



Elite Ecology

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**Oakfields,
Isycoed**



Bat Activity Survey

July 2022



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0. Executive Summary

- 0.1** This report has been prepared at the request of Ms. Clare Callander (proprietor). It relates to the potential presence of bats and birds at the proposed re-development site located at Oakfields, Isycoed, Clwyd, LL13 9RY (Central OS Grid Reference: SJ 40089 50110). To fulfil this brief, Elite Ecology undertook both a desktop study and a field survey.
- 0.2** The surveyed residential dwelling is proposed to be extended.
- 0.3** Due to the amount of potential ingress/egress points and suitable roosting features, the buildings were deemed to be of the following bat roosting potential:
- **B1 = High**
 - **B2 = High**
 - **B3 = High**

Therefore, further bat activity surveys are required during the bat survey season (May to September, inclusive). These were subsequently undertaken on the 5th of May, the 19th of May, and the 17th of June 2022.

All of the buildings had **high** potential to support nesting birds.

0.4 Summary

Bat presence/absence

From the survey visit undertaken on the site, it can be concluded that B1 contains roosts of common pipistrelle (*Pipistrellus pipistrellus*) bats. B2 and B3 may also contain common pipistrelle roosts but the survey effort could not confirm their use of either building. In addition to this, foraging and commuting common pipistrelle (*Pipistrellus pipistrellus*) and soprano pipistrelle (*Pipistrellus pygmaeus*) bats were detected around the site. Brown long-eared (*Plecotus auritus*), noctule (*Nyctalus noctula*) and whiskered (*Myotis mystacinus*) bats were also detected around the site, but not seen.

Bird presence/absence

From the survey visit undertaken on the site, it can be concluded that the surveyed structures contain no nesting birds. However, the surrounding landscape provides all of the necessary habitat elements that birds require.

Ecological value of building units

The ecological value of the buildings B1 has been deemed as **high** to bats due to the presence of roosting common pipistrelle (*Pipistrellus pipistrellus*) bats. The ecological value of B2 and B3 to bats has been deemed to be **moderate** due possible bat roosts being present. The ecological value of the buildings to birds has been deemed **low** due to none of the structures supporting active nests.

0.5 **Recommendations**

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

- Apply for a Natural Resources Wales Development Licence to legally carry out the works.
- No re-development works can proceed on the structure until October when the bats have gone to their hibernation roosts.
- At the start of works, site supervision by a licenced bat ecologist in accordance with the Natural Resources Wales Development Licence will be required.
- Install bat compensatory features on the site in accordance with **Section 5 Recommendations**.
- No works can be undertaken during the bird breeding season of March to August (inclusive), unless the structure has been inspected by a suitably qualified ecologist no more than 24 hours prior to the commencement of works.
- **Optional Enhancement:** Install a variety of bird boxes around the site post development to enhance the site for the local bird populations. Some suitable examples are shown in **Section 5**.

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1. Introduction

1.1 Report rationale

This report has been prepared at the request of Ms. Clare Callander (proprietor). It relates to the potential presence of bats and birds at the proposed re-development site located at Oakfields, Isycoed, Clwyd, LL13 9RY (Central OS Grid Reference: SJ 40089 50110). 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 semi-rural setting within the local government community of Isycoed, Clwyd. Hard standing ground, amenity grassland and hedgerows are situated in the immediate vicinity of the building, as well as a small amount of other buildings (residential dwellings and their associated gardens) and arable and pastureland. This report relates to three buildings on a site which measures approximately 190m². 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 site at Oakfields, Isycoed (as shown by the red outline). The arbitrary building numbers referred to throughout this report are also illustrated.



1.3 **Proposed works**

The surveyed residential dwelling B1 is proposed to be extended.

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 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. North Wales Environmental information service (Cofnod) were the relevant local record 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 birds' 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, endoscope, 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, endoscope, 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 15 minutes before sunset (dusk survey) and 2 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 15 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 surveys were undertaken by licensed bat ecologist/s and members of the Chartered Institute of Ecology & Environmental Management (CIEEM) and Elite Ecology staff members:

Mr. Richard Millington, BSc (Hons), ACIEEM, CERPIT, Senior Ecologist, Natural Resources Wales Survey Licence.

Mr. Matthew Hodgson, Ecologist.

Mr. Matthew Cotterill: BSc [Hons], Ecologist.

Mr. Alex Fitzroy, BSc (Hons), Ecologist.

Mr. Matthew Priddey, Assistant Ecologist.

Miss. Ella Moore, BSc, Assistant Ecologist.

Miss. Livia Spadetto, MSc, Assistant Ecologist.

Mrs. Jackie Mansey: Assistant Ecologist.

Ms. Lucy Talbot: BSc (Hons), Assistant Ecologist.

Mr. Peter Royall: BSc (Hons), Assistant Ecologist.

Mr Simon Band: Assistant Ecologist.

Dr Mark Ashby: Assistant Ecologist.

2.4 Field surveys

- 2.4.1 Site Surveys

Elite Ecology were not made aware of any previous ecological site surveys. However, Elite Ecology have undertaken surveys in 2019, 2020 and 2021 – the results of which are included within this report.

Bat Activity Survey

2.4.2 Roost Surveys

The buildings at Oakfields, Isycoed were externally and internally inspected for the presence of bats with the use of various types of equipment (including binoculars, torches, endoscopes and ladders) in full daylight. Subsequent activity surveys use a variety of bat detectors that include Bat Box Duet, SSF Bat2, EchoMeter Touch and the EcoObs Batcorder. The following table outlines the environmental variables from the survey visits:

Environmental variables	PRA Survey of the Building and Activity Survey 1 – 30 th August 2019. Dusk	Activity Survey 2 – 24 th September 2020. Dusk	Activity Survey of the Buildings – 1 st of June 2021 Dusk	Activity Survey of the Buildings – 21 st of June 2021 Dawn
Temp Start:	17.5°C	11°C	20°C	10°C
Temp Finish:	16.9°C	10°C	18°C	9°C
Humidity Start:	86%	68%	58%	83%
Humidity Finish:	90%	75%	63%	91%
Cloud Cover Start:	100%	50%	30%	5%
Cloud Cover Finish:	100%	50%	70%	10%
Wind Speed Average:	Low	Still	Low	Low
Precipitation:	None	None	None	None

Environmental variables	Activity Survey of the Buildings – 5 th of May 2022 Dusk	Activity Survey of the Buildings – 19 th of May 2022 Dawn	Activity Survey of the Buildings – 17 th of June 2022 Dusk
Temp Start:	14°C	9°C	18°C
Temp Finish:	13°C	9°C	16°C
Humidity Start:	72%	94%	84%
Humidity Finish:	75%	95%	92%
Cloud Cover Start:	30%	10%	100%
Cloud Cover Finish:	45%	15%	100%
Wind Speed Average:	Low	Low	Moderate
Precipitation:	None	None	None

3. Results

3.1 Desktop Survey Results

3.1.1 Bats:

The ecological data search provided by Cofnod revealed no bat species within the 2km search radius of the structure at Oakfields, Isycoed.

3.1.2 Birds:

No ecological data search for birds was commissioned. All UK birds can be split into three categories of conservation importance (red, amber and green – please see [RSPB](#) for more information). This report represents an accurate representation of the structure's potential to support nesting birds.

3.1.3 Designated sites

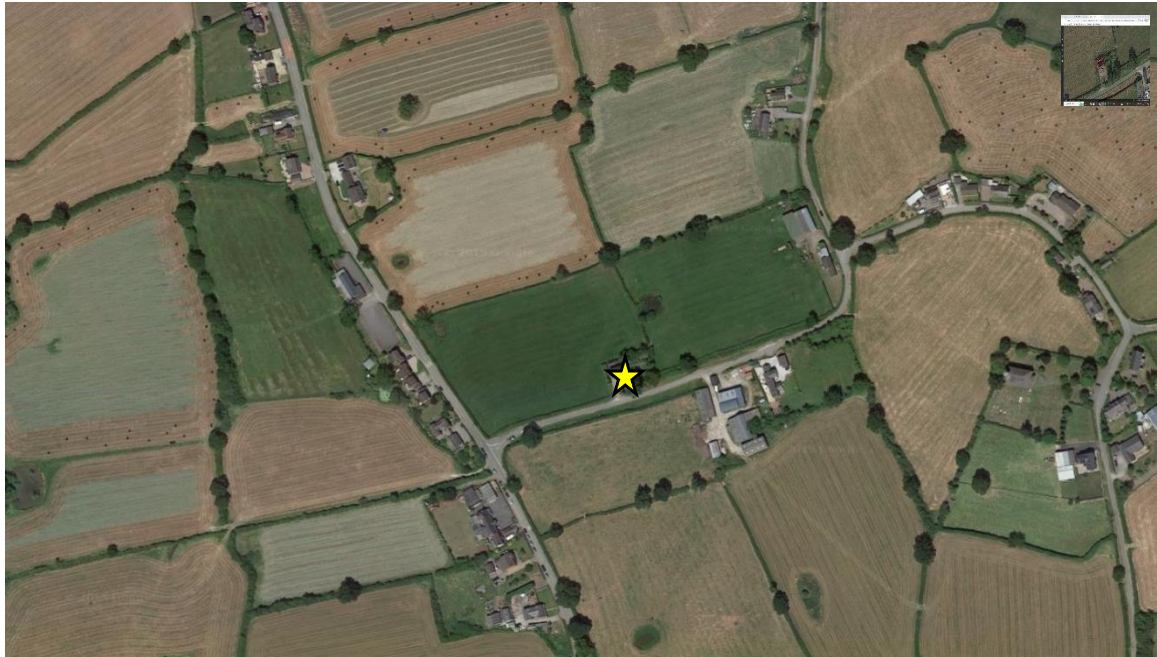
As the current proposal remains within the site boundary, it was not necessary to obtain any further information regarding both Statutory and Non-Statutory Nature Conservation Designations. This is due to the proposed works not altering any of the landscape surrounding the site.

3.2 Field surveys

3.2.1 Habitat description

The site itself is situated within a semi-rural setting within the local government community of Isycoed, Clwyd. Hard standing ground, amenity grassland and hedgerows are situated in the immediate vicinity of the building, as well as a small number of other buildings (residential dwellings and their associated gardens) and arable and pastureland. The wider landscape is comprised of arable land, scattered trees and hedgerows. There is a large waterbody located 600m to the west of the site, and the site offers good connectivity to the wider landscape. 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 Oakfields, Isycoed.



3.2.2 Building survey

Three buildings are located on the survey site. This is the residential dwelling (B1), the outbuilding (B2) and the garage (B3).

Storage Unit (B1)

External Inspection:

The main house has solid brick walls, with a hipped slate tile roof. The tiles are in good condition, although there are gaps present underneath the ridge tiles. There are gaps present around the eaves that could facilitate bat access into the building. The windows and doors around the property are intact and do not allow access to the interior for wildlife. No evidence of nesting birds was found externally.

Internal Inspection:

Internally, B1 is used for residential purposes but is currently unoccupied. There are timber beams present supporting the roof, with torching present beneath the tiles. A scattering of bat droppings were found within the loft, as well as some cobwebs. A small sample of bat droppings were collected and sent for DNA testing. No bird nests are present within this structure.

Outbuilding and Garage (B2 and B3)

External Inspection:

B2 and B3 have solid brick walls, with a pitched slate tile roof. There are missing windows which could be used by bats or birds to access the building. There are also gaps present in the walls and some lifted tiles are present, with gaps around the eaves. No bird nests were found on the exterior of this structure.

Internal Inspection:

B2 and B3 are primarily used for storage. There are timber beams supporting the roof, with remnants of torching present under the tiles. Within B2, evidence of one blackbird (*Turdus merula*) and two swallow (*Hirundo rustica*) nests were noted. A small number of bat droppings and insect remains were found within B3.

3.2.3 Summary of the building inspection

The buildings on site were given varying bat roosting potential based on the features they contain. The following table summarises the findings.

Building	Bat Roost Potential	Number of bat activity surveys required
B1	High	3
B2	High	3
B3	High	3

All of the buildings **high** potential to support nesting birds.

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 testing with EcoWarwicker at the University of Warwick. The results from this testing revealed whiskered (*Myotis mystacinus*) bats with a 100% bootstrap level.

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

The buildings on site have undergone seven activity surveys since 2019. One of these was undertaken on the 30th of August 2019, with a second on the 24th of September 2020. Two surveys were undertaken in 2021, on the 1st and 21st of June. The final surveys were undertaken in 2022, on the 5th and 19th of May, and the 17th of June.

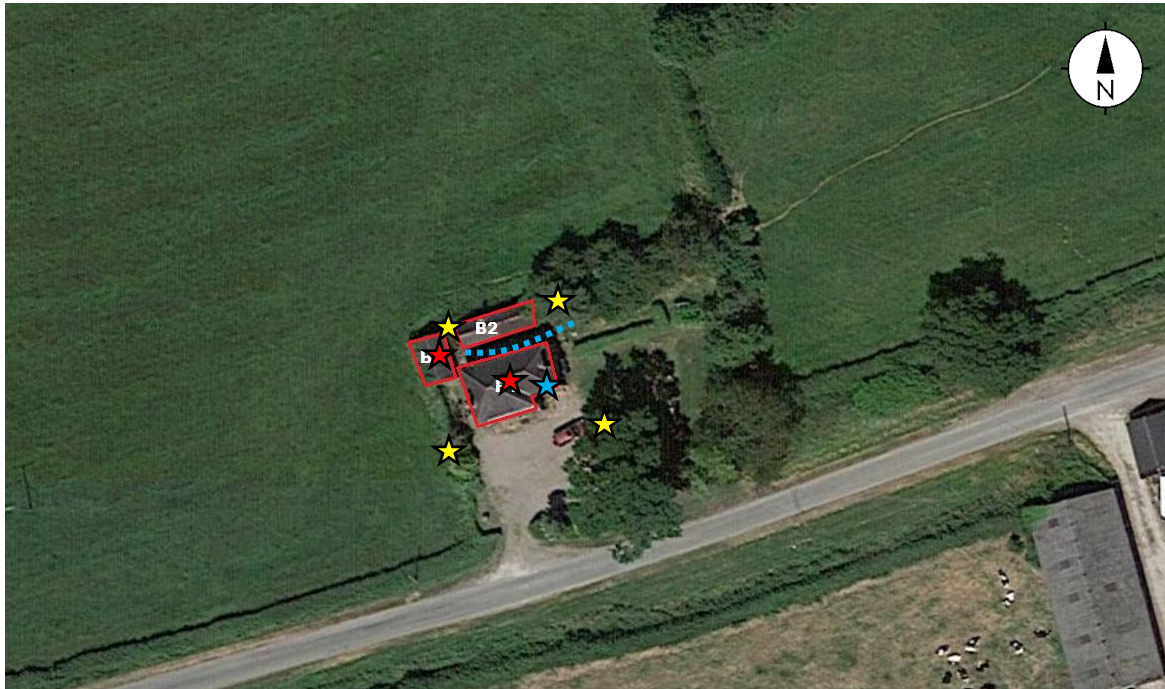
Activity Survey 1 (30th August 2019):

This survey was undertaken at dusk, with sunset being recorded at 20:07. There was a lot of common pipistrelle (*Pipistrellus pipistrellus*) activity, with most of it being focused in the southern garden. During this survey, two common pipistrelle (*Pipistrellus pipistrellus*) bats were seen emerging from the south-eastern corner of the main house.

Activity Survey 2 (24th September 2020):

The activity survey was undertaken at dusk on the 24th of September 2020, with sunset time recorded at 19:04. During the site visit, two whiskered (*Myotis mystacinus*) bats were witnessed emerging from the south-eastern end of the site. In addition to this, some brown-long eared (*Plecotus auritus*) and plenty of whiskered (*Myotis mystacinus*) bats were identified on site. Additionally, a noctule (*Nyctalus noctula*) bat was seen to forage in the vicinity of the buildings.

Figure 3: An aerial photograph of the surveyed site (red outline), the surveyor locations (yellow stars) and the identified bat flight paths (blue lines). The blue star illustrates the identified egress points identified. The red stars illustrates where the bat droppings were identified.



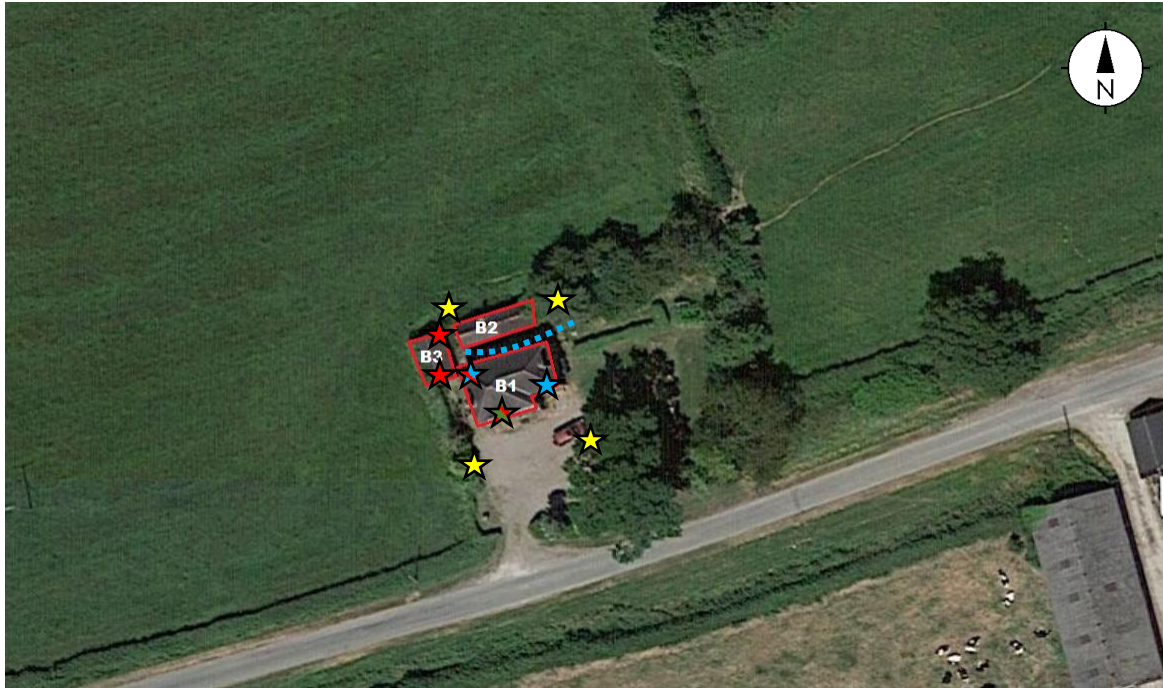
Activity Survey 3 (1st of June 2021):

This survey was undertaken at dusk, with sunset being recorded at 21:27. During this survey, one brown long-eared (*Plecotus auritus*), six common pipistrelle (*Pipistrellus pipistrellus*) bats were seen to emerge from B1, along with two whiskered (*Myotis mystacinus*) specimens. These species were also foraging and commuting around the site.

Activity Survey 4 (21st of June 2021):

The activity survey was undertaken at dawn, with sunrise time recorded at 04:45. During the site visit, one brown long-eared bat was seen to return to roost, along with three common pipistrelle bats. Finally, one whiskered specimen was seen to return to roost within B1.

Figure 4: An aerial photograph of the surveyed site (red outline), the surveyor locations (yellow stars) and the identified bat flight paths (blue lines). The red star illustrates the identified ingress/egress points of the common pipistrelle bats, with the blue stars being the ingress/egress points of the brown long-eared bats identified. The green stars illustrates where the whiskered bats were accessing the property.

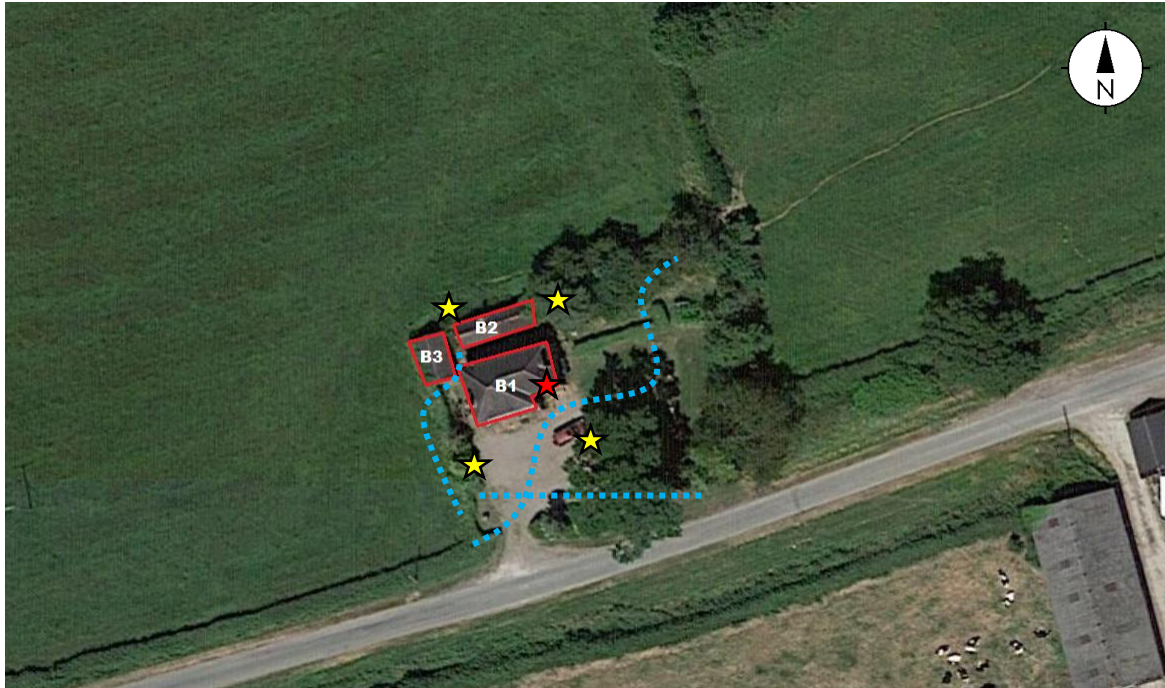


Activity Survey 5 (5th of May 2022):

The activity survey was undertaken at dusk, with sunset being recorded at 20:47. During this survey, one common pipistrelle (*Pipistrellus pipistrellus*) bat was identified emerging from under the eave of the south-eastern corner of B1 at 21:22. No bats were observed emerging from B2 and B3.

In addition to this, common pipistrelle bats were observed foraging and commuting through the site, with a noctule (*Nyctalus noctule*) identified commuting, heading west, and a brown long-eared bat (*Plecotus auritus*) was seen commuting southwards. Soprano pipistrelle (*Pipistrellus pygmaeus*) and whiskered (*Myotis mystacinus*) bats were also heard but not seen.

Figure 5: An aerial photograph of the surveyed site (red outline), the surveyor locations (yellow stars) and the identified bat flight paths (blue lines). The red star illustrates the identified ingress/egress points of the common pipistrelle bats, with the blue stars being the ingress/egress points of the brown long-eared bats identified. The green stars illustrates where the whiskered bats were accessing the property.

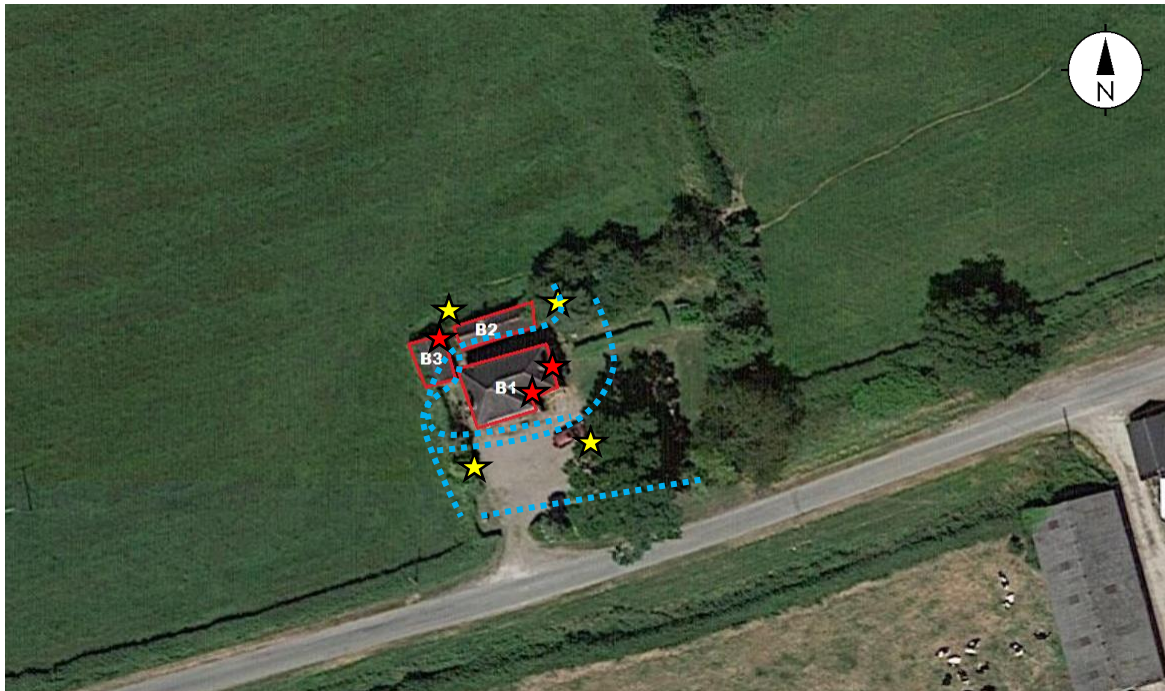


Activity Survey 6 (19th of May 2022):

The activity survey was undertaken at dawn, with sunrise being recorded at 05:06. During this survey, one common pipistrelle (*Pipistrellus pipistrellus*) was seen re-entering B1 at 03:58, below the eave on the eastern aspect. Another common pipistrelle bat was seen re-entering B1 at 04:19, below the eaves by a vent brick at the junction of the smaller south-facing wall, and the small east-facing wall. Two common pipistrelle (*Pipistrellus pipistrellus*) bats flying down into the space between B2 and B3, before returning to roost in B3 at the eastern aspect.

In addition to the re-entries recorded, foraging and commuting common pipistrelle (*Pipistrellus pipistrellus*) bats and a commuting soprano pipistrelle (*Pipistrellus pygmaeus*) were observed using the site. Finally, a whiskered bat (*Myotis mystacinus*) was heard but not seen.

Figure 6: An aerial photograph of the surveyed site (red outline), the surveyor locations (yellow stars) and the identified bat flight paths (blue lines). The red star illustrates the identified ingress/egress points of the common pipistrelle bats.

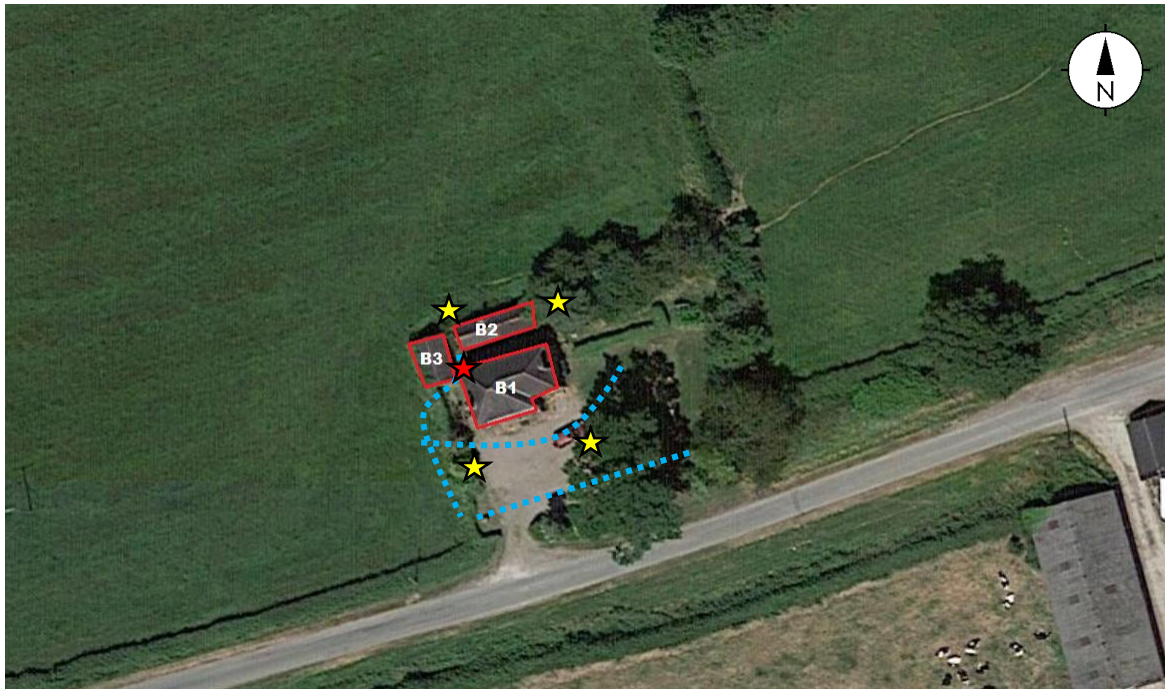


Activity Survey 7 (17th of June 2022):

The activity survey was undertaken at dusk, with sunset time being recorded at 21:40. At 22:04, one common pipistrelle (*Pipistrellus pipistrellus*) was seen emerging below the eaves, from the north-western corner of B1.

In addition to this emergence, commuting and foraging common pipistrelle (*Pipistrellus pipistrellus*) and soprano pipistrelle (*Pipistrellus pygmaeus*) bats were observed using the site. Finally, brown long-eared (*Plecotus auritus*) bats were also identified using the site, although were not visible to the survey team.

Figure 7: An aerial photograph of the surveyed site (red outline), the surveyor locations (yellow stars) and the identified bat flight paths (blue lines). The red star illustrates the identified ingress/egress points of the common pipistrelle bats.



Summary:

In summary, B1 is confirmed to contain roosting bats. The building supports day roosts of brown long-eared (*Plecotus auritus*), common pipistrelle (*Pipistrellus pipistrellus*) and whiskered (*Myotis mystacinus*) bats.

The building referred to as B3 contains a day roost of common pipistrelle (*Pipistrellus pipistrellus*) bats.

B2 contains no active bat roosts, although it is not improbable that some specimens could utilise the building at some point, due to the number of roosts present on site. Therefore, this building will need to be included within the mitigation licence for the site.

In addition to this, foraging and commuting common pipistrelle (*Pipistrellus pipistrellus*) and soprano pipistrelle (*Pipistrellus pygmaeus*) bats were detected around the site. Brown long-eared (*Plecotus auritus*), noctule (*Nyctalus noctula*) and whiskered (*Myotis mystacinus*) bats were also detected around the site, but not seen.

4. Impact Assessment

4.1 Constraints

Constraints on:	Survey Information	Equipment Used
Constraint (Yes or No):	No	No
Explanation of Constraints:	N/A	N/A
Action Taken:	N/A	N/A

4.2 Potential Impacts of the re-development

The surveyed residential dwelling is proposed to be extended. The potential impacts of these works 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:	Buildings B1 and B2 were found to support day roosts of brown long-eared (<i>Plecotus auritus</i>), common pipistrelle (<i>Pipistrellus pipistrellus</i>) and whiskered (<i>Myotis mystacinus</i>) bats.	Buildings B1 and B2 were found to support day roosts of brown long-eared (<i>Plecotus auritus</i>), common pipistrelle (<i>Pipistrellus pipistrellus</i>) and whiskered (<i>Myotis mystacinus</i>) bats.	Buildings B1 and B2 were found to support day roosts of brown long-eared (<i>Plecotus auritus</i>), common pipistrelle (<i>Pipistrellus pipistrellus</i>) and whiskered (<i>Myotis mystacinus</i>) bats.
Any further action:	Species-specific mitigation measures are required (please see Section 5 for more information).	Species-specific mitigation measures are required (please see Section 5 for more information).	Species-specific mitigation measures are required (please see Section 5 for more information).

4.2.3 Bird Nests

No birds were seen to be nesting in any of the surveyed buildings, therefore the impact to birds is **negligible**.

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 to use. Post development, all foraging and commuting habitats will be maintained, thus not negatively affecting the local landscape.

5. Recommendations

5.1 Bats:

5.1.1 Outline Mitigation and Compensation Strategy

Mitigation Licence

A Natural Resources Wales Mitigation Licence will need to be applied for to ensure that the works proceed legally.

Timings of the Works

Works on the structure should only take place in conditions that are deemed suitable for bat activity (temperature above 7°C and avoiding heavy rain). This will reduce any impacts on bats should they be found during the work.

Works

At the start of the proposed works, a licenced bat ecologist is required to be on site to conduct a toolbox talk prior to works commencing. On the morning prior to the commencement of the works, two [2F Schwegler Bat Box](#) per species identified is required to be installed on a nearby tree facing north.

The building will then be thoroughly inspected by a licenced bat ecologist (both externally and internally), through the use of an endoscope to check for any anecdotal presence of bats. This will check all cracks/crevices around the affected areas and around the tiles. A soft strip of the tiles will also be undertaken under the supervision of the licenced ecologist.

Compensation

To compensate for the presence of void dwelling bats within the loft, access into the new loft will be facilitated. This should either be through the retention of the currently used access points, or the incorporation of [Bat Access Tiles](#) and purposely lifted ridge tiles, the location of which are shown in Figure 4. Type 1F Bitumen felt will need to be used as underlay. The loft space will cover the entire structure and meet the measurements specified within the mitigation guidelines. This will be suitable for both species identified within the structure so far, and also accommodate any alterations during the summer 2021 survey.

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.

Figure 4: Annotated site plans for the location of the access points. The Bat Access Tiles are shown by the red markings, with the blue markings showing the location of the purposefully lifted ridge tiles. **Please note** – the annotations on this image are not to scale.



Proposed Front Elevation



Proposed Side Elevation



Post Development Maintenance

The bat compensatory features should be maintained indefinitely.

Post Development Monitoring

At the completion of the works, up to two bat emergence surveys of the compensatory features will be undertaken. These are required to be undertaken on years 2 and 4 following the completion of the works. The years and number of surveys may be altered if Natural Resources Wales deem necessary.

Reporting

A letter statement will be produced following each site visit to report actions taken and the survey findings.

Enhancements

The proposed enhancements for the site are to incorporate at least one [Eco Bat Boxes](#), [Integrated Eco Bat Boxes](#) or [Bat Access Tiles](#) on the redeveloped property. **Please be aware** that all bat features need to avoid artificial lighting and no modern breathable felt should be used.

The site can be enhanced by introducing a bat friendly planting scheme in the soft landscaping plan. 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	Guelder 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	Wild flowers for pond edges & marshy areas
Phacelia	Bog bean
Poached egg plant	Bugle
Primrose	Creeping Jenny
Red campion	Flag Iris
Red valerian	Hemp agrimony
Scabious	Lady's smock
St. John's Wort	Marsh mallow
Sweet William	Marsh marigold
Tobacco plant	Marsh woundwort
Verbena	Meadowsweet
Wallflowers	Purple loosestrife
Wood forget-me-not	Water avens
Yarrow	Wood forge-me-not
Herbs	Water mint
Angelica	
Bergamot	
Borage	
Coriander	
English marigolds	
Fennel	
Feverfew	
Hyssop	
Lavenders	
Lemon balm	
Marjoram	
Rosemary	
Sweet Cicely	
Thyme	

5.2 Birds:

Due to the presence of nesting birds, no works can be undertaken on the structures during the bird breeding season (March to August, inclusive). If this timescale cannot be achieved, the structures are required to be assessed by a suitably qualified ecologist no more than 24 hours prior to the commencement of works to confirm the presence or absence of active nests. If active nests are located, exclusion zones around the nest will be required until the chicks have fledged the nest.

To compensate for the loss of the bird nests, it is recommended that two [Large Bird Nest Boxes](#) are installed on the site post-development. For the swallow (*Hirundo rustica*) nests, it will be necessary to incorporate [eaves/ridge](#) overhangs or easily accessible loft spaces. This will give these specimens the necessary internal opportunities to continue to nest at the site. These features should be located in the southern section of the re-developed site. These should be enhanced with the inclusion of two [No.10 Schwegler Swallow Nest](#) boxes per feature.

In addition to this, a number of additional [bird boxes](#) could be installed around the site to enhance its value to the local bird populations.

6. Summary

6.1 Bat presence/absence

From the survey visit undertaken on the site, it can be concluded that B1 contains roosts of common pipistrelle (*Pipistrellus pipistrellus*) bats. B2 and B3 may also contain common pipistrelle roosts but the survey effort could not confirm their use of either building. In addition to this, foraging and commuting common pipistrelle (*Pipistrellus pipistrellus*) and soprano pipistrelle (*Pipistrellus pygmaeus*) bats were detected around the site. Brown long-eared (*Plecotus auritus*), noctule (*Nyctalus noctula*) and whiskered (*Myotis mystacinus*) bats were also detected around the site, but not seen.

6.2 Bird presence/absence

From the survey visit undertaken on the site, it can be concluded that the surveyed structures do not contain nesting birds. However, the surrounding landscape provides all of the necessary habitat elements that birds require.

6.3 Ecological value of building units

The ecological value of the buildings B1 has been deemed as **high** to bats due to the presence of roosting common pipistrelle (*Pipistrellus pipistrellus*) bats. The ecological value of B2 and B3 to bats has been deemed to be **moderate** due to possible bat roosts being present.

The ecological value of the buildings to birds has been deemed **low** due to none of the structures currently supporting nests.

6.4 Recommendations

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

- Apply for a Natural England Development Licence to legally carry out the works.
- No re-development works can proceed on the structure until October when the bats have gone to their hibernation roosts.
- At the start of works, site supervision by a licenced bat ecologist in accordance with the Natural England Development Licence will be required.
- Install bat compensatory features on the site in accordance with **Section 5 Recommendations**.
- No works can be undertaken during the bird breeding season of March to August (inclusive), unless the structure has been inspected by a suitably qualified ecologist no more than 24 hours prior to the commencement of works.
- **Optional Enhancement:** Install a variety of bird boxes around the site post development to enhance the site for the local bird populations. Some suitable examples are shown in **Section 5**.

7. References

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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



Appendix B: The Ecological Data Search Maps

No desktop data has been ordered at the production of this report.

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

Photographs can be provided upon request.

Appendix E: The Annual Bat Year (BCT)

A Year in the Life of a Bat			
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 15:

In early 2012, the National Planning Policy Framework (NPPF) replaced much previous planning policy guidance, including Planning Policy Statement 9: Biological and Geological Conservation. The government circular 06/05: Biodiversity and Geological Conservation - Statutory Obligations and Their Impact within the Planning System, which accompanied PPS9, still remains valid. A presumption towards sustainable development is at the heart of the NPPF. This presumption does not apply however where developments require appropriate assessment under the Birds or Habitats Directives. The latest National Planning Policy Framework was updated in February 2019, with the section in relation to conserving the natural environment being located within section 15.

Section 15, on conserving and enhancing the natural environment, sets out how the planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and, where possible, provide net gains in biodiversity. Opportunities to incorporate biodiversity gains into a development should be encouraged.

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



23 September 19

Re: Identification Results for Richard Millington, Elite Ecology

Job number 14558, received 09 September 2019

Sample labelled: Oakfields, Isycoed, Clwyd, LL13 9RY. 30/8/19. SJ 403 502.

PCR amplification successful. DNA sequence:

ATCTGATGTAGTGCGCATTATGACCAACATTTCGAAAGTCCCACCCCTTAGTAAAAATT
ATTAATAGCTCATTATCGACCTTCCTGCCCCATCAAATATCTC

Phylogenetic analysis identification: *Myotis mystacinus*

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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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.

Should any equipment be damaged or lost on site at the fault of the client(s), then Elite Ecology withholds the right to charge 100% above the current market value for that exact product or the nearest similar product.

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.

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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.