Way Act (CROW Act) was made law, strengthening the legal protection for many species and introducing a ‘reckless disturbance’ offence. Planning Authorities are also obliged to take nesting birds into account in relation to planning decisions following guidance from the Welsh Government detailed in Technical Advice Note (TAN) 6.

10.5 Otters

Otters are protected under UK law by the Wildlife and Countryside Act 1981 (as amended) and also under European law by the Habitat and Species Regulations (2021). Under these laws it is an offence to deliberately kill or injure an otter, to disturb them or to damage, destroy or block access to their place of shelter. Under both laws the Welsh Assembly Government are empowered to issue licences to disturb them and disturb or destroy their habitat for reasons of overriding public interest.

11 **References**

Bat Conservation Trust (2018) Bats and artificial lighting in the UK

Collins (2016). *Bat Surveys for Professional Ecologists, Good Practice Guidelines* Bat Conservation Trust

Environment Wales Act (2021)

Green, J, Green, R & Jefferies, DJ (1984) A radio tracking survey of otters *Lutra lutra* on a Perthshire river system. *Lutra* 27: 85-145

.

12 Appendices

12.1 Site photographic record



The front elevation of Bwlch y Groes Faen which is in very good condition



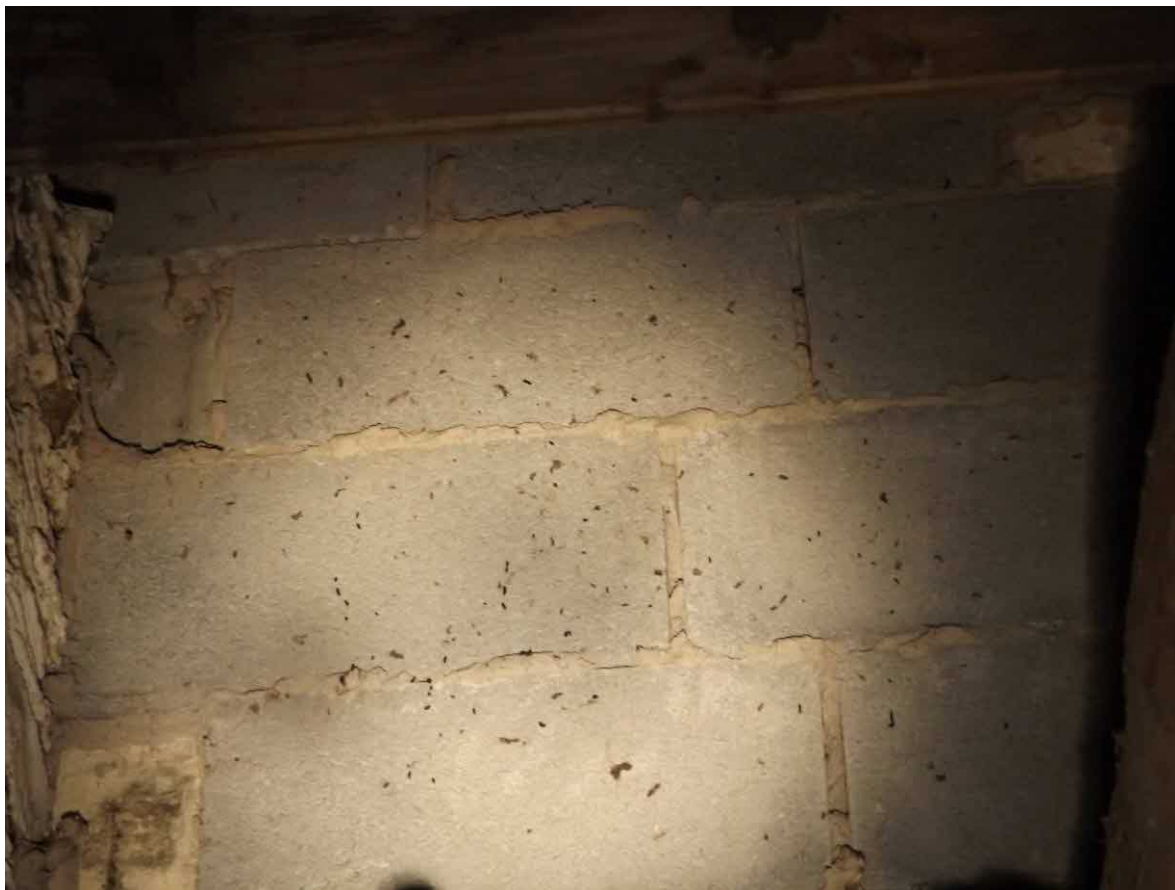
The garage and wood store which are both in poor condition





The defects in the roof where the garage and wood store join the main building





Droppings on the wall of the interior of the wood store where the bats land to crawl into the roost



Location of the droppings



Defects in the edge of the un-renovated roof at the southern end of the building



These defects were exploited by pipistrelles



The good condition of most of the building which is effectively sealed





The new roof on the main part of the building



Brown long eared bats flying inside the roost taken in total darkness with a thermal imaging camera

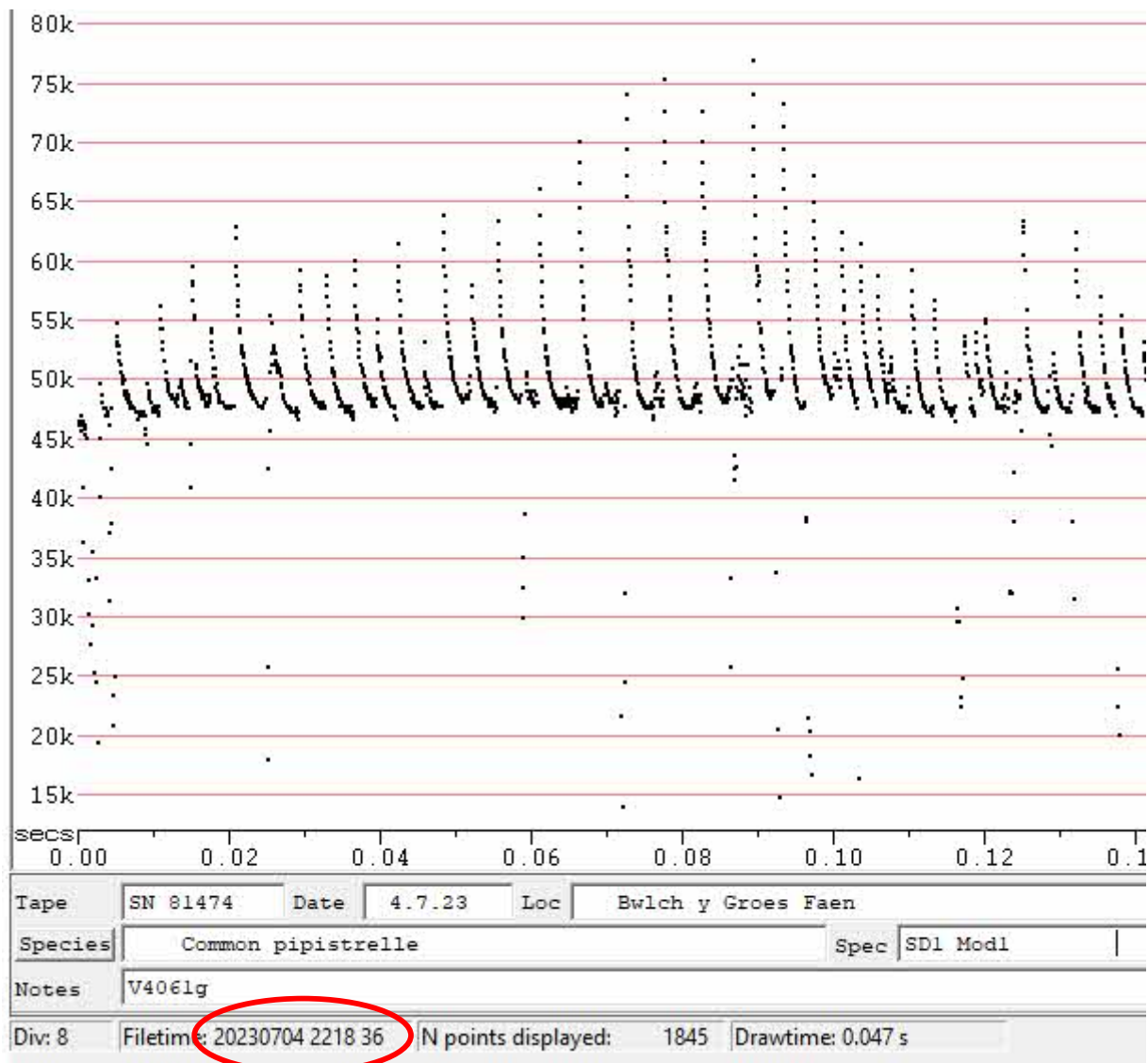


The long ears on this bat are clearly visible are clearly visible

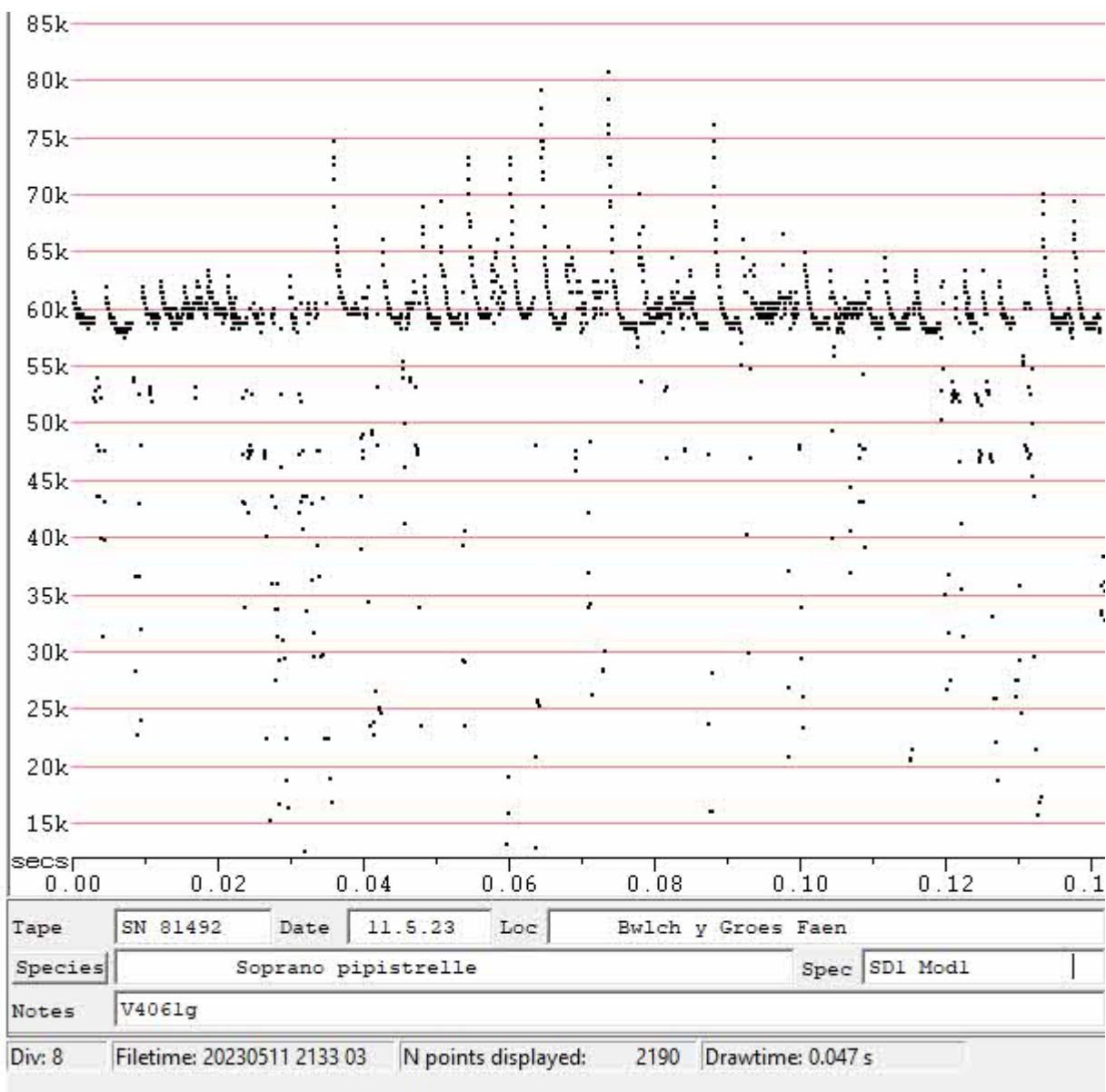


12.2 Examples of sonograms

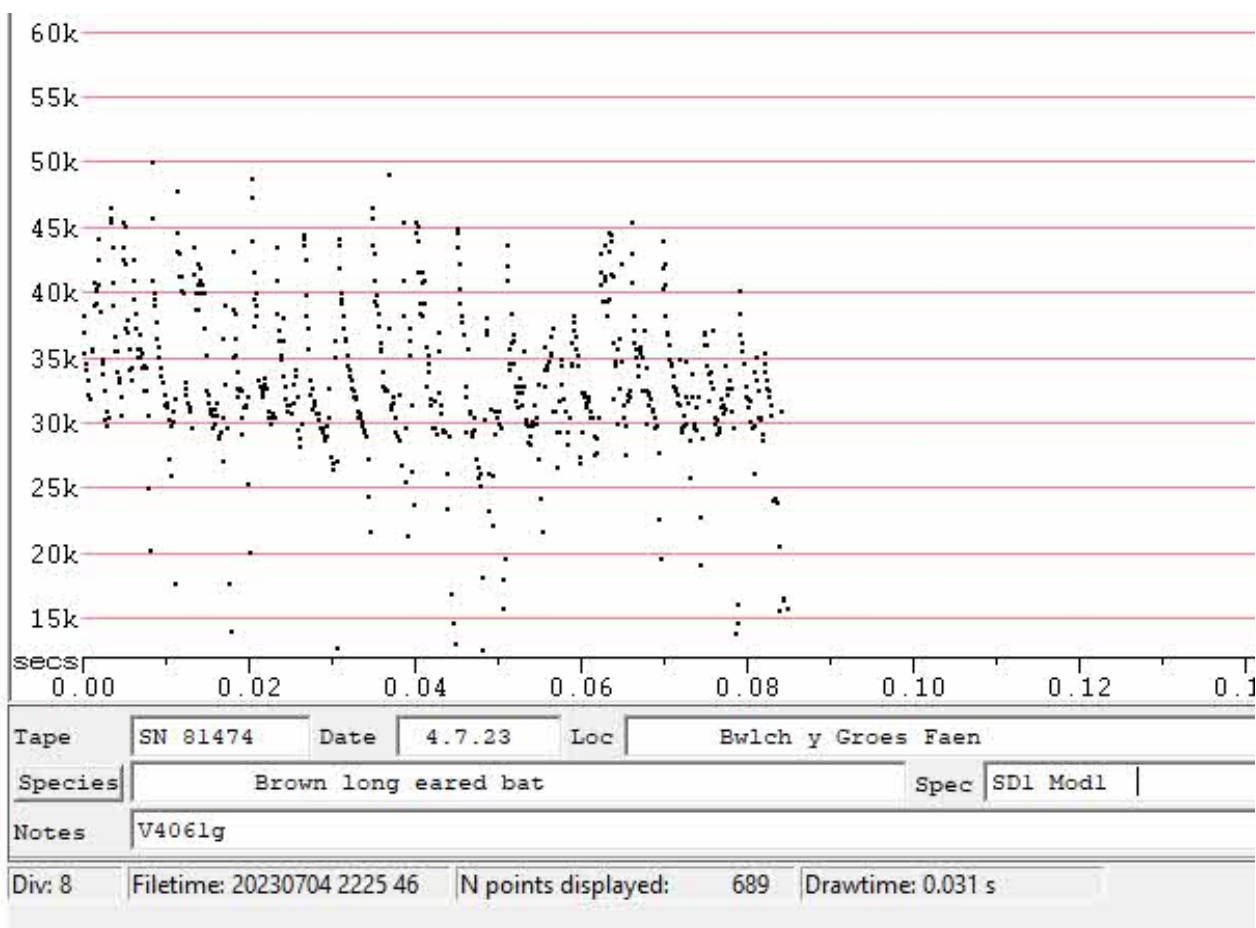
The 'Anabat' system produces 'sonograms' of each bat call enabling species identification to take place. Each call is also time and date stamped so it is possible to accurately record when the bats were present.



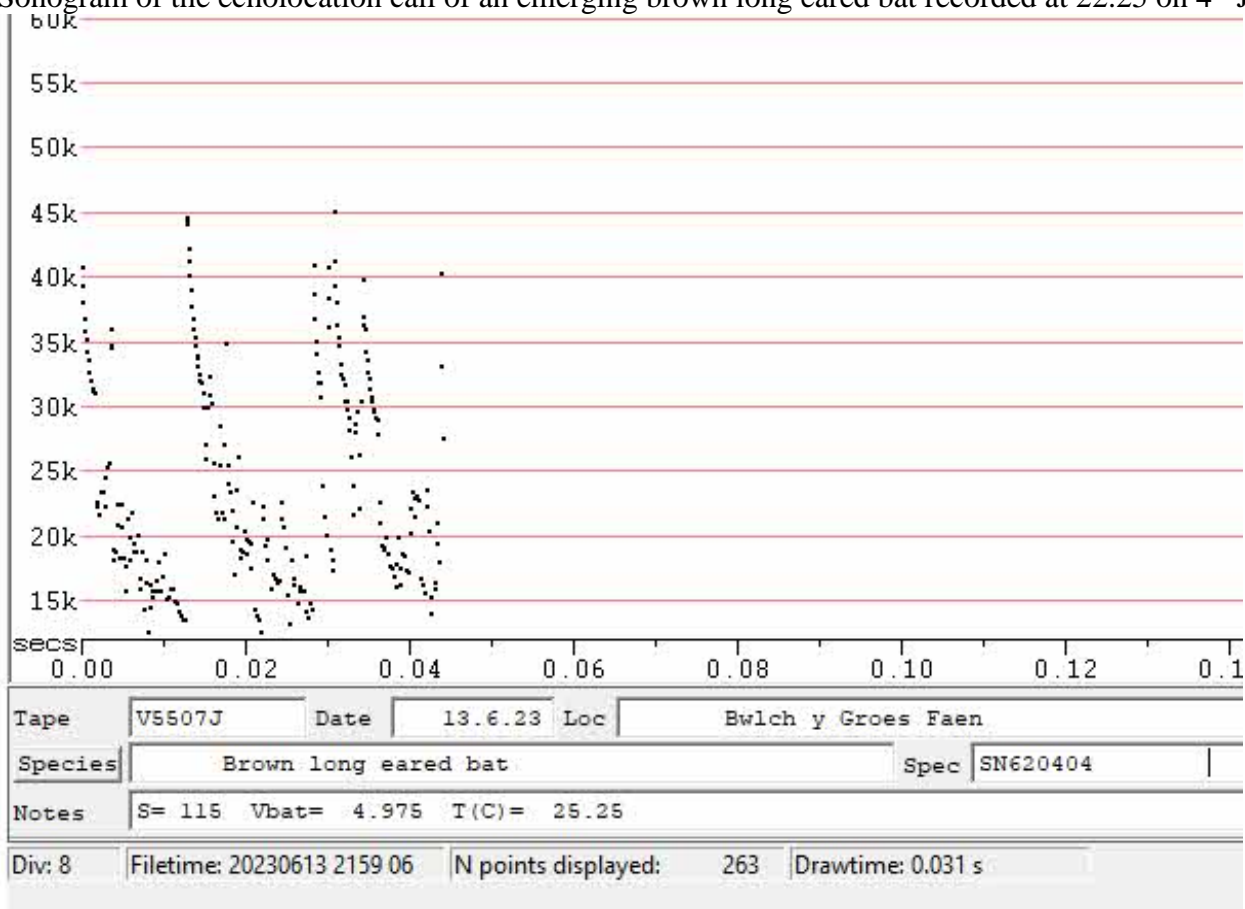
Sonogram of the echolocation call of a common pipistrelle recorded at 22.18 on 4th July 2023



Sonogram of the echolocation call of a soprano pipistrelle recorded at 21.33 on 11th May 2023



Sonogram of the echolocation call of an emerging brown long eared bat recorded at 22.25 on 4th July 2023



Sonogram of the echolocation call of a brown long eared bat recorded inside the roost on 13th June 2023

12.3 Advice regarding NRW licensing

Due to the fact that the bat survey of the building proposed for extension was positive, with a maternity colony of brown long eared bats and individual pipistrelles present, a licence will be required from NRW to carry out both the proposed works which may have an impact on the bats and the roosting areas. The following timeline is intended as a guide to the licence application process.

1. Consents approved and issues, including any planning consent or listed building consent required.

Prior to a licence application being considered by NRW you MUST have and planning consent, or any other consents required such as listed building consent. This often includes having to satisfy planning conditions which have nothing to do with ecology.

2. An ecologist engaged to put together the license application on your behalf

While NRW do not charge for a licence, they will only accept documentation drawn up and submitted by a suitably experienced ecologist. The reason for this is that the application requires detailed knowledge of bats and the species-specific mitigation measures required. You must therefore engage an ecologist to apply on your behalf for which there will be a charge.

3. The planning officer completes a planning authority consultation document

The planning/listed building officer dealing with your case must complete a consultation document to submit with the application. This is to ensure that the proper consultations regarding protected species and other ecological issues were carried out when determining your planning application. This form also contains information that the ecologist will require to complete the application form.

4. The ecologist writes a method statement, completes the licence application form and any other documentation required such as bio-security risk assessments and biological data searches.

The ecologist must draw up a detailed method statement and licence application detailing all of the required mitigation measures. Supporting documentation in the form of architect's drawings is usually required as the mitigation will need to be audited as a condition of the licence. Other documentation may also be required if there are any bio-security issues involved such as the presence of Japanese knotweed or any other invasive species. Bio-security is now an integral part of the licence application and can not be ignored.

5. Submission of license application

Once all of the documentation is in place and you have satisfied all relevant planning conditions, your licence can be submitted by the ecologist. The usual processing time is approximately eight weeks from submission but it would be prudent to allow longer when planning your work schedules.

6. Commencement of works once a license is issued

Once the licence is issued, work can commence. Do not be tempted to start work before the licence is issued. You must ensure that all of the licence conditions are adhered to at all times to avoid committing a criminal offence.

12.4 Review Table

Name	Task	Date
Chris Hall	Author	05.07.2023
Lizzie Richardson	Review	02.10.2023
Ben Box	Proofreading	05.10.2023