

Dyffryn Barn
Llanwrthwl
Llandrindod
LD1 6NP



An Ecological Survey
Report By:



On Behalf Of:

Ms J Tyler

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1 Executive Summary

- 1.1 It is proposed to improve and extend a converted garage dwelling, known as Dyffryn Barn, at Llanwrthwl. To support the development plans a bat and bird survey of the building was undertaken in May, June and July 2021. The survey comprised an internal and external daytime inspection, followed by two dusk emergence/activity observations and a dawn swarming/re-entry session, due to the property's potential for roosting bats and nesting birds.
- 1.2 External survey of the walls and roof structure, as well as the context within the local landscape, resulted in the building being assessed to have a 'high' level of suitability for roosting bats, in accordance with the Bat Conservation Trust's Bat Surveys Good Practice Guidelines (Collins 2016). Internal inspection of the loft found evidence for the presence of bats by way of droppings, with *circa* 200 fresh droppings at north end wall, and some 200 fresh droppings near the loft hatch. Droppings were identified as pipistrelle and brown long-eared. An abundance of old bat droppings, which were pale grey in colour, indicated long-term usage by a low number of animals.
- 1.3 During the two dusk observations in May and June 2021, bats emerged from a variety of exit points. A count of 11 animals occurred in June with common pipistrelle (1), and soprano pipistrelle (4) bats seen to emerge, as well as brown long-eared bats (6). At dawn, in July 2021, 12 bats were seen to enter the building at a variety of locations – using some new access features and some using those already noted from the dusk observations. The pipistrelle species are assessed to be summer day roosting, but the brown long-eared bats are likely to from part of a small maternity colony.
- 1.4 All bats species and their places of rest are fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), and the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019. Legal protection for bats concerns impacts from disturbance, loss of roost locations, modifications to roosts and loss of access or obstruction to roost. The modifications and proposed extension will result in damaging impacts for the bat roosts identified in the survey. Therefore in addition to planning consent, the development activity will require that a European Protected Species licence is issued by Natural Resources Wales, before any work is done which affects the roosts and damages or obstructs the bat exit/entry points. This licence must be obtained once planning consent is issued. Further information concerning the European Protected Species licence and other recommendations are made in this report. The loss of the roosts will require a scheme of mitigation and proposals are made in this report for the provision of replacement roosting opportunities suitable for crevice and non-crevice roosting species.
- 1.5 When the nature conservation significance of the site is considered against recognised criteria (*Bat Mitigation Guidelines 2004* and *Good Practice Guide: NRW Approach to Bats and Planning October 2015*), the nature conservation status of the site is assessed to be moderate, due to the presence of three species of bat (common pipistrelle, soprano pipistrelle and brown long-eared), with the pipistrelle bats summer day roosting, and the brown long-eared bats likely to be a small maternity colony.
- 1.6 No breeding bird activity was noted during the survey but a house sparrow was seen to enter at the north-east corner of the building. It is likely that a nest is present in this location. All nesting birds are protected under the provisions of the Wildlife and Countryside Act 1981 (as amended), and active bird nests cannot legally be disturbed or destroyed. General advice afforded to breeding birds is provided in this report.
- 1.7 It will be necessary to bring forward a scheme of enhancements for biodiversity in order to meet planning policy PPW10. As an enhancement feature, it is recommended that two timber bird boxes are installed at the site in suitable locations, avoiding full sunlight and the risk of predation from cats.

2 Introduction

- 2.1 The property is an existing conversion which provides two storey accommodation. Whilst it is referred to as Dyffryn Barn, the structure is not a barn as such, and was previously a garage. Features of this former use are most evident on the west elevation where the ground floor walls retain the old garage doors. The owner of the barn is preparing a planning application in order to improve and extend the living accommodation with a two storey extension attached to the north gable end. Existing walls and the roof structure will be retained and improved appropriately. External timber planking on walls will be replaced and new insulation will be fitted to make the

dwelling more energy efficient. Replacement planking on the existing walls will also serve to match the new wall cladding that is proposed for the northern extension.

- 2.2 Just Mammals Limited was commissioned to assess the ecological value of building, and its suitability to support protected species. The site is located a short distance to the north of the community of Llanwrthwl and some 3.5km south of Rhayader, at National Grid Reference (NGR) SN 97194 64519, at an altitude of approximately 220m Above Ordnance Datum. The structure has features suitable for bats and birds and an ecological survey was conducted comprising a daytime assessment and dusk and dawn bat activity observations within the prime summer season.
- 2.3 Primary objective of the ecological assessment included:
- determining the presence of bat roosts at the property and, if found, the bat species, roost type (maternity, day roost etc), and any other relevant details relating to the roost structure and associated access point(s);
 - identifying any important bat foraging or commuting habitat in relation to the site;
 - determining the presence of nesting birds on site, either in the building itself or associated with any associated vegetation;
 - gathering sufficient information to accurately assess whether bats or nesting birds were reasonably likely to be impacted by the proposed work; and
 - using the survey findings to recommend appropriate mitigation and enhancement measures for safeguarding ecology on site.
- 2.4 This ecological assessment will accompany a planning application. Its primary aim is to highlight, as far as reasonably possible, any planning constraints or development risks that might arise in relation to protected species on site, primarily roosting bats and nesting birds. Recommendations appropriate to the findings of the survey are provided at the end of this report.

3 Survey Team Experience

- 3.1 The lead surveyor and co-author of this report is Diane Morgan. Table 1 below describes Diane's ecological experience, as well as other members of staff and key survey equipment used during the two dusk bat activity surveys.

Table 1: Survey Team Experience

Name/Position/Detector	Licences	Experience
Diane Morgan BA (Hons) ACIEEM Senior Ecologist (TE)	S087512/1 expiry January 2022	Diane is an Associate Member of the Chartered Institute of Ecology and Environmental Management (ACIEEM). She has considerable experience (over 25 years) of surveying built structures for bats and has carried out ringing of Daubenton's bat as part of a multi-year project on the species and has undertaken monitoring work on several important lesser horseshoe bat roosts and assisted in radio tracking projects on the same species. Prior to current role. She was the Director of Brecknock Wildlife Trust and was involved in a wide range of nature conservation work including species and habitat protection and conservation land management. Other areas of interest include otter, dormice, water voles, reptiles, amphibians, fungi and crayfish. Diane is a Senior Ecologist with Just Mammals Limited
Nigel Isaksson Senior Survey Assistant (TE)	S086633/1, bats, valid to 31st July 2021	Nigel has over ten years' experience undertaking bat surveys, flight line observations, census counts. Nigel holds an NRW licence to disturb bats, and is also licenced to disturb dormice, and is a Senior Survey Assistant with the Just Mammals Consultancy Limited
Paul Leith MSc (Hons) Survey Assistant (TE)		Paul received a degree in Biology from the University of Sheffield before becoming a farm manager in the Brecon Beacons. He has a passion for wildlife and has joined Just Mammals Limited as a Survey Assistant in order to learn more about practical conservation

Note: Detectors

TE = Time expansion (Pettersson D-240X)

4 Survey Methodology

- 4.1 An initial Preliminary Roost Assessment (PRA) was undertaken in May 2021 with the aim of detecting any signs of bat or bird presence. With respect to bats, all outer surfaces of the building were examined from the ground seeking signs of use, including bat faeces (droppings) on walls, ledges, doors and sills. Urine staining on paintwork and window glass, or staining on the surfaces of exposed timbers caused by oil from bat fur were also searched for. A high-powered lamp and binoculars were used to examine Potential Roosting Features (PRFs), and any gaps or crevices in

- the structure were inspected as closely as possible. The context of the building within the surrounding landscape was also assessed at this time.
- 4.2 Internal survey of the roof void sought the presence of bats or the remains of dead bats (including dead juvenile bats and babies), which might indicate the presence of a maternity roost, and other roosting signs (e.g. droppings), on floors, ledges, walls, stored items, and other surfaces. The roof structure and loft void were inspected for live bats or evidence for their presence, including discarded fragments of insects such as moth wings, which might indicate the presence of a night feeding perch.
 - 4.3 Nesting birds were also assessed at this stage. Surveyors recorded any signs of bird activity including nest-building, feeding at nest sites and any indirect evidence such as bird droppings and feathers.
 - 4.4 The building was subjected to two dusk emergence observations and a dawn session in May, June and July 2021, to identify the presence of roosting bats. If presence was confirmed, this type of survey also enabled surveyors to count the number of any roosting bats, identify species and determine the roost location and key access points.
 - 4.5 A team of surveyors was used and positioned at strategic vantage points during the survey. Surveyors recorded all bat activity but particularly focussed their attention on whether bats emerged from the building. Surveyors documented the time, bat species and behaviour. This survey schedule was based on BCT's Bat Surveys Good Practice Guidelines (Collins 2016) specifically in relation to buildings with a 'high' level of suitability for day-roosting bats.
 - 4.6 Surveyors were equipped with Pettersson D-240X machines. These devices are particularly sensitive and excellent at separating species which employ the middle range frequencies for foraging (45 – 55 kHz). They are therefore very good at identifying the different pipistrelle species (*Pipistrellus sp.*) and the different myotis bats* (*Myotis sp.*) (*myotis bat is a collective term used where the species could not be specifically identified beyond this broad group). The myotis group encompasses seven species of British bat including Alcatheo's (*Myotis alcatheo*); Bechstein's (*M. bechsteinii*); Brandt's (*M. brandtii*); Daubenton's (*M. daubentonii*); mouse-eared (*M. myotis*); Natterer's (*M. nattereri*); and the whiskered bat (*M. mystacinus*).
 - 4.7 The Pettersson D-240X machine can be used in heterodyne or time expansion modes and for the purposes of this survey, only the time expansion facility was used. The received signals were then recorded to Roland RO-5 recording devices for later analysis. The time expansion method is similar to making a high speed tape recording of a bat's ultrasonic call and then playing it back at a slower speed. Digital technology is used to make the recording and slow it down for play back. Since the signal is stretched out in time, it is possible to hear details of the sound not audible with other types of detector.
 - 4.8 Time expansion is also the only technique which preserves all characteristics of the original signal, which makes time expanded signals ideal for sound analysis. In addition to the simple echo-location calls which can be used for commuting, enabling the bat to find its way about, bats will also produce feeding 'buzzes' when foraging. These buzzes occur when the bat closes in on its prey and are a consequence of the Doppler Effect, which results in a feeding 'buzz' as the reflected signal shortens when the animal approaches its prey. Such buzzes are used to assess the importance of an area for foraging. The recorded echo-location calls are then interpreted using BatSound sound analysis software. By use of the software it is possible to separate the different species by analysis of the sonograms produced.

5 Site Description

- 5.1 The site is accessed from a minor road which leads north from Llanwrthwl towards Rhayader. The farmstead occupies a shoulder on the hillside with views of the Wye Valley to the north and east. Good quality woodlands are within the wider area and are close by to the west and south-east. Dyffryn Barn forms a discreet dwelling formed within a complex layout of attached buildings at the farmstead. Additional dwellings result from the division of the large farmhouse and a traditional barn which is still in agricultural use, is attached to the southern end of Dyffryn Barn. The survey building forms a structure that projects northwards from the eastern end of the original house. A gravel drive and car parking area lie immediately to the west and north sides of the barn: a gravel seating area and a managed lawn area are on the east side of the barn.
- 5.2 Dyffryn Barn stands close to a north/south alignment (see Figure 3). Built in a combination of

materials, the former garage has walls of stone and concrete block, which are covered with a cement render and overlapping timber planking. Timber garage doors are retained as part of the wall materials on the west side. Windows are a combination of timber frames and uPVC. Fascias are timber. A wood burner flue is attached to the north gable end wall. A timber framed pitched roof with slate type tiles and a bitumen lining membrane cover the building. A single loft void extends over the whole of the structure which is accessed via a standard ceiling hatch. Fibreglass insulation is present between the joists and covers the floor of the loft which is empty.

- 5.3 Internally the converted garage provides ground floor and upper floor living accommodation which is accessed via a timber entrance door at the southern end of west elevation.

6 Desktop Study

- 6.1 Sites of nature conservation interest within 2km of Dyffryn Barn were identified using the web-based MAGIC database (www.MAGIC.gov.uk). This search found sites with statutory designations of international importance, Special Areas of Conservation (SACs), Special Protected Areas (SPAs) and Ramsar sites, as well as sites of national importance such as Sites of Special Scientific Interest (SSSIs), and National Nature Reserves (NNRs).
- 6.2 Although no part of the site was within or directly adjacent to any sites of nature conservation interest, the desktop study identified six sites that lie within 2km.

Table 2: Sites Designated for Nature Conservation Interest

Site and Designation (In Order of Distance)	Distance and Direction to Site	Primary Reasons for Designation
Afon Gwy/River Wye and tributaries SAC/SSSI	230m to east	Aquatic species within an internationally significant linear ecosystem, important for plant and animal communities
Afon Dulas (River Wye tributary) SAC/SSSI	650m to south	Part of the Wye Valley ecosystem
Rhos Rhyd y Ceir SSSI	1km to the east	Botanically rich damp pasture
Carn Gafallt SSSI (and RSPB nature reserve)	550m to north-west	Moorland and upland woodland, significant for upland vegetation and for breeding birds
Elan Valley Woodlands SAC	1.37km to north-west	Upland woodland: significant for upland vegetation and for breeding birds
Elenydd – Mallaen SPA	550m to north-west	Moorland and upland woodland, significant for upland vegetation and for breeding birds

- 6.3 A search of the County Mammal records for Vice County 42: Brecknockshire, was conducted to determine if there had been any previous records of bat species in the area within 2km around the property. A total of 35 records relate to bat species in a period from 1984 – 2020. Three historic records relate to the survey site. An edited extract of the data set is reproduced below in Table 3, with records relating to the survey site highlighted.

Table 3: Historic Records in a 2km Radius of the Site

Date	Species	No.	Location	Recorder	Class of Site
23/07/1986	Brown long-eared	1	Dyffryn	John E Messenger	Day roost
23/07/1986	Noctule	9	In oak tree, Dyffryn	John E Messenger	Maternity
31/10/2006	Brown long-eared	1	Llanwrthwl Village Hall	Jonathan Gilpin	Maternity
03/06/2010	Brown long-eared	1	Craig Llyn	Claire Montanaro	Day roost
27/06/2015	Common pipistrelle	42	The Cwm	Richard Knight	Maternity
20/10/2015	Noctule	1	Dyffryn	Sorcha Lewis	Found dead
11/04/2016	Natterer's		Afon Gwy	Claire Montanaro	Foraging
11/04/2016	Daubenton's		Afon Gwy	Claire Montanaro	Foraging
07/05/2016	Noctule		Craig Llyn	Claire Montanaro	Foraging

- 6.4 The data set contains multiple bat records for a small number of sites where regular monitoring occurs. In an area of good habitat, the bat populations are under recorded as opposed to not present.

7 Survey Constraints

- 7.1 Full access was provided but the floor of the loft could not be fully assessed. It was thought unlikely for the joists to be weight bearing so the loft was viewed from a location close to the loft hatch.
- 7.2 Bats emerged particularly early during the daytime inspection and the first flew out from Dyffryn Barn one hour and 38 minutes before sunset. This was before the surveyor entered the loft, so at

this time no disturbance of the loft was known to have occurred. A second bat followed 17 minutes later. These emergences were well ahead of the usual commencement of the observation at 20 minutes before sunset. The second dusk observation was commenced early as a consequence of this occurrence but no similar activity happened.

- 7.3 An equipment failure of a bat detector resulted in a reduced number of bat calls being recorded during the second dusk observation. The surveyor was able to switch from the defective device to a Duet detector and continue the observation but she was not able to make recordings of the calls.

8 Survey Results

- 8.1 A series of survey visits were made to the site and details of the dates and times for the different elements of the survey in May, June, and July 2021 are shown below. Table 4 summarises the staff present, time and weather conditions under which the surveys was undertaken with wind speeds being shown using the Beaufort scale.

Table 4: Summary of Timing and Weather Conditions

Date	Survey Type	Timing	Weather Conditions
17/05/2021	Internal and external daytime inspection (DM, NI, PL)	19.15 – 20.30 hours British Summer Time (BST)	Air temperature: 10°C Cloud cover: 1/8 oktas Wind speed: F0, calm Conditions: Dry
17/05/2021	Dusk emergence/activity observation (DM, NI, PL)	20.30 – 22.20 hours BST (Sunset 21.06 hours)	Air temperature: Cloud cover: 1/8 oktas Wind speed: F0, calm Conditions: Dry
23/06/2021	Dusk emergence/activity observation (DM, NI)	20.30 – 22.45 hours BST (Sunset 21.41 hours)	Air temperature: 13°C Cloud cover: 8/8 oktas Wind speed: F1, light air Conditions: Dry
09/07/2021	Dawn activity re-entry observation (DM, NI)	03.25 – 05.15 hours BST (Sunrise 05.05 hours)	Air temperature: 10°C Cloud cover: 0/8 oktas Wind speed: F0, calm Conditions: Dry
Surveyors	Diane Morgan (DM), Nigel Isaksson (NI), Paul Leith (PL)		

- 8.2 The daytime visit examined the building to look for signs of the presence of bats and at features which might be used either as roost locations or as access entry/exit points. Several potential roost features (PRFs) were noted around the external parts which as summarised as follows:
- gaps between timber wall planking;
 - gaps at eaves;
 - gaps at fascias/soffits;
 - gaps around doors and windows;
 - gaps at the edge of the roof and at ridge tiles.
- 8.3 Inside the loft, no live bats were found, but abundant evidence for the presence of bats was noted. A large quantity of bat droppings extend along the full length of the loft below the ridge line, with several areas showing a more marked concentration of droppings. A large proportion of the droppings look to be old and grey. Some fresh droppings were examined and it was apparent that pipistrelle and brown long-eared bats are present in the roof structure. Fresh droppings were seen down the face of both end walls within the loft, especially at the north gable end. The colour and appearance of the droppings suggested that the number of animals roosting in Dyffryn Barn is not great, but there had been long-term presence of bats. Droppings close to the hatch were collected and examined but the droppings elsewhere in the loft were viewed from the distance as the weight bearing strength of the joists across the floor of the loft could not be determined with confidence.
- 8.4 At the same time as the building was examined for the presence of bats, the presence of nesting birds was considered. No evidence of old or active nests was found, and no signs of barn owl (*Tyto alba*) such as droppings or distinctive pellets, although a single barn owl was seen in a tree close to the site following the conclusion of the dawn session in July 2021. During the first dusk session, a house sparrow (*Passer domesticus*) was seen to fly into the building at the north-east corner suggesting that a nest site is likely to be present in this location.
- 8.5 During the first dusk session, a total of eight common pipistrelle and soprano pipistrelle bats emerged. The external assessment was progressing when the first bat was seen to exit at the north-west corner at 1 hour and 40 minutes ahead of sunset. This bat was not recorded and therefore the species is not known. Pipistrelle and brown long-eared droppings were identified in

- the loft, but only pipistrelles were recorded to exit, which was a curious outcome.
- 8.6 The second dusk activity session noted an increased number of bats to exit the roof structure of Dyffryn Barn, and this time a small number of brown long-eared bats as well as common pipistrelle and soprano pipistrelle bats were seen and heard. No bird activity was noted.
- 8.7 A final dawn session was very busy with bats arriving back at the roost a short time after the observation start time at 03.25 hours. Between 03.45 and 04.50 constant activity by several bats occurred, with animals flying repeatedly up to parts of the roof and upper walls as if to land, but then dropping away and flying another loop of this repetitive action. Low numbers of brown long-eared, common pipistrelle and soprano pipistrelle bats landed and entered at seven locations: some of these matched exit points from the dusk sessions, but some were new entry exit points. A myotis bat was recorded to fly over the roof of the survey building but no entry activity was noted with this bat. No bird activity was noted at the site, but a single barn owl was seen in a roadside oak tree between the survey site and the village of Llanwrthwl.
- 8.8 Table 5 briefly summarises the emergence surveys results. Full details of the data gathered during the three activity observations are presented in Tables 6 – 8 of Appendix II.

Table 5: Survey Findings from Activity Observations

Date	Findings
17/05/2021 Dusk	<p>A total of eight bats emerged</p> <p>Common pipistrelle (3): one from the soffit roughly half way along the west side : one from the gap at the north-west corner : one from the ridge area</p> <p>Soprano pipistrelle (4): two from the gap at the north-west corner : one from the edge of the timber garage door : one from the ridge area</p> <p>Not identified (1) : one from the gap at the north-west corner</p>
23/06/2021 Dusk	<p>A total of eleven bats emerged</p> <p>Common pipistrelle (1): one from the north gable wall, roughly two thirds down on the west slope</p> <p>Soprano pipistrelle (4) : one from the gap at the north-west corner : one from the soffit roughly half way along the west side : one from the edge of the timber garage door : one from the eaves at the south-west corner abutting the farmhouse</p> <p>Brown long-eared (6) : five from the edge of the north gable end wall : one from the eaves at the south-west corner abutting the house</p>
09/07/2021 Dawn	<p>A total of twelve bats entered</p> <p>Common pipistrelle (1): one in near the apex of the north gable wall</p> <p>Soprano pipistrelle (6): two in at the gap at the north-west corner : one in at the eaves on the east elevation : two in at the edge of the timber garage door : one in at the eaves at the south-west corner abutting the farmhouse</p> <p>Brown long-eared (2) : one in near the apex of the north gable wall : one in at the eaves at the south-west corner abutting the farmhouse</p> <p>Not identified (3) :one in at the gap at the north-west corner :one in at the gap at the eaves of the west side near the north-west corner :one in at the north gable wall, low on the east slope of the roof</p>

9 Discussion and Conclusions

- 9.1 The previously converted structure known as Dyffryn Barn is confirmed to be a bat roost for at least three species: common pipistrelle, soprano pipistrelle, and brown long-eared. A maximum count was 12 animals was recorded during the dawn re-entry survey in July 2021. The daytime internal inspection of the loft space noted the droppings of these species with a large quantity of old droppings, but not such an abundance of fresh droppings. There are indications of long term usage at the roost location by a low number of animals: this evidence, from field signs, was consistent with the dusk emergence and dawn re-entry behaviour. A variety of exit/entry points were utilised on the east and west sides and at the north gable end wall. The number and diverse access points suggests that the pipistrelle bats are summer day roosting. A more obvious concentration of animals and droppings would be expected for a maternity roost of these pipistrelle species.
- 9.2 Assessing the status of the brown long-eared bats is more challenging. This species often has maternity roosts with a low number of animals. Their quiet echo-location calls and their emergence from dark locations often when light levels are low can result in them being overlooked and under-recorded. Having noted the droppings inside the loft, the surveyors were expecting to encounter this species but still found it hard to focus on their movements in and out of the structure. It is possible that some of the bats which were not identified to a precise species during the survey visits were brown long-eared bats.

- 9.3 Historically, brown long-eared bat was first recorded at Dyffryn in 1986, pointing to long-term presence. Although the original records of the visit to Dyffryn by John Messenger in July of that year are unavailable, it seems that the record related to the original farmhouse, which was disused at the time, rather than Dyffryn Barn, so it is equally likely that other buildings at the site are used by brown long-eared bats too. However, their consistent presence means that a maternity roost of this species is considered most likely to be present at Dyffryn, and Dyffryn Barn probably plays a role, and is likely to be used late into the autumn transitional period when pipistrelle bats have left the roof structure for locations where thermal conditions are more constant.
- 9.4 Bats are occupying roost locations typical for the different species. Both pipistrelle species are crevice roosters which utilise small gaps around the outer shell of the building: at the soffits and fascias, behind the timber garage doors, under roof tiles, ridge tiles and at the edge of the roof. Brown long-eared bats favour a large loft void where they can exercise and fly but they will favour a resting place in the apex of the roof void against the ridge board, and often tucked against a rafter, but will also crevice roost when loft conditions make this preferable.
- 9.5 When the nature conservation significance of the site is considered against recognised criteria (*Bat Mitigation Guidelines 2004* and *Good Practice Guide: NRW Approach to Bats and Planning October 2015*), the nature conservation status of the site is assessed to be moderate, due to the presence of three species of bat (common pipistrelle, soprano pipistrelle and brown long-eared), with the pipistrelles summer day roosting but the brown long-eared bats likely to be a small maternity colony.
- 9.6 The improvements to the existing living accommodation at Dyffryn Barn will not require re-roofing but modifications and upgrades will involve new timber wall cladding and it is also anticipated that this will lead to the provision of new soffits and fascias. Improvements for thermal efficiency will see new insulation introduced to walls and probably the loft also. These elements will impact on the roosts by disturbing, modifying and destroying roost locations and access points. The impact of the two storey extension to the northern end of the building also results in impacts on the bat roosts as it will obstruct several access points and roost locations found at the north gable end wall.
- 9.7 All bats are protected under the provisions of Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), whilst their roosting places are also protected under the provisions of the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019. The changes to the walls and repairs to the roof coverings and edges of the roof structure will result in the destruction of bat roosts and it is not possible to consider how such an outcome can be avoided if the proposed development is to occur. Therefore it will be necessary to obtain a European Protected Species (EPS) Licence for bats to address the plans for the modifications and the northern extension to proceed without an unlawful offence occurring.
- 9.8 EPS licences are currently issued by Natural Resources Wales (NRW) provided that the following three tests are met:
- the proposed activity must be for the purpose of preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment;
 - there is no satisfactory alternative;
 - the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status (FCS) in their natural range.
- 9.9 It is considered that all three tests could potentially be met. Therefore, there is no reason why the extension work could not be covered by an EPS licence provided that the FCS status is secured by appropriate mitigation. An EPS licence will be required from NRW before any work is done which affects the roost and obstructs the bat exit/entry point. Further information concerning the EPS licence and other recommendations are made below. The EPS licence can only be applied for once planning consent is issued.
- 9.10 For the extension proposals to proceed, a robust scheme of mitigation is required to ensure that the favourable conservation status of the bat species is not adversely affected. The following broad principles must be followed within any scheme of mitigation of compensation at the site and will need to be delivered under the auspices of an EPS licence:
- bats must not be left without a place to roost;
 - major works must be timed to avoid periods of the year when bats are likely to be present;
 - any new roost structures provided as part of mitigation and compensation proposals must be suitable for the species of bat and type of roost affected by the development;

- any scheme must ensure that the 'action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range', and;
 - post-development monitoring may be needed to comply with the EPS licence. It is also recommended to form part of the scheme of mitigation for local authority planning procedures.
- 9.11 Bat friendly materials must be used where bat mitigation features are provided. Consideration of materials concerns timber treatment products and also the choice of roof lining membrane. Modern breathable membranes (BRM) are often light in colour and in weight with low thermal retention properties; they can sag into pockets and can have a smooth and shiny finish which offers no purchase to bats. Research has demonstrated that none of the modern breathable membranes currently on the market are safe to use in bat roosts, and that all present a potentially lethal threat to bats. Again appropriate recommendations are made below.
- 9.12 No lighting proposals were available at the time of preparing this report and it is not known if new artificial lighting installations may form part of the proposals for the new extension. However, the introduction of artificial lighting in an area, which is currently unlit, can have a negative impact on bats and other nocturnal wildlife. Artificial lighting can negatively impact bats' reproductive ecology and growth rates by delaying their emergence time, increasing the chances of predation, shortening foraging times, severing commuting routes, or causing roost abandonment (ILP 2018).
- 9.13 No habitat fragmentation issues are identified associated with the extension and modifications planned for the dwelling.
- 9.14 Surveyors considered the presence of nesting birds at the survey building. A house sparrow nest is likely to be present at the north-east corner of the structure. All nesting birds, their chicks, eggs and nests are protected under the Wildlife and Countryside Act 1981 (as amended) whilst in active use. General advice relating to nesting birds is made below.

10 Recommendations

- 10.1 All bat species are legally protected from the impacts of disturbance, as well as loss and damage to roost locations; and loss of access or obstructed bat access under the provisions of the Wildlife and Countryside Act 1981 (as amended), and the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019. The extension and modification of the dwelling will result in detrimental impacts on bat roost locations. Therefore, an application to NRW for an EPS licence is required. No work which has the potential to affect the bat roost locations can commence until such time as a licence has been issued.
- 10.2 An application for an EPS licence can only be made once planning consent is granted, and it can take several weeks to put together. Considerable supporting documentation is needed including the licence application forms; a detailed Ecological Method Statement (EMS) (providing information on the survey effort with recent survey data not older than 18 – 24 months), and details of the local status of the species concerned; the duties of an independent experienced Ecological Clerk of Works (ECW); as well as the duties and responsibilities of the various contractors (e.g. builders, carpenters, electricians, plumbers etc), and the owner/developer of the site. A local planning authority consultation document must also be completed and signed, and any pre-commencement conditions concerning ecology must be formally approved and signed off by the planning authority. NRW do not currently make a charge for issuing an EPS licence but this circumstance is likely to change in the future.
- 10.3 It will be essential to provide suitable and appropriate mitigation for crevice roosting pipistrelle bats and also non-crevice roosting brown long-eared bats. Mitigation is more effective when it replicates the features of the roof which will be altered or destroyed. At Dyffryn Barn, no re-roofing is planned although minor repairs may be necessary to the roof coverings. The existing loft will be retained and new exit points will be created into the loft to mitigate for the loss of exit/entry points at the north gable. A new loft will be created over the new extension at the north end which will link internally to the existing loft. The fitting of replacement wall cladding, soffits and fascias is also likely to modify or obstruct additional access points into the loft so new access points must be provided elsewhere. Similarly, crevice roosting slots at the wall cladding, soffits, fascias and garage door will be modified or obstructed so these must be replicated in the new wall and roof structure to ensure replacement roosting opportunities are created. These gaps must be annotated to the design plans to show to all parties concerned with the development where the bat mitigation

features are located.

- 10.4 Over the new extension, a bat loft must be created within the apex of the roof. The height of the bat loft will be determined by the level of the ceiling from the dormer window on the east elevation: the loft will be a minimum height of 1m of clear space (from the top of any layers of insulation) to the roof apex and it will be the full length of the new extension. It will link internally to the existing loft via a hole created of minimum dimensions 400mm x 400mm in the concrete block end wall. The new bat loft will be a dedicated bat space with no plant or tanks or storage use. **A trussed rafter arrangement must not be fitted so as to avoid clutter in the bat loft: the roof frame must include a ridge board. A dry ridge system must not be fitted as this is not compatible with bat mitigation.** Slate or slate type roof coverings must be fitted with a traditional 1F bitumen lining membrane (BS 747) – no other lining membrane may be fitted in conjunction with the bitumen liner either above it or below it. Modern lining membranes are known to be harmful to bats.
- 10.5 New access points must be created into the new bat loft at the north gable end wall and also at the ridge of the new extension. At the new north gable wall, a short distance (*circa* 300mm) from the roof apex, and to either side of the apex, a small slot of dimensions 50mm wide x 18mm high, must be fashioned to provide access behind timber fascias/soffits, and onto the wall plate area, and into the loft space. In this location, the gap must be fashioned either at the soffit or via access up behind the fascia board – depending on the features of the edge of the roof. The soffit and fascia at this location must be a timber material and not uPVC, and the opening must be flush to the gable wall, so that a bat can land on the wall and crawl up into the opening (see Plate 16).
- 10.6 A gap for bat access must be created in the ridge line of the new extension roof to give bat access into the loft. A single bat access gap must also be created at the ridge of the new rear roof in a roughly central position. The exact execution of the gap will depend on the type of ridge tile used. If interlocking ridges are used then one of the tiles will need to be raised at one end so that a gap of at least 18mm by 28mm (minimum) is provided. If a parallel type ridge tile is employed then a similar gap must be provided between tiles, in the form of a gap in the mortar. The gap (which must be of 18mm by 28mm minimum dimension) must be on one side of the roof only, away from the prevailing weather. An alternative would be to provide a dedicated air vent at the ridge or to fit a bat slate into the top row of roof slates. Whichever method is used it is essential that there must be no obstructions behind the gaps so that bats can move easily into the void beneath each ridge tile and move along the entire length of the ridge. A small slot of 20mm x 100mm must be cut into the lining membrane close to the ridge access point but offset by 100mm so as to avoid venting warm air or creating a draught and to avoid ingress of water.
- 10.7 In addition to the access points into the new loft at the north gable end wall, two slots must be created in the timber cladding within the apex area of the wall. Small slots of dimensions 20mm x 40mm must be cut in the lower edge of the cladding to provide bat access to the narrow cavity behind the cladding that is created by the battens holding the cladding in place. These slots must be fashioned between 400mm – 500mm from the apex and positioned to either side of the end wall at a slightly different height.
- 10.8 In two locations on both the east and west elevations of the existing dwelling, new slots must be created at the eaves for crevice roosting species. When the new cladding is fitted, a slot of dimensions 20mm x 40mm must be fashioned at the top of the wall and either up into the soffit or behind the fascia. The location of these gaps must replicate the slots where bat exit /entry points were identified in the survey.
- 10.9 Only bat friendly materials may be applied to the new roof structure over the new extension and for any repairs over the retained section of the dwelling. Modern breathable membranes (BRMs) are hazardous to bats and can cause entanglement and death. Only a 1F sanded bitumen liner to BS747 may be fitted. In addition to the 1F bitumen lining membrane, fascia boards must be timber and not uPVC to ensure that bats can grip to the natural surface of wood. Use of timber treatment products must ensure that only bat friendly chemical materials are used. Details can be found in the list produced by Natural England (TIN 092 dated February 2013).
- 10.10 As a short-term measure during the period of the structural changes to the dwelling, two timber bat boxes (1 x Kent style and 1 x Stebbings Walsh style) must be installed at the property in suitable locations to serve as short term mitigation features and to offer a safe refuge for any bat removed from the working zone. It is appropriate to retain these in place in the garden for so long as they remain intact and serviceable.

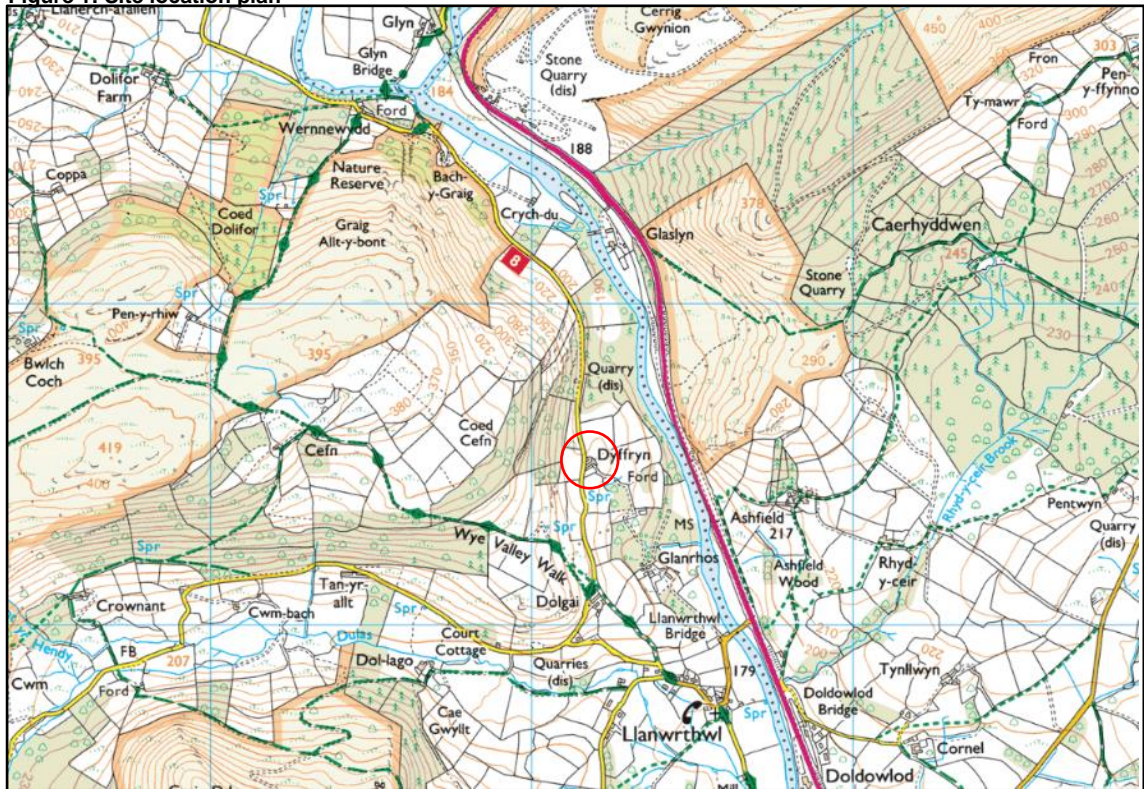
- 10.11 It will be necessary to apply to NRW for an EPS licence ahead of the work commencing at the site as the construction work will result in low/moderate level of disturbance. Although ground level construction work on the new extension may commence in the summer period, a bat friendly autumn/winter timetable is essential for the work to construct and link the new extension roof to the existing roof. The roof modification work being carried out in the autumn/winter period (commencing 1st October) will greatly reduce the risk of detrimental impacts on the maternity colony of long-eared bats. It will be necessary to have an ecologist present as Ecological Clerk of Works (ECW) when wall cladding, fascias and soffits are removed, as there is a risk of bats being encountered. It will also be necessary to note where there is evidence of roosting activity so that roost features can be reproduced when new cladding/fascias are fitted. This element of work must also be done avoiding the summer period (May to September inclusive).
- 10.12 Since there is no legal duty requiring sites to be lit (ILP 2018), and the introduction of any new artificial lighting around the dwelling has the potential to negatively impact the local bat populations, it is recommended that artificial lighting is avoided altogether. However, if some level of artificial lighting is critical for maintaining health and safety standards then Just Mammals (or an alternative ecological consultancy) must be re-appointed to help reach a collaborative consensus with the local authority regarding the sensitivity of the site and the requirement for lighting. The site is currently naturally dark in a rural setting and it is recommended that this situation is continued.
- 10.13 If it is necessary to prepare a sensitive lighting strategy in conjunction with a suitably experienced and competent lighting professional, there are several approaches available for reducing light levels in ecologically sensitive locations. These include appropriate luminaire restrictions, the use of motion-triggered lighting, creation of dark buffer zones, vegetation screening, glazing treatment, cowl fittings, and timing restrictions. It is therefore beyond the scope of this report to prescribe detailed measures at this stage. However, such approaches are outlined in the recently published and freely downloadable 'Bats and Artificial Lighting in the UK: Guidance Note 08/18' by the Institution of Lighting Professionals and Bat Conservation Trust (2018). This advice can be found here: <https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/>. It is essential that no artificial lighting falls on the upper parts of the of the new north gable wall where bat mitigation access points will be provided. Lights fitted high on walls which spread a wide and intense pool of light which can remain turned on for long periods or even the whole night are not acceptable.
- 10.14 Bats can be encountered unexpectedly during building work, and if this occurs, it is important to stop activity in the vicinity of the bat(s). It is possible that a bat will be in a torpid state and unable to fly off for several minutes or even up to 20 minutes. Advice must be sought from NRW, or if this is not possible, then from a bat ecologist who holds a licence to disturb bats. To proceed without taking advice would be committing an offence.
- 10.15 The timetable indicated above with the removal of wall cladding avoiding the summer period also avoids the nesting season and the risk of encountering an active house sparrow nest at the north-east corner. Birds are protected under the provisions of the Wildlife and Countryside Act 1981 (as amended), and active bird nests cannot legally be disturbed or destroyed. Once a nest is established, the birds must be able to have access at all times until the young have fledged and the nest is no longer active. The bird breeding season commences as early as March for some species and continues to late August for species which rear a second or third brood. In the event that active nest is found, it must be retained and protected from disturbance. A cordon must be established for a safe working zone a suitable distance from the nest site, and not until the chicks have fledged can the nest be destroyed and the cordon taken down.
- 10.16 Planning policy requires that development activity provides a positive outcome for local biodiversity. As an enhancement feature, it is recommended that two timber bird boxes are installed at the site in suitable locations, avoiding full sunlight and the risk of predation from cats.

11 References

- Collins, J. (Ed.) (2016). '*Bat Surveys for Professional Ecologists – Good Practice Guidelines – 3rd Edition.*' Bat Conservation Trust, London
- The Institution of Lighting Professionals and Bat Conservation Trust. (2018). '*Bats and Artificial Lighting in the UK: Guidance Note 08/18.*' ILP, Rugby
- Mitchell-Jones, A.J. (2004). '*Bat Mitigation Guidelines.*' English Nature, Peterborough
- Mitchell-Jones, A.J. (1992). '*Focus on Bats.*' English Nature, Peterborough
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- Ninnes, R. (2015). '*NRW Approach to Bats and Planning.*' Natural Resources Wales, Bangor
- Russ, J. (2012). '*British Bat Calls: A Guide to Species Identification.*' Pelagic Publishing, Exeter

Appendix I: Site Location Plans

Figure 1: Site location plan



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Figure 2: Aerial view of site location



Aerial View of the Site

Site Reference:
BAT11920

Map Scale:
1:40,000 & 1:2300

Source:
© Google Satellite Imaging
2021



Legend

- Site location
- Barn outline

Appendix II: Results of Bat Activity Observations

Table 6: Dyffryn Barn – Dusk Observation 17th May 2021

Time (24 Hour Clock)	Species (Common Name)	Recording No.	Observed Activity
19.28 hours	Pipistrelle	-	Emerged at north-west corner (see Plate 4)
19.45 hours	Common pipistrelle	1 NI	Emerged at north-west corner (see Plate 4)
20.44 hours	Soprano pipistrelle	2 NI	Emerged at north-west corner (see Plate 4)
21.03 hours	Common pipistrelle	1 DM: 3 NI: 1 PL	Commuting past north wall from west to east
21.10 hours	Common pipistrelle	4 NI	Emerged from gap in soffit on west elevation roughly half way along (see Plate 8)
21.14 hours	Common pipistrelle	2 DM: 5 NI	Emerged from ridge area of roof, and flew north
21.15 hours	Common pipistrelle	2 PL	Heard but not seen on east side of barn
21.16 hours	Soprano pipistrelle	6 NI	Emerged from edge of garage door on west elevation (see Plate 7)
21.16 hours	Common pipistrelle	3 PL	Heard but not seen on east side of barn
21.17 hours	Soprano pipistrelle and noctule	3 DM: 7 NI	Pipistrelle emerged at north-west corner (see Plate 4); noctule heard in background
21.18 hours	Noctule	4 PL	High over site, not seen
21.24 hours	Common pipistrelle	4 DM	Flew high over roof and off to north-west
21.25 hours	Common pipistrelle	5 PL	Commuting past east side of barn
21.36 hours	Noctule	5 DM	High over site, not seen
21.37 hours	Noctule	6 PL	Commuting past east side of barn
21.48 hours	Common pipistrelle	6 DM	Foraging to north of building
21.49 hours	Common pipistrelle	7 PL	Foraging to north of building
21.53 hours	Soprano pipistrelle	7 DM	Flew north from ridge area of roof, probable emergence

Note: Highlighted records indicate emergence or re-entry activity

Table 7: Table 5: Dyffryn Barn – Dusk Observation 23rd June 2021

Time (24 Hour Clock)	Species (Common Name)	Recording No.	Observed Activity
21.33 hours	Soprano pipistrelle	1 DM	Commuting south to north along east side of barn
21.41 hours	Soprano pipistrelle	1 NI	Emerged from eaves at south-west corner of barn adjacent to farmhouse; flew off north
21.44 hours	Soprano pipistrelle	2 DM	Emerged at north-west corner (see Plate 4)
21.46 hours	Common pipistrelle	3 DM	Emerged from edge of roof at north gable wall, roughly two thirds down on west slope
21.50 hours	Soprano pipistrelle	2 NI	Emerged from edge of garage door on west elevation (see Plate 7)
21.56 hours	Soprano pipistrelle	3 NI	Emerged from a gap in soffit on west elevation roughly half way along (see Plate 8)
21.58 hours	Brown long-eared (x2)	Not recorded	At north gable wall, possible emergence but no precise location seen
22.11 hours	Brown long-eared	Not recorded	Emerged from edge of roof at north gable, roughly two thirds down on west slope
22.11 hours	Brown long-eared and noctule	4 NI	Brown long-eared emerged from eaves at south-west corner of barn adjacent to house, flew off north; noctule in background
22.12 hours	Brown long-eared	Not recorded	Emerged from edge of roof at north gable wall, roughly two thirds down on west slope
22.15 hours	Brown long-eared	Not recorded	At north gable wall, possible emergence but no precise location seen
22.29 hours	Common pipistrelle	5 NI	Commuting east to west past north gable end wall
22.35 hours	Soprano pipistrelle	6 NI	Heard but not seen
22.36 hours	Common pipistrelle	7 NI	Heard but not seen

Note: Highlighted records indicate emergence or re-entry activity

Table 8: Dyffryn Barn – Dawn Observation 9th July 2021

Time (24 Hour Clock)	Species (Common Name)	Recording No.	Observed Activity
03.29 hours	Brown long-eared	1 NI	Heard but not seen on west side of barn
03.45 hours	Common pipistrelle	1 DM	Flying close to north gable wall
03.46 hours	Common pipistrelle and soprano pipistrelle	2 DM	Flying close to north gable wall
03.47 hours	Soprano pipistrelle (x2)	3 DM	Entered at gap at north-west corner
03.51 hours	Soprano pipistrelle	4 DM	Flying at north end wall and up over roof
03.53 hours	Soprano pipistrelle	5 DM	At north end wall and up over roof
03.54 hours	Common pipistrelle and soprano pipistrelle	6 DM	Flying at north end wall and up over roof
03.55 hours	Soprano pipistrelle	2 NI	Flying up close to eaves at south-west corner where barn connects to house
03.56 hours	Soprano pipistrelle	7 DM	Flying close to north gable end wall

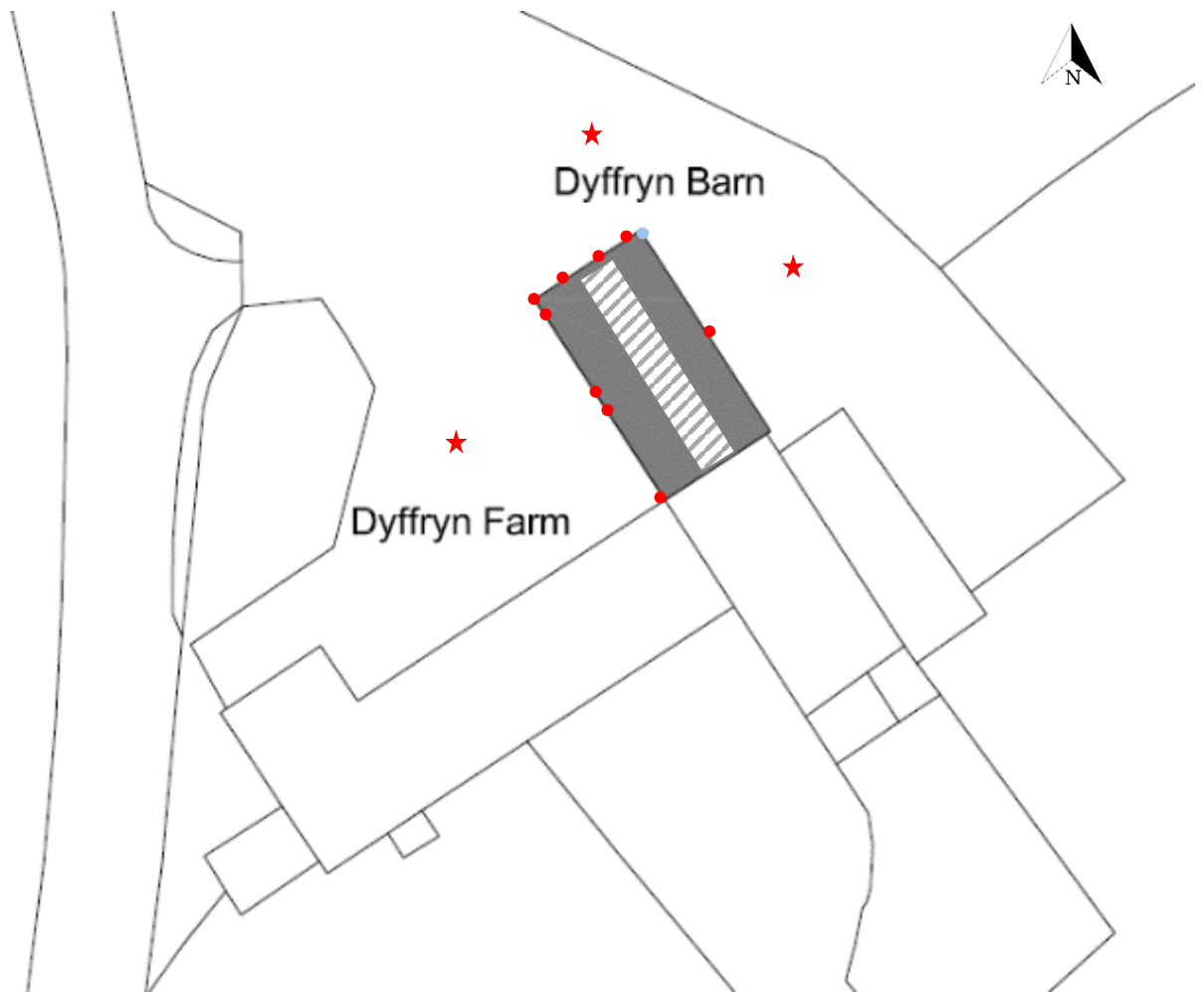
03.57 hours	Common pipistrelle and soprano pipistrelle	8 DM	Flying close to north gable end wall
03.58 hours	Soprano pipistrelle (x2)	9 DM	Flying close to north gable end, and repeatedly flying up to apex area and edge of roof beside flue on east side
03.59 hours	Soprano pipistrelle	3 NI	Flying up close to eaves along west side
04.05 hours	Common pipistrelle (x2)	10 DM	Flying close to north gable end, and repeatedly flying up to apex area and edge of roof beside flue to east side
04.09 hours	Brown long-eared	11 DM	Landed and entered at edge of roof on north gable wall beside flue to east side
04.12 hours	Brown long-eared and soprano pipistrelle	12 DM	Flying close to north gable end wall, and repeatedly flying up to apex area and edge of roof beside flue to east side
04.13 hours	Brown long-eared and soprano pipistrelle	13 DM	Flying close to north gable end, and repeatedly flying up to apex area and edge of roof beside flue to east side
04.15 hours	Soprano pipistrelle	14 DM	Flying close to barn at north gable, and repeatedly flying up to apex area and edge of roof beside flue to east side
04.18 hours	Common pipistrelle	15 DM	Flying close to barn at north gable, and repeatedly flying up to apex area and edge of roof beside flue to east side
04.20 hours	Brown long-eared and soprano pipistrelle	16 DM	Flying close to north gable end, and repeatedly flying up to apex area and edge of roof beside flue to east side
04.20 hours	Myotis	4 NI	Flying back and forth over roof of building
04.22 hours	Common pipistrelle and soprano pipistrelle	17 DM	Flying close to barn at north gable, and repeatedly flying up to apex area and edge of roof beside flue to east side
04.25 hours	Common pipistrelle	18 DM	Landed and entered at edge of roof on north gable wall beside flue to east side
04.28 hours	Soprano pipistrelle	19 DM	On regular circuits past west side of barn, over yard and flying up to west side eaves
04.31 hours	Soprano pipistrelle	20 DM	Flying close to north-west corner of barn as though to land and go in
04.35 hours	Soprano pipistrelle (x2)	21 DM	Flying close to north-west corner; flying close to fascia of north gable wall as though to land and then dropping away
04.36 hours	Soprano pipistrelle (x2)	22 DM	Flying close to north-west corner, flying close to fascia of north gable wall as though to land and then dropping away
04.36 hours	Soprano pipistrelle	- NI	Bat landed and went in at eaves at south-west corner of barn adjacent to farmhouse
04.37 hours	Common pipistrelle and soprano pipistrelle (x2)	23 DM	Flying close to barn at north gable end wall, and repeatedly flying up to north-west corner and one landed and went in
04.42 hours	Common pipistrelle and soprano pipistrelle	24 DM	Flying close to north-east corner of barn, close to fascia of north gable as though to land and then dropping away, one landed and went in over top of fascia a short distance above eaves level (see Plate 3)
04.42 hours	Soprano pipistrelle	- NI	Bat landed and went in at edge of garage door below external light fitting on west side
04.43 hours	Soprano pipistrelle (x2)	25 DM	Flying close to barn at north gable, and repeatedly flying up to apex area and edge of roof beside flue to east side
04.44 hours	Soprano pipistrelle (x2)	26 DM	Flying close to barn at north gable, and repeatedly flying up to apex area and edge of roof beside flue to east side
04.45 hours	Pipistrelle	- NI	Bat landed and went in at the eaves near to the north-west corner on the west side
04.46 hours	Brown long-eared	- NI	Landed and went in at eaves at south-west corner of barn adjacent to house
04.47 hours	Soprano pipistrelle	27 DM	Flew up to eaves on east side of barn close to aerial roughly mid-way along, and then dropped away
04.48 hours	Soprano pipistrelle	28 DM	Bat flew up to eaves on east side of barn close to aerial roughly mid-way along, landed and entered at eaves
04.51 hours	Soprano pipistrelle	- NI	Bat landed and went in at edge of garage door below external light fitting on west side

Note: Highlighted records indicate emergence or re-entry activity

Appendix III: Evidence of Bat Roosts and Plan of Building

Roost location:	Dyffryn Barn, Llanwrthwl
Survey date(s):	Day survey: 17 th May 2021: Diane Morgan Dusk observations: 17 th May 2021: Diane Morgan, Nigel Isaksson, Paul Leith Dawn observation: 23 rd June 2021: Diane Morgan, Nigel Isaksson 9 th July 2021 Diane Morgan, Nigel Isaksson (Just Mammals Limited)
Description:	A converted garage with walls of stone and concrete block with render at low level and timber cladding above. A timber framed pitched roof is covered with slate type tiles and a bitumen lining membrane. A large loft void is empty except for fibreglass insulation across the floor.
Actual and potential bat access points:	Gaps at fascias and soffits; gap between roof tiles and fascia; gaps behind timber door, gaps behind timber wall cladding, gaps at ridge.
Actual and potential bat roosting sites:	Gaps behind damaged fascias; gap between fascia and roof tiles; gaps behind lead flashing; small opening beside broken roof tile, gap between lining membrane and roof tiles, gaps between roof timbers
Species and number recorded:	<p><u>17th May 2021</u></p> <p>Common pipistrelle (3): one from the soffit roughly half way along the west side : one from the gap at the north-west corner : one from the ridge area</p> <p>Soprano pipistrelle (4): two from the gap at the north-west corner : one from the edge of the timber garage door : one from the ridge area</p> <p>Not identified (1) : one from the gap at the north-west corner</p> <p><u>23rd June 2021</u></p> <p>Common pipistrelle (1): one from the north gable wall, roughly 2/3 down on the west slope</p> <p>Soprano pipistrelle (4) : one from the gap at the north-west corner : one from the soffit roughly half way along the west side : one from the edge of the timber garage door : one from the eaves at the south-west corner abutting the house</p> <p>Brown long-eared (6) : five from the edge of the north gable end wall : one from the eaves at the SW corner abutting the house</p> <p><u>9th July 2021</u></p> <p>Common pipistrelle (1): one in near the apex of the north gable wall</p> <p>Soprano pipistrelle (6): two in at the gap at the north-west corner : one in at the eaves on the east elevation : two in at the edge of the timber garage door : one in at the eaves at SW corner abutting the farmhouse</p> <p>Brown long-eared (2) : one in near the apex of the north gable wall : one in at the eaves at the south-west corner abutting the farmhouse</p> <p>Not identified (3) :one in at the gap at the north-west corner :one in at the gap at the eaves of the west side near NW corner :one in at the north gable wall, low on the east slope of the roof</p>
Droppings recorded:	<i>Circa</i> 200 fresh droppings at north end wall, and <i>circa</i> 200 fresh droppings near loft hatch, identified as pipistrelle and also brown long-eared Under the line of the ridge several thousand old droppings, pale grey in colour.

Figure 3: Building layout and evidence of bats and birds



Key

- ★ = position of observers
- = Evidence of birds
- ▨ = area of bat droppings
- = bat exit/entry points

Appendix IV: Site Photographs (bat exit /entry points circled in red)

Plate 1: North end wall and west elevation



Plate 2: East elevation



Plate 3: North end wall showing entry/exit points

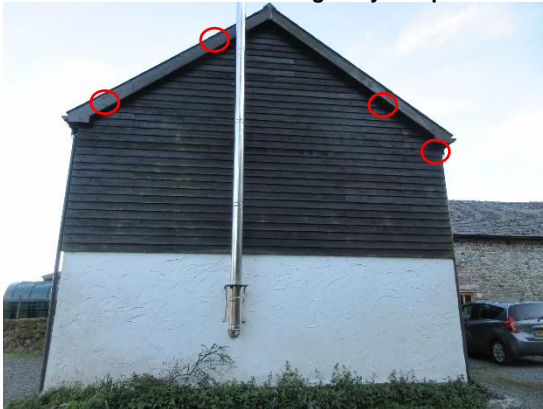


Plate 4: North-west corner gap



Plate 5: Gap at top of wall above window



Plate 6: Gap at top of timber cladding



Plate 7: Gap at garage door on west elevation



Plate 8: Gap at soffit on west side



Plate 9: Bat droppings down north gable end wall



Plate 10: Bat droppings at north gable end wall



Plate 11: Bat droppings at north gable end wall



Plate 12: Bat droppings at south end wall



Plate 13: Bat droppings below ridge line

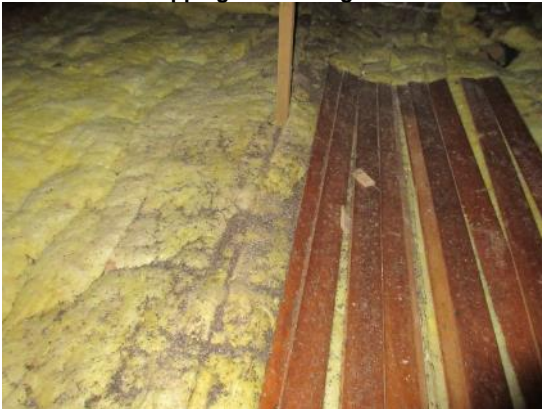


Plate 14: Roof materials



Appendix V: Bat Mitigation Features

Figure 4: Bat access features

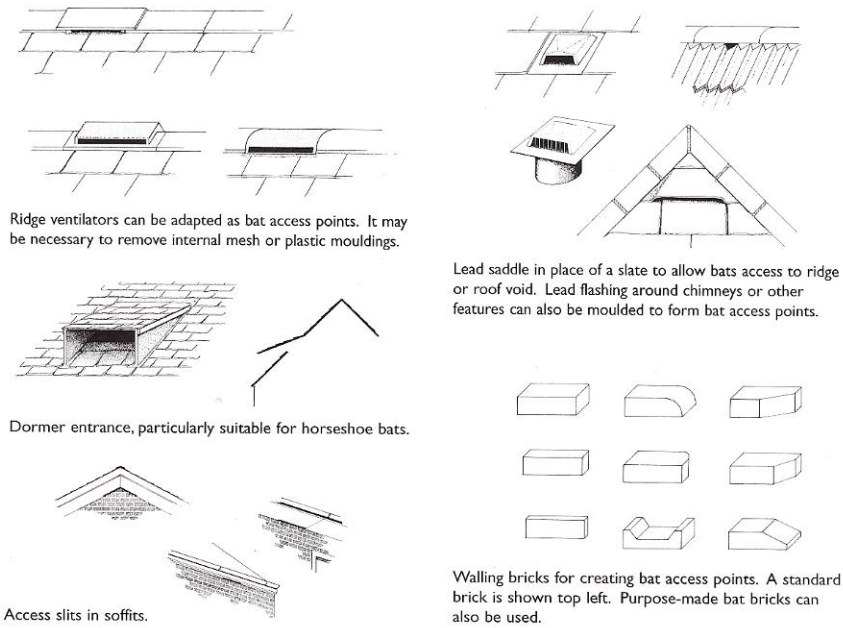


Plate 15: Gap in wall cladding



Plate 16: Gap at gable wall soffit



Plate 17: Gap at ridge tile



Appendix VI: Ecology of British Bats

There are at least 18 species of bats breeding in Britain. Most of them are regarded as threatened due to a variety of factors including habitat loss, intolerance and disturbance/damage or loss of roosts. Of these species a number regularly use buildings at certain times of year in order to find safe secure roost sites. Often several different species can use a building over the course of the year, and not all species are present at the same time, making assessment of their presence complex.

Bats are highly mobile flying mammals, which in Britain, feed entirely on insects. They have evolved over seventy million years and have developed sophisticated mechanisms to allow them to effectively 'see' in the dark by using sound waves. This system is called echo-location which enables them to track and hunt down small moving insects whilst in flight, rather like radar does in a modern military fighter aircraft. It is possible to record this sound, and because each species of bat echo-locates in a different way, determine what the species is without actually handling the animal which made the call.

In winter, when their prey is scarce, British bats hibernate or enter torpor, in cool parts of caves, buildings (cavity walls), and tree cavities. They may wake occasionally and will feed if evening temperatures are greater than 7°C, when flying insects can be active. Generally however, activity during cold winters is very limited and bats only become fully active in spring, with late March and early April being a critical time for animals desperately trying to save energy whilst gaining weight. Disturbance during these months can therefore be more devastating to bats than at other times of year.

By late spring female bats will gather together in maternity roosts in order to give birth and rear their single baby in June. Such maternity roosts are often near to important foraging areas in order to save energy as flight requires vast energy resources. Flight routes to and from such roosts can therefore also be important and some bats are extremely light averse preferring dark locations without street or security lamps which can force them to take complex routes to reach foraging areas. Such lighting can also badly degrade foraging areas where they occur close to buildings and hedgerows and tree lines can be particularly important areas for bat foraging to take place particularly when close to the roost building.

Whilst females form maternity colonies, usually in warmer roofs or trees, male bats tend to seek out cooler sites which may not be so close to the foraging areas. Males are often solitary and do not exhibit the social behaviour that marks out females during the birthing period. Non-breeding females will also roost in this way, when they have no need to spend energy on raising a single baby.

Several British bat species are known to rely heavily on buildings to roost. Of these species, the most likely are the soprano pipistrelle bat and the common pipistrelle. Other bat species regularly found in buildings are the brown long-eared bat; Natterer's bat; Brandt's bats and whiskered bat. Pipistrelle species and the small myotis or mouse-eared species (Brandt's, whiskered etc) often favour locations at the ridge or around the exterior shell of the structure. Brown long-eared and Natterer's tend to prefer living within the roof area of a building – large lofts being popular.

Other species that are known to use the internal areas of built structures such as barns include the two horseshoe species, the greater horseshoe bat (*Rhinolophus ferrumequinum*), and lesser horseshoe bat (*Rhinolophus hipposideros*), as well as Western barbastelle bat (*Barbastella barbastellus*).

Appendix VII: Relevant Legislation

Bats

All species of bat in Britain, and their places of rest are protected under the provisions of the Wildlife and Countryside Act 1981 (WCA), Section 9(1), 9(4)(a) and 9(4)(b) as amended by Schedule 12 of the Countryside and Rights of Way Act 2000. Further protection is afforded by the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019. In relation to structures used by bats for shelter or protection (i.e. roosts), this legislation makes it an offence to either intentionally or recklessly damage, destroy or obstruct access to any site used by bats, whether bats are present at the time or not, or to intentionally or recklessly disturb bats within a roost.

Infringements under this legislation include building demolition, removal of hollow trees, blocking, filling or installing grills over old mines or tunnels, building alteration or maintenance work, re-pointing of stone walls, getting rid of unwanted bat colonies, re-roofing, remedial timber treatment, re-wiring or plumbing in roofs, treatment of wasps, bees or cluster flies (Mitchell-Jones, 1992; Childs, 2001). Greater horseshoe bat, lesser horseshoe bat, Bechstein's bat, greater mouse eared bat and barbastelle are included in Annex II of the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019 and hence require special protection.

Maximum penalties for committing offences relating to bats or their roosts can amount to imprisonment for a term not exceeding six months or to fines of up to Level 5 on the standard scale under the Criminal Justice Act 1982/1991 (i.e. £5000 in April 2001) per roost or bat disturbed or killed, or to both. Bodies corporate and their directors/secretaries are liable for offences under the 2019 Regulations and the WCA. Additionally, where such an offence results in the offender benefitting in a monetary form from the illegal action, confiscation or civil recovery of the proceeds can occur under the Proceeds of Crime Act 2002.

It is sensible to assess as soon as possible if bats are present at potential sites for development – preferable before the land is acquired. In some cases, the period required for adequate survey work may span more than one calendar year. If a development, including demolition or change of use, is likely to impact on bats and their roosts then a licence will usually be required. Adequate survey results are a necessary input to any licence application. If bats are not found until late in the development stage this may result in delays while a licence is sought and even in offences being committed.

The law with respect to dwellings and other structures is applied equally. Where disturbance is deemed likely to have a significant effect on bats to survive, breed and rear their young or will affect the local distribution and abundance of the species, a European Protected Species licence issued by Natural Resources Wales. A licence application must demonstrate that the development will not be detrimental to the maintenance and conservation status of the species concerned.

This explanation must be regarded only as a guide to the law. For further details, reference must be made to the Wildlife and Countryside Act 1981 (as amended), the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019, and the Countryside and Rights of Way Act 2000.

Wild birds

All wild birds, their eggs and nests are protected by The Wildlife and Countryside Act 1981 (as amended). It is an offence, with certain exceptions, to:

- intentionally kill, injure or take any wild bird;
- intentionally take, damage or destroy the nest of any wild bird while it is in use or being built;
- intentionally take or destroy the egg of any wild bird;
- sell wild birds or put them on display for sale;
- use traps or similar items to kill, injure or take wild birds; and
- intentionally or recklessly disturb any wild bird listed on Schedule 1 while it is nest building, or at a nest containing eggs or young, or disturb the dependent young of such a bird.

Penalties that can be imposed for criminal offences in respect of a single bird, nest or egg contrary to the Wildlife and Countryside Act 1981 (as amended) is an unlimited fine, up to six months imprisonment or both. In exceptional cases NRW and Natural England issues licences for specific purposes, so that legitimate work may be undertaken without breaking the law.

Appendix VIII: European Protected Species Licences

Under the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019 a licence can only be issued if Natural Resources Wales are satisfied that:

- there are imperative reasons of overriding public interest including those of a social or economic nature;
- there is no satisfactory alternative, and;
- the action authorised will not be detrimental to the maintenance of the population of the species at a favourable conservation status in their natural range.

Natural Resources Wales will require a copy of the full planning consent, as well as an explanation of why there is a need to carry out the proposed work and what alternative solutions have been considered (e.g. other sites) and why they have been discounted. The alternative of retaining the roost within the development must be considered. The last point will depend on the possibility of implementing appropriate mitigation and on assurances that it can be and will be carried out and maintained and the results monitored. Natural Resources Wales aim to process applications within 40 working days, but in practice licences often take longer depending on the number of applications being processed at any one time. NRW do not currently make a charge for issuing a licence but this circumstance is likely to change in the future.

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