



Elite Ecology

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**The Dymock Arms,
Penley**



Preliminary Roost Assessment

July 2021



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Document Control			
Document Properties			
Organisation	Elite Ecology		
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Title	The Dymock Arms, Penley Preliminary Roost Assessment		
Version History			
Date	Version	Status	Description/Changes
04/07/2021	V1	Draft	First Draft
05/07/2021	V1	Final Report	Proof Read

0. Executive Summary

0.1 This report has been prepared at the request of Mr. David Evans (Architect). It relates to the potential presence of bats and birds at the proposed re-development site located at The Dymock Arms, A539, Penley, Wrexham, LL13 0LS (OS Grid Reference: SJ 41999 39696). To fulfil this brief, Elite Ecology undertook both a desktop study and a field survey.

0.2 Under the current proposals, the site is proposed to be re-developed.

0.3 Due to the amount of potential ingress/egress points and suitable roosting features, the building is of **high** bat roosting potential, with the potential to support both summer and winter roosts of bats. The structure has also been **confirmed** to support nesting birds, with the presence of one wren (*Troglodytes troglodytes*) nest. Therefore, three further bat activity surveys are required on the building.

0.4 Summary

Bat presence/absence

From the survey visit undertaken on the site, it can be concluded that The Dymock Arms, Penley is of **high** bat roosting potential for both summer and winter roosts. Therefore, further activity surveys are required to ascertain the roosts within the structure. Despite this, foraging and commuting bats are anticipated within the local landscape and their presence within the vicinity of the building can be assumed.

Bird presence/absence

From the survey visit undertaken on the site, it can be concluded that the surveyed building has one wren (*Troglodytes troglodytes*) nest. In addition to this, the surrounding landscape provides all of the necessary habitat elements that birds require, and their presence can be assumed.

Ecological value of building units

The ecological value of The Dymock Arms has been deemed as **high** to bats, with roosting features and anecdotal evidence present within. The ecological value of The Dymock Arms to birds has been deemed **high** due to the presence of one wren (*Troglodytes troglodytes*) nest within.

0.5 Recommendations

The recommendations for The Dymock Arms, Penley can be summarised as follows (please refer to **Section 5 Recommendations** for a more in-depth description):

- Undertake a minimum of three bat activity surveys on the building between May and September, with at least two in the optimal months of mid-May to August. Seven surveyors are required to adequately cover all elevations.
- Undertake a hibernation bat inspection between November and March.
- Incorporate compensatory bat features within the design of the scheme, as outlined in **Section 5**. This should include provisions for both crevice dwellers and void dwellers.
- Artificial lighting should be avoided where possible. If this is not possible, this should be sensorised for large bodies only and pointed downwards.
- No works on the building can be undertaken during the breeding bird season of March to August, inclusive. If this timescale cannot be achieved, an inspection by a suitably qualified ecologist no more than twenty-four hours prior to works commencing is required.
- Install at least one [Robin and Wren FSC Nest Box](#) at the completion of the works.
- **Optional Enhancement:** Incorporate a bat friendly planting scheme post development.
- **Optional Enhancement:** Install a variety of [bird boxes](#) around the site post development to enhance the site for the local bird populations.

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1. Introduction

1.1 Report rationale

This report has been prepared at the request of Mr. David Evans (Architect). It relates to the potential presence of bats and birds at the proposed re-development site located at The Dymock Arms, A539, Penley, Wrexham, LL13 0LS (OS Grid Reference: SJ 41999 39696). To fulfil this brief, Elite Ecology undertook both a desktop study and a field survey.

1.2 Site description

The site itself is situated within a rural setting on the outskirts of the village of Penley. On site, hard standing ground, ornamental shrub and scattered trees are situated in the immediate vicinity of the surveyed structure. There is one former public house building on site, which measures approximately 360m². Therefore, the site is considered to contain potential to support the local bat and bird populations by offering roosting/nesting, commuting and foraging opportunities.

Figure 1: An aerial photograph of the surveyed structures at The Dymock Arms, Penley (as shown by the red outline).



1.3 Proposed works

Under the current proposals, the site is proposed to be re-developed.

1.4 **Aims of surveys**

The aims of the surveys were to undertake an assessment of the building(s), vegetation and surrounding area to establish whether any bats and birds may be present and, if so, in what way they are using the site. The actions of the surveyors on the site and during the production of this report were conducted in accordance with Bat Conservation Trust (BCT) guidelines (3rd edition).

1.4.1 This survey effort considered the potential for all **bat and bird species (including barn owls)** onsite:

- To establish the possibility of bat roosts and bird nests being present at the proposed development site.
- To assess any roost/nest status (i.e. what type and numbers of individuals).
- To assess suitable food, resources and habitat requirements on site and in the local landscape.

1.4.2 The information will subsequently be used in conjunction with the knowledge of the proposed works at the site to determine the potential need for further survey effort, the impacts of the proposed scheme of works, to establish whether a Natural England Development Licence is required along with species-specific mitigation and compensation. This is done in order to keep any protected species at a favourable conservation status on site.

2. Survey Methodology

2.1 Desktop Survey Methodology

- 2.1.1 A variety of resources were independently consulted to assess the known local records within the nearby area and the importance of the site within the local landscape from an ecological perspective. The resources used were the Local Records Centre, naturalresources.wales, www.ordnancesurvey.co.uk, Google Maps, Google Earth and Bing Maps. A search of other relevant nature conservation information was made through the use of the Multi-Agency Geographic Information for the Countryside (MAGIC) database.
- 2.1.2 The local records centre was contacted to provide data on all bat and bird species within 2km of the proposed development site at this point. COFNOD were the relevant local records centre for this project.

2.2 Field Survey Methodology

2.2.1 Initial Site Survey

This is done by assessing the site by visually inspecting all building/s/structures and any trees/vegetation to be impacted by the proposed works. This is done to assess the resource availability for protected species on site and in the immediate area. Particular reference is made to:

- The presence or absence of bats and birds onsite.
- Any evidence of potential bat roosts and bird nests onsite.
- Whether any additional survey effort will be required.

During the initial survey, an internal and external inspection of the building(s) is undertaken to look for signs of bat activity. This is done in accordance with BCT guidelines for the assessment of building(s) and built structures.

2.2.2 External Inspection

This survey method is used to locate potential ingress and egress points around the structures that both bats and birds could use to gain access into the building. It also aims to identify any areas where cracks and crevices are present to be used as roosting/nesting features. This visual inspection is carried out in full daylight using binoculars, endoscopes, torches, and ladders. This will allow for the determination of the following information:

- The type of building(s) surveyed.
- The approximate age of building(s) surveyed.
- The construction type and materials used.
- The presence of potential roost features (e.g. missing roof tiles, raised ridge tiles, air vents, cracks and crevices within the mortar).
- The presence of suitable ingress and egress points (e.g. missing windows and doors, missing mortar, lifted tiles).
- The location of any anecdotal evidence for the presence of protected species (e.g. nests, droppings or food remains).

2.2.3 Internal Inspection

This survey method aims to locate and examine areas which potentially provide suitable environmental conditions for bats. This visual inspection was undertaken by using binoculars, endoscopes, torches, ladders, and bat detectors to inspect internal features of the building(s).

This will allow for the determination of the following information:

- The presence of warm areas, dark areas, joints, crevices, beams and cavities that could be used for roosting and nesting purposes by bats and birds.
- To locate possible bat roost and bird nest sites.
- To listen for social calling bats.
- To locate any evidence of bat and bird presence through the identification of live or dead specimens, grease marks, droppings, food remnants, urine stains and/or the characteristic smell of bats.

2.2.4 Building/Vegetation Classification

A building/vegetation classification will be assigned to each surveyed feature that is proposed to be impacted by the scheme of works. This classification is based on the features potential to support roosting bats. The rating is also influenced by the location of the structure(s) in the local landscape, along with the number of suitable alternative roosting features, the type of features present in the landscape and the surveyor's experience. For example:

A structure that has a high level of anthropogenic disturbance with limited opportunities for access by bats, that is also situated within an urbanised area with few or no mature trees, parkland, woodland or wetland would generally equate to having **negligible/low** potential.

Conversely, an older structure (e.g. pre 20th century or early 20th century) with multiple features suitable for use by bats that is close to optimal foraging habitat would equate to having **high** potential.

The amount of additional survey effort required for each feature will depend on its rating:

- **Negligible** – No further survey effort is required.
- **Low** – One further activity survey is required (structures only).
- **Moderate** – Two further activity surveys are required.
- **High** – Three further activity surveys are required.

2.2.5 Roost Categories

Any structures with evidence of bats will be further evaluated to assess which of the following roost categories may be present onsite:

➤ **Day Roost:**

A place where individual bats or small groups of males, rest or shelter during the daytime. These bats are rarely found at night at these sites.

➤ **Feeding Roost:**

A place where individual bats rest or feed during the night, but are rarely present in the day.

➤ **Hibernation Roost:**

A place where bats may be found either individually or together during the winter months. These roosts often have a constant cool temperature and high humidity.

➤ **Maternity Roost:**

A place where female bats give birth and raise their young to independence.

➤ **Mating Roost:**

A place where mating/copulation takes place between male and female bats. These can continue through the winter months.

➤ **Night Roost:**

A place where bats rest and/or shelter during the night, but will rarely be found here during the day. These can be used colonially or individually by the bats.

➤ **Satellite Roost:**

These are alternative roosting sites that are found within close proximity to the main nursery colony within the maternity roost. These are used throughout the breeding season by individual or small groups of female bats.

➤ **Swarming Site:**

A place where large numbers of bats come together during the latter summer months through until autumn. These sites are classed as being important mating areas.

➤ **Transitional/Occasional Roost:**

A place that is used by individuals or small groups of bats for a small period of time. These are used by the bats prior to hibernation and/or shortly after hibernation.

2.2.6 Bat Detector Survey (presence/absence survey)

If required, the object for this survey method is to detect any bats leaving or returning to their roost sites within the surveyed features. This is achieved by undertaking dusk and dawn activity surveys under the following protocol:

- Commencing the survey fifteen minutes before sunset (dusk survey) and two hours before sunrise (dawn survey).
- Listening for any social calls at potential roost sites using bat detectors.
- Standing at different survey points around the building(s) and/or vegetation using bat detectors to hear the bat echolocation.
- The survey will attempt to witness the first bats emerging (dusk) and the bats returning (dawn) to their roosts.
- Standing at different transect points at foraging/commuting areas around the site.
- Carrying out this survey methodology for up to two hours after sunset (dusk) and up to fifteen minutes after sunrise (dawn). This will cover the emergence and re-entry of the bats at the potential roost site, for some bat species.

- 2.2.7 In order to comply with the required legislation, the results from the surveys will be collated to establish whether a European Protected Species (EPS) development licence will be required. If required, project appropriate species-specific compensation and mitigation measures will be devised to ensure the species remains at a favourable conservation status at the impacted site.

2.3 Surveyors Information

- 2.3.1 The survey was undertaken by licensed bat ecologist/s, members of the Chartered Institute of Ecology & Environmental Management (CIEEM) and members of Elite Ecology staff:

Mr. Matthew Cotterill: BSc (Hons), Ecologist, Natural Resources Wales Bat Survey Licence Accredited Agent.

2.4 **Field surveys**

2.4.1 Site Surveys

Elite Ecology were not made aware of any previous site surveys.

2.4.2 Roost Surveys

The structure at The Dymock Arms, Penley was externally and internally inspected for the presence of bats and birds with the use of various types of equipment (including binoculars, torches, endoscopes and ladders) in full daylight. The following table outlines the environmental variables from the survey visits:

Environmental variables	PRA Survey of the Building – 9 th of June 2021. Daytime
Temp Start:	22°C
Temp Finish:	22°C
Humidity Start:	62%
Humidity Finish:	62%
Cloud Cover Start:	90%
Cloud Cover Finish:	90%
Wind Speed Average:	None
Precipitation:	None

3. Results

3.1 Desktop Survey Results

The ecological data search provided by COFNOD revealed multiple bat and bird species within the search radius of the structure at The Dymock Arms, Penley.

3.1.1 Bats:

The ecological data search revealed several bat records within the search radius. There were no UKBAP species recorded in the search. The non-BAP species recorded in the search were common pipistrelle (*Pipistrellus pipistrellus*) bats. In addition to these, there were a few records of unidentified bats (*Chiroptera* sp.), and unidentified pipistrelle (*Pipistrellus* sp.) specimens within the search radius.

The closest record to the site is of a common pipistrelle bat that was located approximately 123m to the south-east of the survey site.

3.1.2 Birds:

Within the ecological data set received by COFNOD, nine bird species were revealed. All records were given to a 1km grid reference, with the nearest records being of all species located approximately 537m to the south-west. These species are blue tit (*Cyanistes caeruleus*), collared dove (*Streptopelia decaocto*), great tit (*Parus major*), house sparrow (*Passer domesticus*), jackdaw (*Corvus monedula*), pied wagtail (*Motacilla alba*), starling (*Sturnus vulgaris*), swallow (*Hirundo rustica*) and wren (*Troglodytes troglodytes*).

Please note: Any records may not truly represent the current species on site. The maps provided by COFNOD showing the locations of the records obtained through the ecological data search can be found in **Appendix B**.

3.1.3 Designated sites

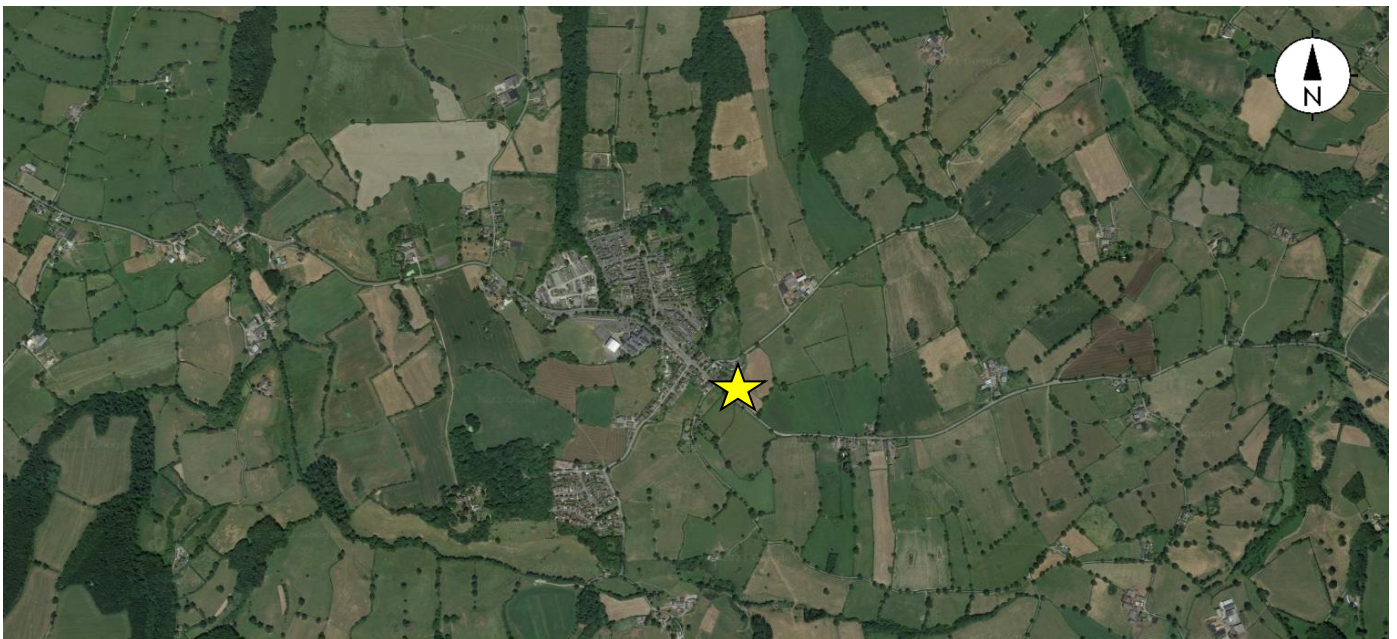
As the current proposals remain within the site boundary, it was not necessary to obtain any further information regarding both Statutory and Non-Statutory Nature Conservation Designations. This is due to the proposed works not altering any of the landscape surrounding the site.

3.2 **Field surveys**

3.2.1 Habitat description

The site itself is situated in a rural location, near the settlement of Penley. On site, one old public house structure is present, with ornamental shrub, hard standing ground, and scattered trees also present. Within the wider landscape, agricultural structures (such as barns), hedgerows, pastureland, arable land, residential dwellings (with their associated gardens), scattered trees, waterbodies and woodland are evident. Therefore, the habitats that are present in and around the site contains all of the elements that are considered to be critical in both bat and bird life cycles.

Figure 2: An aerial photograph of the surveyed site (yellow star) and some of the nearby habitats to The Dymock Arms, Penley.



3.2.2 Building survey

External Inspection:

The onsite structure is a former public house, that has been partially burnt out. However, a large portion of the building still stands.

The walls of the structure are built out of solid brick, with no cavity present, and have subsequently been rendered for appearance. A number of cracks and crevices are apparent within the walls, owing to the derelict nature of the structure. The windows and doors around the structure are boarded up to try to restrict access to the interior from trespassers.

The structure has a gabled slate tile roof, with areas of a slate lean-to and flat felt also apparent. There are numerous gaps underneath the tiling, including missing tiles, features that can facilitate access for bats and birds to the interior of the structure. There are areas of lifted ridge tiles, once again features that bats can utilise. Wooden fascia's are apparent around the building, with gaps around these features also noted. Lead flashing has also been noted in areas around the structure, with this lifted in areas. This does provide suitable roosting areas for bats.

No evidence of nesting birds was noted externally.

Internal Inspection:

The internal inspection revealed that the building has been burnt out, with the first floor collapsed in areas. The roof has also collapsed entirely in areas. However, sufficient areas remain that can facilitate roosting bats. A cellar is also present underneath the building.

From what remains of the roof, it is apparent that it is supported by timber beams, with bitumen felt as underlay. Cracks and crevices are apparent in the interior walls, features that can facilitate roosting bats. A number of cobwebs are apparent, but these are only extensive in certain areas, indicating that bats do not use the areas in which they are present. A number of butterfly wings are apparent, potential feeding remains from species such as brown long-eared (*Plecotus auritus*) bats. Bat droppings have also been identified scattered throughout the cellar, indicating that bats are accessing and roosting within this feature. Finally, one wren (*Troglodytes troglodytes*) nest is apparent internally.

3.2.3 Summary of the building inspection

Bats:

Due to the amount of potential ingress/egress points and suitable roosting features on the structures, the following classifications have been identified:

Building	Bat Roost Potential	Number of bat activity surveys required	Number of surveyors required for bat activity survey
The Dymock Arms	High/Confirmed	3	7

It has also been deemed that the building could support both summer and winter roosts, with further survey effort required to establish the utilisation of the structure by bats.

Birds:

The structure has been **confirmed** in supporting nesting birds, with the presence of one wren (*Troglodytes troglodytes*) nest.

Table 1: Low/Moderate/High potential building(s) survey recommendations. The full guidance can be found in the Bat Conservation Trust Good Practice Survey Guidelines. These guidelines are what all local authorities abide by.

Bat Conservation Trust

Table 7.3 Recommended minimum number of survey visits for presence/absence surveys to give confidence in a negative result for structures (also recommended for trees but unlikely to give confidence in a negative result).

Low roost suitability	Moderate roost suitability	High roost suitability
One survey visit. One dusk emergence or dawn re-entry survey ^a (structures). No further surveys required (trees).	Two separate survey visits. One dusk emergence and a separate dawn re-entry survey. ^b	Three separate survey visits. At least one dusk emergence and a separate dawn re-entry survey. The third visit could be either dusk or dawn. ^b

^a Structures that have been categorised as low potential can be problematic and the number of surveys required should be judged on a case-by-case basis (see Section 5.2.9). If there is a possibility that quiet calling, late-emerging species are present then a dawn survey may be more appropriate, providing weather conditions are suitable. In some cases, more than one survey may be needed, particularly where there are several buildings in this category.

^b Multiple survey visits should be spread out to sample as much of the recommended survey period (see Table 7.1) as possible; it is recommended that surveys are spaced at least two weeks apart, preferably more. A dawn survey immediately after a dusk one is considered only one visit.

3.2.4 DNA Results

A small sample of droppings were collected and sent for DNA analysis at EcoWarwicker, based at the University of Warwick. The results from this assessment revealed that the droppings belonged to brown long-eared (*Plectocus auritus*) bats. The correspondence showing the DNA sequences can be found in Appendix G at the end of this report.

Please be aware that results from DNA testing reflect the droppings collected. This may not be a true representation of all species using the surveyed site.

3.2.5 Activity surveys

No activity surveys were undertaken on the structure as Elite Ecology were only commissioned to undertake a Preliminary Roost Assessment (PRA) of the buildings.

4. Impact Assessment

4.1 Constraints

Constraints on:	Survey Information	Equipment Used
Constraint (Yes or No):	Yes	No
Explanation of Constraints:	Some floors within the surveyed structure were unsafe.	N/A
Action Taken:	Further activity surveys have been recommended for the structure, so any bat or bird presence will be subsequently identified.	N/A

4.2 Potential Impacts of the re-development

Under the current proposals, the site is proposed to be re-developed. The potential impacts have been identified as follows:

4.2.1 Designated sites

As the proposed works are due to remain within the site boundary, the presence of any designated sites nearby is not applicable to this project. This, therefore, means that any building works would be of no detriment to the surrounding habitats and landscape.

4.2.2 Bat Roosts

	Short-term Impacts: Disturbance	Long-term Impacts: Roost Modification	Long-term Impacts: Roost Loss
Classification:	High	High	High
Justification:	The anecdotal presence of bats suggests roosts are present within the property. Therefore, the impacts of the works are likely to be high.	The anecdotal presence of bats suggests roosts are present within the property. Therefore, the roost modification at the site will cause a high long-term impact.	The anecdotal presence of bats suggests roosts are present within the property. Therefore, the impacts of roost loss are likely to cause a high long-term impact.
Any further action:	Undertaking a minimum of three activity surveys during the bat activity survey season of May to September (inclusive). Following this, species-specific mitigation measures are required.	Undertaking a minimum of three activity surveys during the bat activity survey season of May to September (inclusive). Following this, species-specific mitigation measures are required.	Undertaking a minimum of three activity surveys during the bat activity survey season of May to September (inclusive). Following this, species-specific mitigation measures are required.

4.2.3 Bird Nests

Due to the presence of one wren (*Troglodytes troglodytes*) bird nest, the proposed scheme of works will be of a **high** effect to the local bird populations. Therefore, further mitigation and compensation measures are apparent (please see **Section 5.2**).

4.2.4 Foraging and commuting habitat

It is considered that the re-development of the site would have a **negligible** effect on potential foraging and commuting habitat. The site itself offers little foraging habitat, with the adjacent land containing better opportunities for bats and birds to use. Post development, all foraging and commuting habitats will be maintained, thus not negatively affecting the local landscape.

5. Recommendations

5.1 Bats

From the site survey, it has been established that The Dymock Arms, Penley has **high** bat roosting potential, with brown long-eared (*Plecotus auritus*) bat droppings identified. The building has also been identified to be of value to both summer and winter roosting bats.

Due to this, a minimum of three activity surveys are required between May and September, with at least two of these done in optimal survey months (mid-May to August). It has been deemed that seven surveyors are required to adequately cover all elevations of the structure.

To assess the building utilisation by bats during the winter months, an in-depth survey is required using torches, endoscopes and mirrors. This survey should be done during the period of November to March.

It would be prudent to incorporate a bat loft within the design of the works for the void dwellers, particularly if a maternity roost is identified during the summer surveys. This can be located in the converted building or another suitable structure on site.

The loft will need to measure a minimum of 2m (height) x 5m (width) x 5.5m (length) as per the latest mitigation guidelines. This does not need to be in the same structure. It has been confirmed that the client can facilitate this feature somewhere within the red line boundary. Access into this loft will be facilitated through [Bat Access Tiles](#) and purposely lifted ridge tiles. Once again, all bat compensation features will need to be seeded with droppings to facilitate the uptake of the new roosting features.

A number of additional measures should be included to ensure that the roost is of the highest value possible to the target species. These measures include incorporating two [Schwegler 2F bat boxes](#) should be placed along the ridge board. Finally, a ply-board lining should be introduced [approximately] half way up the roof (heading towards the apex) in order to provide further roosting opportunities for the bat species present.

All compensatory bat features must avoid direct artificial lighting and contain no modern breathable felt.

A sensitive artificial lighting plan is required for the site. An artificial lighting plan should be drawn up to illustrate the spill of light. This is to include the proposed security lighting on the structure as well as all street lighting. This document should then be approved by a licenced bat ecologist. Any lighting should avoid key habitat features, such as trees, hedgerows and linear landscapes. This lighting must include sensors that are triggered by large bodies only, to prevent moths or bats themselves setting them off. More information on bats and artificial lighting can be found within **Appendix C**.

A soft landscaping plan should incorporate some wildlife attracting species. The table below outlines species recommended by the Bat Conservation Trust, all of which could be incorporated into the site post development.

Flowers for borders	Trees, shrubs & climbers
Aubretia	Bramble
Candytuft	Buddleia
Cherry pie	Common alder
Corncockle	Dogrose
Corn marigold	Elder
Corn poppy	English oak
Echniacea	Gorse
English bluebell	Gelder rose
Evening primrose	Hawthorn
Field poppies	Hazel
Honesty	Honeysuckle (native)
Ice plant 'pink lady'	Hornbeam
Knapweed	Ivy
Mallow	Jasmine
Mexican aster	Pussy willow
Michaelmas daisy	Rowan
Night-scented stock	Silver birch
Ox-eye daisy	Herbs
Phacelia	Angelica
Poached egg plant	Bergamot
Primrose	Borage
Red campion	Coriander
Red valerian	English marigolds
Scabious	Fennel
St. John's Wort	Feverfew
Sweet William	Hyssop
Tobacco plant	Lavenders
Verbena	Lemon balm
Wallflowers	Marjoram
Wood forget-me-not	Rosemary
Yarrow	Sweet Cicely
	Thyme

5.2 Birds

The structure has been found to contain one wren (*Troglodytes troglodytes*) nest. The proposed works on the building should be undertaken outside of the bird breeding season (March to August, inclusive). If this time scale cannot be achieved, the building should be inspected for active bird nests by a suitably qualified ecologist no more than twenty-four hours prior to the removal process. If bird nests are found, no vegetation removal can take place in that area until the nests become inactive, with an exclusion zone set up to prevent any unlawful damage. This will be required to be signed off by a suitably qualified ecologist.

To compensate for the loss of these features, some compulsory nesting features are required to be installed. Post-development, at least one [Robin and Wren FSC Nest Box](#) should be installed at the completion of the works.

The site could also be enhanced for birds by installing a variety of [bird boxes](#) on site, such as an [Apex Bird Box](#) and an [Apex Robin Box](#).

6. Summary

6.1 Bat presence/absence

From the survey visit undertaken on the site, it can be concluded that The Dymock Arms, Penley is of **high** bat roosting potential for both summer and winter roosts. Therefore, further activity surveys are required to ascertain the roosts within the structure. Despite this, foraging and commuting bats are anticipated within the local landscape and their presence within the vicinity of the building can be assumed.

6.2 Bird presence/absence

From the survey visit undertaken on the site, it can be concluded that the surveyed building has one wren (*Troglodytes troglodytes*) nest. In addition to this, the surrounding landscape provides all of the necessary habitat elements that birds require, and their presence can be assumed.

6.3 Ecological value of building units

The ecological value of The Dymock Arms has been deemed as **high** to bats, with roosting features and anecdotal evidence present within.

The ecological value of The Dymock Arms to birds has been deemed **high** due to the presence of one wren (*Troglodytes troglodytes*) nest within.

6.4 Recommendations

The recommendations for The Dymock Arms, Penley can be summarised as follows (please refer to **Section 5 Recommendations** for a more in-depth description):

- Undertake a minimum of three bat activity surveys on the building between May and September, with at least two in the optimal months of mid-May to August. Seven surveyors are required to adequately cover all elevations.
- Undertake a hibernation bat inspection between November and March.
- Incorporate compensatory bat features within the design of the scheme, as outlined in **Section 5**. This should include provisions for both crevice dwellers and void dwellers.
- Artificial lighting should be avoided where possible. If this is not possible, this should be sensored for large bodies only and pointed downwards.
- No works on the building can be undertaken during the breeding bird season of March to August, inclusive. If this timescale cannot be achieved, an inspection by a suitably qualified ecologist no more than twenty-four hours prior to works commencing is required.
- Install at least one [Robin and Wren FSC Nest Box](#) at the completion of the works.
- **Optional Enhancement:** Incorporate a bat friendly planting scheme post development.
- **Optional Enhancement:** Install a variety of [bird boxes](#) around the site post development to enhance the site for the local bird populations.

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8. Appendices

Appendix A: Site Plans

Appendix B: Eco Data Map

Appendix C: Artificial Light and Bats

Appendix D: Photographic Records

Appendix E: The Annual Bat Year (BCT)

Appendix F: Legislation

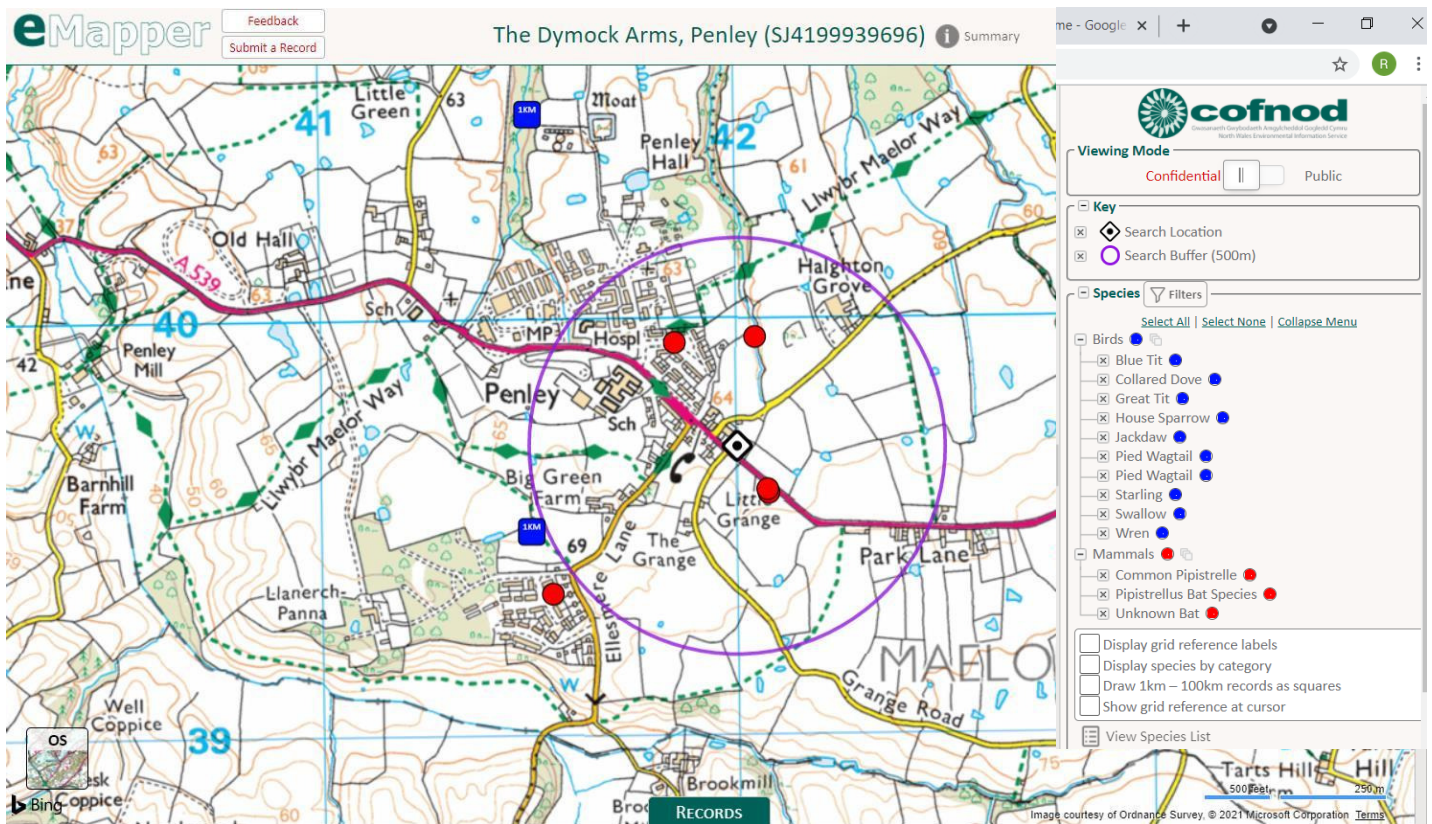
Appendix G: Bat DNA Results

Appendix A: Site Plans

No site plans have been provided to Elite Ecology at the production of this report.

Appendix B: The Ecological Data Search Map

This map has been produced by COFNOD. All rights pertaining to it belongs to them.



Appendix C: Artificial Lighting and Bats

Artificial lighting is known to affect bat's roosting and foraging behaviour, with lighting resulting in a range of impacts that includes roost desertion (BCT, 2009), delayed emergence of roosting bats (Downs et al., 2003), increased activity of some bat species and decreased activity by others (Stone et al., 2012).

An experimental approach using LED units, demonstrated that relatively fast-flying bat species, including the common pipistrelle, showed no significant impacts as a result of new artificial lighting, even when lighting was set at relatively high levels close to 50 lux.

In contrast, slow flying bats such as the myotis bats (*Myotis* spp.) showed sharp reductions in presence, even at low light levels of 3.6 lux (Stone et al., 2012).

Current recommendations for all bat species specifies that no bat roost should be directly illuminated.

Due to the impacts of lighting, mitigation and sensitive lighting design schemes are required for projects where bats are present. These should include bat friendly lighting plans that should aim to avoid lighting wherever possible. If this is not possible, then the minimisation of any lighting impacts is required by adopting the following measures:

➤ **To introduce lighting curfews or use of PIR sensors.**

Lighting curfews can be an effective way of avoiding impacts on bats. These curfews may involve either turning off lighting or dimming light units at specific times of the night, dimming units at key times of the year, providing the luminaire allows for this option via a control unit. Lighting to be triggered by PIR sensors can be expected to be illuminated only when required and for a low proportion of time.

➤ **To consider no lighting solutions where possible.**

Options such as white lining, good signage and LED cat's eyes should be considered as preferable. Reflective fittings may help make use of headlights to provide any necessary illumination in some areas.

➤ **To use only high pressure sodium or warm white LED lamps where possible.**

High pressure sodium and warm white LED lamps emit lower proportions of insect attracting UV light than mercury, metal halide lamps and white LED lighting. Generally, lamps should have a lower proportion of white or blue wavelengths, with a colour temperature <4200 kelvin recommended (BCT, 2014).

➤ **To minimise the spread of light.**

The light spread should be kept at or near horizontal to ensure that only the task area is lit. Flat cut-off lanterns or accessories should be used to shield or direct light to where it is required. Baffles, hoods, louvres and shields should be used where necessary to reduce light spill.

➤ **To consider the height of the lighting column.**

While downward facing bollard lighting is often preferable, it should be noted that a lower mounting height does not automatically reduce impacts to bats as bollard lighting can often be designed to provide up-lighting. Where bollard lighting is considered to be the most appropriate system, bollard spacing or unit density should be kept to a minimum and units should be fitted with the appropriate hoods/deflectors to reduce any up-lighting.

➤ **To avoid reflective surfaces below lights.**

The polarisation of light by shiny surfaces attracts insects increasing bat activity (BCT, 2012). Consequently, surface materials around lighting require consideration.

Appendix D: Photographic Records

Plate 1: A photograph of the front (south-western and south-eastern) of The Dymock Arms, Penley.



Plate 2: An image of the south-western and north-western elevations of the pub.



Plate 3: A photograph showing the rear (north-eastern) elevation of The Dymock Arms.



Plate 4: An image of a gap under the ridge tile.



Plate 5: A photograph of one of the numerous slipped tiles on the structure.



Plate 6: An image of some of the lifted lead flashing on the structure.



Plate 7: A photograph demonstrating the roof space of the property.



Appendix E: The Annual Bat Year (BCT)

January		February	
	Hibernating; using up fat reserves.		Still hibernating; few fat reserves left.
March		April	
	Some activity; occasional bat seen feeding.		Awake and feeding at night.
May		June	
	Females looking for nursery sites.		Young born, usually only one.
July		August	
	Young still suckling.		Young start catching insects; females leave nursery to find males.
September		October	
	Mating season begins; start building fat reserves for hibernation.		Search for suitable hibernation site.
November		December	
	Hibernation begins although still some activity in warm weather.		Hibernating.

Appendix F: Legislation and Policy

All species of bat are fully protected under a variety of domestic, European and international legislation and conventions. These include:

- Bern Convention (Appendix II)
- Bonn Convention (Appendix II)
- Conservation Regulations (Northern Ireland) 1995
- The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019
- Countryside Rights of Way Act 2000
- Eurobats Agreement
- Habitats Directive (Annexes IV and II)
- Habitats Regulations 1994 (as amended) Scotland
- NERC Act 2006
- Wildlife and Countryside Act 1981 (as amended)
- Wild Mammals Protection Act

In addition to this, some species have additional protection by being listed on the UK Biodiversity Action Plan (UKBAP).

The legislation afforded to bats makes it illegal to possess or control any live or dead specimens, to damage, destroy or obstruct access to any structure or place used for shelter, protection or breeding, and to intentionally disturb a bat while it is occupying a structure or place which it uses for that purpose.

All nesting birds are protected under the Wildlife and Countryside Act 1981 (as amended), which protects birds, nests, eggs and nestlings from harm. In addition to this, some rarer species, such as barn owls are afforded extra protection.

National Planning Policy Framework, Section 11:

The published framework in 2012 replaces the previous Planning Policy Statement 9.

Section 11: Conserving and enhancing the natural environment reaffirms the government's commitment to maintaining green belt protections and preventing urban sprawl, retains the protection of designated sites and preserves wildlife. It also aims to improve the quality of the natural environment and halt declines in species and habitats, protects and enhances biodiversity and promotes wildlife corridors.

Biodiversity 2020:

This sets out to halt overall biodiversity loss and support healthy well-functioning ecosystems by establishing coherent ecological networks, with more and better places for nature, to the benefit of wildlife and people. The government's policy is aimed at individuals, communities, local authorities, charities, business and government, which all have a role to play in delivering Biodiversity 2020.

Appendix G: Bat DNA Results

28 June 21

Re: Identification Results for Richard Millington, Elite Ecology

Job number 16708, received 11 June 2021

Sample labelled: The Dymock, Penley, Wrexham, LL13 0LS, 9/6/21

PCR amplification successful. DNA sequence:

ATGACCAACATTTCGAAAGTCCCACCCTCTCATAAAAAATTATCAAtGACTCATTTCATTGA
CTTACCTGCTCCCTCAAATATTTTCATCATGATGAAACTTTGGATCTCTTCTAGGCATT
GCC

Phylogenetic analysis identification: *Plecotus auritus*

Confirmed by maximum likelihood, maximum parsimony, bootstrap 100%.

Best regards,

Professor Robin Allaby

The results and conclusions in this report are based on an investigation of mtDNA sequence analysis. The results obtained have been reported with accuracy. The interpretation represents the most probable conclusion for the DNA sequence obtained rather than the sample provided given current levels of species data. It should be borne in mind that different circumstances might produce different results. Therefore, care must be taken with interpretation of the results especially if they are used as the basis for commercial recommendations.

Professor Robin Allaby

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Elite Ecology undertake all site surveys with reasonable skill, care and diligence, within the terms of the contract that has been agreed with the client and abiding by the Elite Ecology Terms and Conditions. The actions of the surveyors on site, and during the production of the report, were undertaken in accordance with the Code of Professional Conduct for the Chartered Institute of Ecology and Environmental Management.

The latest good practice guidelines put in place by Natural England or the relevant statutory conservation bodies have been followed by the surveyors on site. If those methodologies fail to identify a protected species during the survey efforts, no responsibility can be attributed to Elite Ecology. If any of these guidelines are adapted between the date(s) of the surveys being undertaken and the submission of this report, then Elite Ecology takes no responsibility for this.

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The survey results purport the current status of the site and its potential for protected species utilisation at the time of surveying. It should not be viewed as a complete list of the possible flora and fauna species that could be using the site at different times of the year.

Elite Ecology has been provided with full payment for this report and thus the product has been released to the client(s) for the purpose of their planning application. If any part of the report is lost or altered without the written permission of Elite Ecology, then the entire report becomes invalid. Due to the potential for continual change within the natural world, this report is valid for **2 years only** from the date of the last survey visit. If this report is submitted after the 2 year deadline, then a further updated inspection will be required to ascertain whether the site remains in the same condition as it was when initially inspected.

No reliance should be made on any such comments in relation to the structural integrity of the features located on the surveyed site. All information within the report is based solely on evidence that has been found on site during the service provided. No individual opinion or inference will be made other than that of the suitably qualified ecologist appointed to the project.