



Bat Emergence and Re-entry Surveys

St David's Cottage, Tainant, Penrycae, Wrexham, LL14 1UG

Suzanne Shaw

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Industry Guidelines and Standards

This report has been written with due consideration to:

- Chartered Institute of Ecology and Environmental Management (2017). Guidelines for Preliminary Ecological Appraisal. 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2017). Guidelines on Ecological Report Writing. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2020). Guidelines for Accessing, Using and Sharing Biodiversity Data in the UK. 2nd Edition. Chartered Institute of Ecology and Environmental Management, Winchester.
- British Standard 42020 (2013). Biodiversity – Code of Practice for Planning and Development.
- British Standard 8683:2021 (2021). Process for Designing and Implementing Biodiversity Net Gain.

Proportionality

The work involved in preparing and implementing all ecological surveys, impact assessments and measures for avoidance, mitigation, compensation and enhancement should be proportionate to the predicted degree of risk to biodiversity and to the nature and scale of the proposed development. Consequently, the decision-maker should only request supporting information and conservation measures that are relevant, necessary and material to the application in question. Similarly, the decision-maker and their consultees should ensure that any comments and advice made over an application are also proportionate.

This approach is enshrined in Government planning guidance, for example, paragraph 174 of the National Planning Policy Framework for England.

The desk studies and field surveys undertaken to provide a Preliminary Ecological Appraisal (PEA) might in some cases be all that is necessary.

(BS 42020, 2013)

Executive Summary

Arbtech Consulting Ltd was instructed by Suzanne Shaw to undertake Bat Emergence and Re-entry Surveys (BERS) at St David's Cottage, Tainant, Penycae, Wrexham, LL14 1UG (hereafter referred to as “the site”). The survey was required to inform a planning application for an extension to the main dwelling which will impact the existing roof structure as well as the removal of the roof on the garage (hereafter referred to as “the proposed development”).

The following bat roosts were identified at the site:

- One day roost of two common pipistrelle bats using different roost features was confirmed within B1

An EPSL application to Natural Resources Wales will be required to legally permit the proposed works. The EPSL application requires that all surveys have been undertaken within the most recent active bat season (May to September) and planning permission must have been granted and all relevant wildlife-related conditions have been discharged prior to submission. The EPSL will deal with any mitigation and compensation measures that will be required for the proposed development to comply with the standing advice and will be designed to reduce any impacts to an acceptably low level so as to maintain (or enhance) the Favourable Conservation Status (FCS) of the local bat population.

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1.0 Introduction and Context

1.1 Background

Arbtech Consulting Limited was instructed by Suzanne Shaw to undertake Bat Emergence and Re-entry Surveys (BERS) at St David's Cottage, Tainant, Penycae, Wrexham, LL14 1UG (hereafter referred to as “the site”). The survey was required to inform a planning application for an extension to the main dwelling which will impact the existing roof structure as well as the removal of the roof on the garage (hereafter referred to as “the proposed development”). A plan showing the proposed development will be provided in Appendix 1 when available.

The aim of the BERS was to determine the presence or likely absence of roosting bats and to characterise any roosts present. This has been undertaken with due consideration to the “Bat Surveys for Professional Ecologists —Good Practice Guidelines” publication (Collins, 2016).

The BERS have been informed by a Preliminary Roost Assessment (PRA) which was completed by Arbtech Consulting Limited on 21st September 2021 (Arbtech 2021). The survey results are summarised in Table 1 below.

Table 1: Results of the PRA and subsequent survey requirements

Feature	Survey conclusions (with justification)	Foreseen impacts	Recommendations
B1 Bats	The building is a confirmed roost as droppings were found internally in the loft space.	As the proposals include the removal of part of the existing roof structure and the addition of an extension, the roost will be destroyed. This could result in death or injury or disturbance of bats.	Three bat emergence and re-entry surveys are required during the active bat season (May – September) to characterise the roosts present. At least two of the surveys should be completed during the optimal survey period mid-May to August inclusive. Sub-optimal: early May and September. One of these surveys must be a dawn re-entry survey. Three surveyors are required to provide full coverage of the building.
B2 Bats	The building has “low habitat value” (Collins, 2016) for supporting roosting bats due to the presence of a small number of suitable external roosting features for crevice-dwelling bats.	As the proposals include the removal of part of the existing roof structure and the addition of an extension, any bat roosts present would be destroyed. This could result in death or injury or disturbance of bats.	One bat emergence or re-entry survey is required during the active bat season (May – September) to confirm presence or likely-absence of a bat roost in the building. The survey must be completed during the optimal survey period mid-May to August inclusive. Sub-optimal: early May and September. The survey can be either a dusk emergence or dawn re-entry survey. Two surveyors are required to provide full coverage of the building. If bat roosts are confirmed in the building two additional survey will be required to inform a European protected species mitigation Licence application to Natural England once planning permission has been granted. At least one of the additional surveys will need to be completed during the peak survey period.

1.2 Site Context

The site is located at National Grid Reference SJ 26957 46431 and has an area of approximately 0.1ha. There are two buildings within the site boundary both of which were surveyed as they will be affected by the proposed development.

A site location plan is provided in Appendix 2.

1.3 Scope of the Report

This report provides a description of the bat activity observed and recorded during BERS. The aim of the surveys was to determine the presence or likely absence of bats and to characterise any roosts present including species, number of individuals, number and location of roost access points, and to gain an understanding of how bats use the site. The report provides information on possible constraints to the proposed development as a result of bats and summarises the requirements for any mitigation proposals, including a European Protected Species Licence (EPSL), where appropriate, to achieve planning or other statutory consent and to comply with wildlife legislation.

To achieve this, the following steps have been taken:

- BERS of built structures has been undertaken to determine the presence or likely absence of bat roosts.
- An outline of potential impacts on any confirmed or unidentified roosts has been provided, based on the proposed development.
- Recommendations for mitigation have been made, along with advice on the requirements for a European Protected Species Licence (EPSL) application if appropriate.
- Opportunities for the enhancement of the site for roosting, foraging and commuting bats have been set out.

2.0 Methodology

2.1 BERS

Three BERS, comprising two dusk emergence and one re-entry surveys, were undertaken of B1, and one dusk emergence of B2, as per the recommendations from the Preliminary Roost Assessment. The surveys involved surveyors positioned around the buildings ensuring that all elevations and roof sections with suitable roosting features could be clearly observed. Particular attention was paid to the areas of the building identified as providing suitable access points to bat roosts.. Each surveyor was assigned an area of the building to observe for the duration of the survey.

Surveyors used heterodyne and frequency division bat detectors, and Echo Meter Touch detectors connected to iPads or Android tablets. Bat echolocation calls recorded during the surveys were analysed using Wildlife Acoustics sound analysis software Kaleidoscope V3.1.7 when required. The Echo Meter Touch includes an auto ID function for bat species, however this is not 100% accurate and further post-survey sound analysis is often required to confirm species that could not be identified by the auto ID software during the survey. Surveyors also used head torches, survey record sheets and pens/pencils for recording all activity observed during the surveys. Each surveyor was also provided with a handheld radio for communication between surveyors to assist with confirming ambiguous bat activity e.g. a bat emergence or a bat passing over the building.

An infrared recording kit was set up to monitor the building during the BERS. This comprised Nightfox Red Goggles set up on a tripod with two separate infrared lamps on a second tripod to provide additional illumination. Analysis of the footage was subsequently undertaken to detect roosting activity.

Dusk emergence surveys commenced 15 minutes before sunset and continued for 1½ - 2 hours after sunset – depending upon bat activity and surveyor visibility. Dawn re-entry surveys commenced 2 hours before sunrise and continued until 15 minutes after sunrise.

Surveys were completed during optimal weather conditions i.e., when temperatures were above 10°C, with no rain or strong winds (greater than 5m/s), as these adverse weather conditions can impact upon bat emergence and foraging behaviour. Periods of high moon illuminance (>80%) were also avoided insofar as possible as this can reduce bat activity.

2.2 Surveyors

The lead surveyor was Jon Roberts who was assisted by several surveyors, each with several years of bat survey experience. Three surveyors were used to provide sufficient cover of the B1 and two surveyors for B2 during each survey. The designated position of each surveyor during each survey is detailed in the tables in Section 3.1 below and shown on the plan in Appendix 3.

2.3 Limitations

These surveys follow best practice guidance to confirm presence or likely absence of roosting bats and where present, characterise the roost. However, this information is collected at finite dates and times, and provides an indication of the conditions on site only. The use of the buildings, and the site as a whole by bats, at all times cannot be established based on this information. Bats are highly mobile creatures that switch roosts regularly and therefore the usage of a site by bats can change over a short period of time.

There were no specific limitations to the survey.

3.0 Results and Evaluation

3.1 Survey Results

The results of each survey are provided in the tables below.

Table 2: Survey results (first visit)

Date		16/05/2022
Start and end times		20:50 – 22:35 Sunset: 21:05
Weather conditions		Start: Temp: 14°C Relative Humidity: 78% Cloud Cover: 90% Wind: 5mph Rain: None End: Temp: 12°C Relative Humidity: 81% Cloud Cover: 100% Wind: 5mph Rain: None
Surveyor (position) As shown in Appendix 3		Jon Roberts – Several years' conducting bat surveys (Position 1 – observing the north-eastern and south-eastern elevation and roof structure of B1) James Prendergast – Several years' conducting bat surveys (Position 2 – observing the north-western elevation and roof structure of B1) Hannah Taylor – Second season conducting bat surveys (Position 3 – observing the south-eastern and south-western elevation and roof structure of B1) Nick Smith – First year conducting bat surveys (Position 4 – observing the north-eastern and south-eastern elevation and roof structure of B2) Nicole Duggan – Second conducting bat surveys (Position 5 – observing the north-western and south-western elevation and roof structure of B2)
Building reference	Surveyor position	Notes/observations:
B1	1	No bats were emerging from or re-entering the building during the survey. The first bat activity recorded was a distant common pipistrelle pass at 21:40 which was heard on the detector but not seen. Further common pipistrelle passes were recorded during the rest of the survey, some of which were heard on the detector and some of which were sobered commuting across the site. Soprano pipistrelle passes were also recorded during the survey. The last bat activity recorded was a distant soprano pipistrelle pass at 22:12 which was heard on the detector but not seen.
B1	2	No bats were emerging from or re-entering the building during the survey. The first bat activity recorded was a commuting common pipistrelle pass at 21:54 observed flying south to north. Further common and soprano pipistrelle passes were recorded during the survey with the last activity recorded at 22:12

B1	3	<i>No bats were emerging from or re-entering the building during the survey.</i> The first bat activity recorded was a distant common pipistrelle pass at 21:40 which was heard on the detector but not seen. Further common and soprano pipistrelle passes were recorded during the survey with the last bat activity recorded at 22:20. Two noctule passes were recorded during the survey both of which were heard on the detector but not seen.
B2	4	<i>No bats were emerging from or re-entering the building during the survey.</i> The first bat activity recorded was a distant common pipistrelle pass at 21:33 which was heard on the detector but not seen. Further common and soprano passes were recorded during the survey with the last activity recorded at 22:20.
B2	5	<i>No bats were emerging from or re-entering the building during the survey.</i> The first bat activity recorded was a commuting soprano pipistrelle pass at 21:32 observed flying west to east. Further common and soprano pipistrelle passes were recorded during the survey with the last activity recorded at 22:20.

Table 3: Survey results (second visit)

Date		08/06/2022
Start and end times		21:20 – 23:05 Sunset: 21:35
Weather conditions		Start: Temp: 12°C Relative Humidity: 76% Cloud Cover: 80% Wind: 9mph Rain: None End: Temp: 11°C Relative Humidity: 78% Cloud Cover: 90% Wind: 9mph Rain: None
Surveyor (position) As shown in Appendix 3		Jon Roberts – Several years' conducting bat surveys (Position 1 – observing the north-eastern and south-eastern elevation and roof structure of B1) James Prendergast – Several years' conducting bat surveys (Position 2 – observing the north-western elevation and roof structure of B1) Andrew Cristinacce – Several years' conducting bat surveys (Position 3 – observing the south-eastern and south-western elevation and roof structure of B1)
Building reference	Surveyor position	Notes/observations:
B1	1	The first bat activity recorded was a distant pass by a common pipistrelle at 21:49 which was heard on the detector but not seen. <i>A common pipistrelle emerged from the eaves of the B1 on the southeastern elevation (see photo below).</i>  Further common and soprano pipistrelle passes were recorded across the site until 22:36.

		A noctule pass was recorded at 22:04.
B1	2	<i>No bats were seen emerging or re-entering the building during the survey.</i> The first bat activity recorded was a distant noctule pass at 22:05 which was heard on the detector but not seen. Common and soprano pipistrelle passes were recorded during the survey with the last activity recorded at 22:15.
B1	3	<i>The first activity recorded was a common pipistrelle emergence from the eaves of the gable-end on the south-western elevation of the building (see photo below).</i>  Common and soprano pipistrelle passes and feeding were recorded across the site from this time until 22:50. The last activity recorded was a distant common pipistrelle pass at 22:50.

Table 4: Survey results (third visit)

Date		29/06/2022
Start and end times		03:20 – 05:05 Sunrise: 04:49
Weather conditions		Start: Temp: 13°C Relative Humidity: 92% Cloud Cover: 100% Wind: 6mph Rain: None End: Temp: 12°C Relative Humidity: 93% Cloud Cover: 30% Wind: 4mph Rain: None
Surveyor (position) As shown in Appendix 3		Jon Roberts – Several years' conducting bat surveys (Position 1 – observing the north-eastern and south-eastern elevation and roof structure of B1) James Prendergast - Several years' conducting bat surveys (Position 2 – observing the north-western elevation and roof structure of B1) Erin Joyce – First year conducting bat surveys (Position 3 – observing the south-eastern and south-western elevation and roof structure of B1)
Building reference	Surveyor position	Notes/observations:
B1	1	The first bat activity recorded was a distant pass by a common pipistrelle at 03:38 which was heard on the detector but not seen. Further common and soprano pipistrelle passes were recorded across the site from this time until 04:34 <i>A common pipistrelle was observed re-entering B1 at 04:42 behind the bargeboard on the south-eastern elevation of B1 (see photo below).</i> 
B1	2	The first bat activity recorded was a distant common pipistrelle pass at 04:03 which was heard on the detector but not seen.

		Further common pipistrelle passes were recorded during the survey until 04:41 which was the last activity recorded. <i>A common pipistrelle was observed re-entering the building at 04:41 along the eaves on the south-eastern elevation of B1 at the same place a previous common pipistrelle emergence was observed (see photo below).</i>  A distant noctule pass was recorded at 04:09.
B1	3	<i>No bats were seen emerging or re-entering the building during the survey.</i> A distant common pipistrelle was recorded at 04:15 which was heard on the detector but not seen. No further bat activity was recorded.

4.0 Conclusions, Impacts and Recommendations

4.1 Informative Guidelines

A summary of the relevant legislation and planning policies is provided in Appendix 5.

Bats are protected under the Wildlife and Countryside Act and the Conservation of Habitats and Species Regulations 2017 (amended by the Conservation of Habitats and Species Regulations (amendment) (EU Exit) Regulations 2019).

When bat roosts are present, the bat surveys undertaken at a site facilitate the characterisation of the roost type. This allows for appropriate mitigation and compensation to be designed to inform a European Protected Species Licence (EPSL) application to Natural Resources Wales.

The definitions of bat roost types are provided below, taken from the *Bat Mitigation Guidelines* (English Nature, 2004) and the Bat Conservation Trust (BCT) publication *Bat Surveys for Professional Ecologists – Good Practice Guidelines* (Collins, 2016).

Day roost: a place where individual bats, or small groups of males, rest or shelter in the day but are rarely found by night in the summer.

Night roost: a place where bats rest or shelter in the night but are rarely found in the day. May be used by a single individual on occasion or it could be used regularly by the whole colony.

Feeding roost: a place where individual bats or a few individuals rest or feed during the night but are rarely present by day.

Transitional / occasional roost: used by a few individuals or occasionally small groups for generally short periods of time on waking from hibernation or in the period prior to hibernation.

Swarming site: where large numbers of males and females gather during late summer to autumn. Appear to be important mating sites

Mating sites: sites where mating takes place from later summer and can continue through winter.

Maternity roost: where female bats give birth and raise their young to independence.

Hibernation roost: where bats may be found individually or together during winter. They have a constant cool temperature and high humidity. Sites where hibernating bats have been confirmed by appropriate survey effort should be classed as 'hibernation confirmed'.

Satellite roost: an alternative roost found in close proximity to the main nursery colony used by a few individual breeding females to small groups of breeding females throughout the breeding season.

Other: roost types are interchangeable and not always easy to classify according to the nuances of certain species.

Bat Emergence and Re-entry Surveys

An EPSL **will be required** to enable the proposed development to be lawfully undertaken, whilst ensuring the favourable conservation status of the species concerned in their natural range. Appropriate justification for this assessment is provided in Table 5 of this report. The EPSL application requires that all surveys have been undertaken within the most recent active bat season and planning permission must have been granted and all relevant wildlife-related conditions have been discharged prior to submission.

Natural Resources Wales issues licences under Regulation 55 of the Habitats Regulations to allow you to work within the law. Licences are issued for specific purposes stated in the Regulations, if the following three tests are met:

- The purpose of the work meets one of those listed in the Habitats Regulations (see below);
- That there is no satisfactory alternative;
- That the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status (FCS) in their natural range

The Habitats Regulations permits licences to be issued for a specific set of purposes including:

- 1. *include preserving public health or public safety or other imperative reasons of over-riding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment;***
2. scientific and educational purposes,
3. ringing or marking
4. conserving wild animals

Development works fall under the first purpose and Natural Resources Wales issues bat mitigation licences for developments.

4.2 Evaluation

Taking the field survey results into account, Table 5 presents an evaluation of the value of the buildings for roosting bats in relation to the proposed development which will comprise extension to the main dwelling which will impact the existing roof structure as well as the removal of the roof on the garage.

Table 5: Evaluation of buildings/ on site for roosting bats

Feature	Survey conclusions (with justification)	Foreseen impacts	Recommendations <i>Measures required to adhere to guidance, legislation and planning policies.</i>	Enhancements <i>The Local Planning Authority has a duty to ask for enhancements under the PPW (2021) and Wrexham Unitary Development Plan (2005)</i>
B1	One day roost of two common pipistrelle bats using different roost features was confirmed within B1. roosts are considered to have low conservation value, in line with the Bat Mitigation Guidelines (English Nature, 2004).	The proposed development will result in the renovation of this building including the partial removal of the roof structure. This could result in destruction to the bat roosts and could cause disturbance, death or injury to bats.	An EPSL application to Natural Resources Wales will be required to legally permit the proposed works. The EPSL application requires that surveys have been undertaken within the most recent active bat season (May to September) and planning permission must have been granted and all relevant wildlife-related conditions have been discharged prior to submission. The EPSL will detail any mitigation and compensation measures that will be required for the proposed development to comply with the standing advice and will be designed to reduce any impacts to an acceptably low level so as to maintain (or enhance) the Favourable Conservation Status (FCS) of the local bat population. The EPSL will include the following measures: - The installation of one bat box at the site (one bat box per bat species) prior to works commencing to form a receptor site for any bats found during the works. This box may be installed on buildings or trees but must be in an undisturbed location and will need to be maintained in this location post-development. Bat boxes should be positioned 3-5m above ground level facing in a south or south-westerly direction with a clear flight path to and from the entrance, away from artificial light. See Appendix 4 for full details. - The provision of a toolbox talk to contractors, by the Named Ecologist or an Accredited Agent, to inform them of the presence of bat roosts.	The installation of a minimum of two bat boxes on mature trees around the site boundaries or on retained buildings will provide additional roosting habitat for bats e.g. 2F Schwegler Bat Box (trees) 1FF Schwegler Bat Box (trees) 2FN Schwegler Bat Box (trees) Beaumaris Bat Box (buildings) Vivara Pro Woodstone Bat Box (buildings) Or a similar alternative brand. Bat boxes should be positioned 3-5m above ground level facing in a south or south-westerly direction with a clear

			• A pre-commencement inspection of any roost features by the Named Ecologist or an Accredited Agent using a torch and an endoscope (this may be via ladders, scaffolding or a mobile elevated platform). • The removal of bat roost features by hand under the supervision of the Named Ecologist or an Accredited Agent (where it is not possible conclude absence of bats during the pre-commencement inspection). • Avoiding the use of unnecessary lighting, particularly at night, or implementing a low impact lighting strategy to avoid illumination of retained or newly created roosts or roost features. • Avoiding excessive noise or vibration disturbance e.g. from power tools or radios, within close proximity of retained or newly created roosts or roost features. • Bat access tiles will be added to the new roof structure to compensate for lost roosts.	flight path to and from the entrance, away from artificial light.
B2	A likely absence of roosting bats is confirmed from B2.	Bats are very unlikely to be roosting within this building and as such, there are not anticipated to be any impacts on bats in this location as a result of the proposed development.	None.	As above.

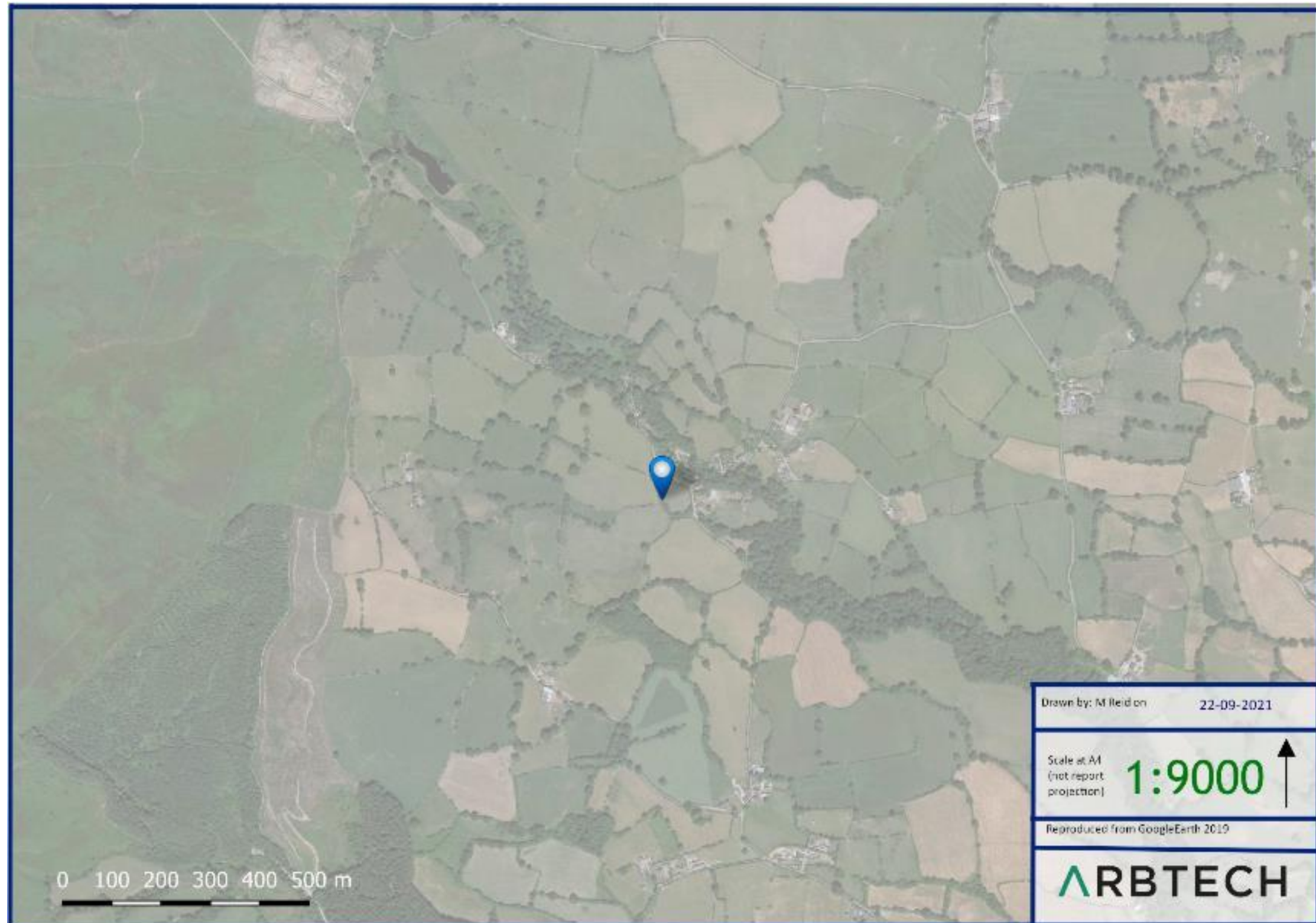
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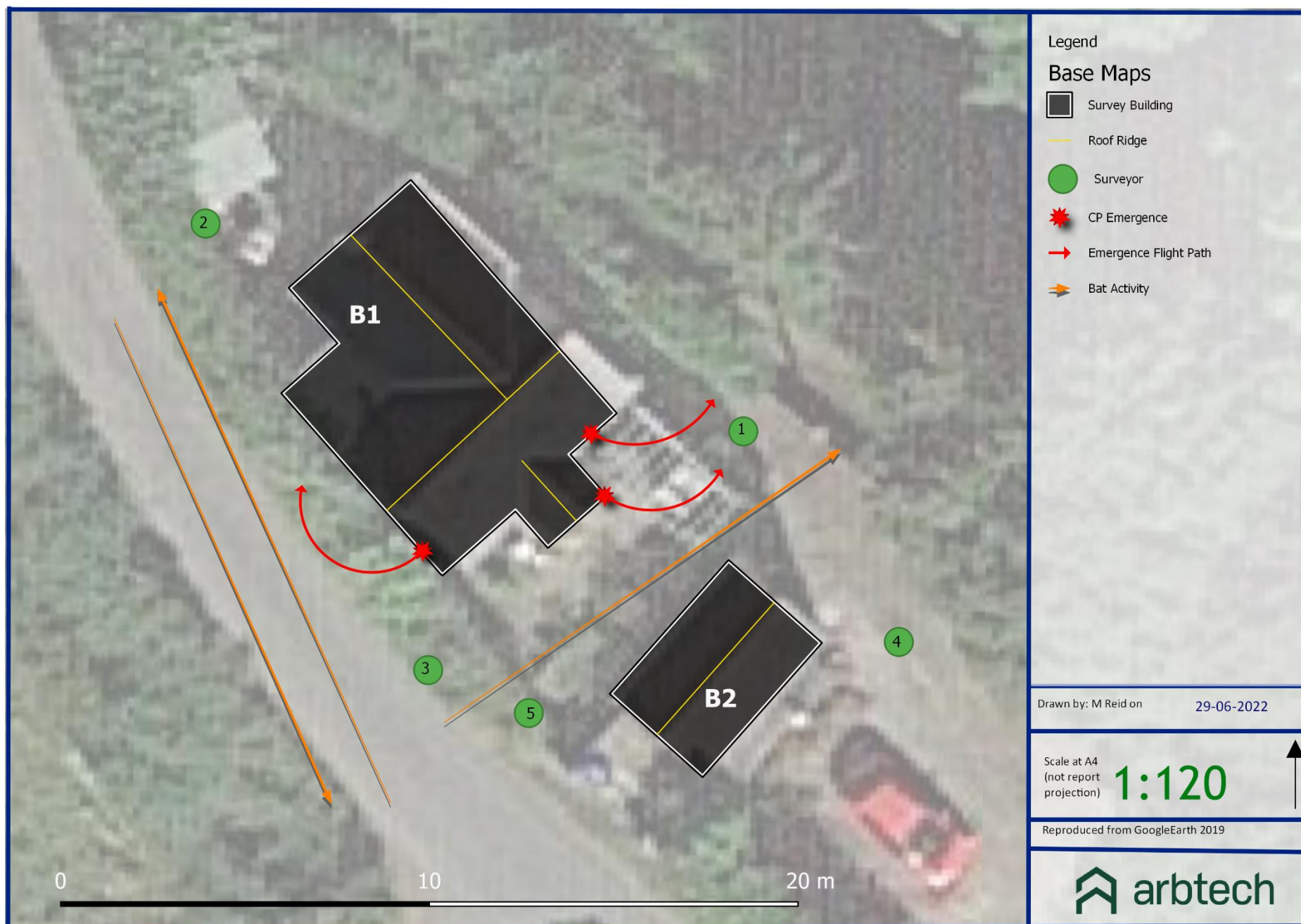
Appendix 1: Proposed Development Plan

None available.

Appendix 2: Site Location Plan



Appendix 3: Bat Survey Plan



Appendix 4: Bat Mitigation Plan

Works to the building will only proceed once the European Protection Species Licence (EPSL) from Natural Resource Wales has been granted and the associated method statement approved.

The following mitigation measures will be included in the EPSL application:

- A check of known roost locations will be carried out immediately prior to the commencement of the roof strip by the Licence Named Ecologist or Accredited Agent using ladders, torches and an endoscope immediately prior to the commencement of works.
- A bat box will be placed on a suitable tree or building before the roof stripping commences. See details of bat box below.
- The roof structure will be stripped by hand under ecological supervision by a suitably licenced ecologist.
- The supervision will include a bat toolbox talk prior to the commencement of the stripping of the roof.
- During the roof strip, each roof tile will be removed by hand, turned over and the underside will be checked for bats before stacking.
- Any bats found during the roof strip will be carefully captured by hand by the ecologist and transported to the pre-placed bat box by the Named Ecologist or Accredited Agent.
- Any bats accidentally harmed during the works will be carefully placed in a vivarium (see example of a bat vivarium below in figure 1) and passed to the local bat group carer until which time they can be re-released at the site.

Compensation for alternative roosting sites during works

To provide a suitable roosting site for any bats found during the roof strip, the following will be implemented before the roof strip commences:

- A Beaumaris Woodstone Bat Box will be erected on a mature tree along the north-western site boundary.
- This bat box will remain in place for 5 years.

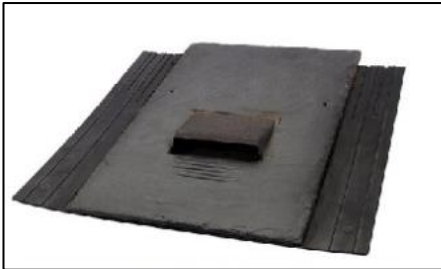
Access to the common pipistrelle day roosts located under roof tiles on the eastern and southern elevation roof structures will be re-instated by creating bat access tiles in the roof structure (See Bat Mitigation Plan below). Bat access tiles can be bought in a variety of roof tile styles to match the existing roof structure. Alternatively, they can be created from regular roof tiles using lime mortar or lead flashing. See Figure 2 below for examples of bat access tiles.

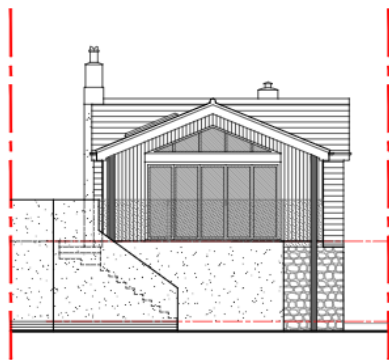
The bat-friendly lighting strategy outlined below will ensure that the new bat roosting provisions will be used by bats.

Figure 1: Example of a bat vivarium and a “Beaumaris WoodStone Bat Box”



Figure 2: Example of bat access roof tiles

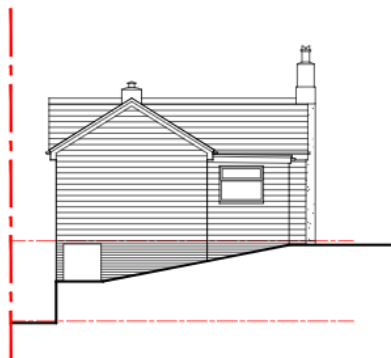




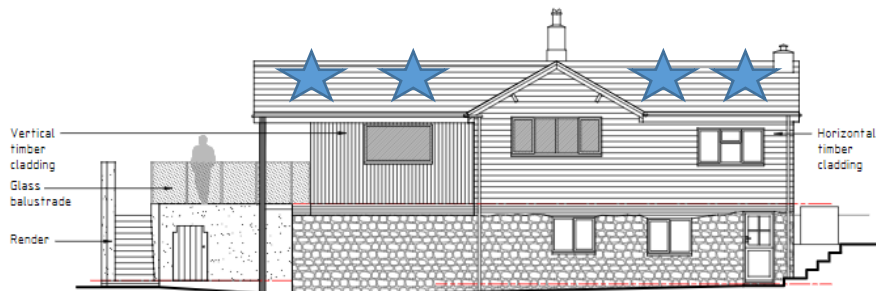
Front elevation 1:100



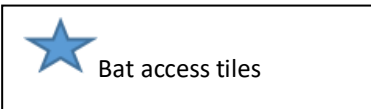
Side-01 elevation 1:100



Rear elevation 1:100



Side-02 elevation 1:100



Proposed

 HDS ARCHITECTURAL SERVICES HDS Architectural Services, The Foundry, 12 Yoke Street, Wrexham, LL14 1UG Tel: 01947 502220 www.hdsarchitectural.co.uk	Project: St David's Cottage, Tainant, Penrycae, Wrexham, LL14 1UG	Dwg No.: S02-PR04	Date: 18.07.21
	Title: Proposed Elevations	Scale (A3): 1:100	Revision:

Figure 3a: Bat mitigation plan (bat access tiles)

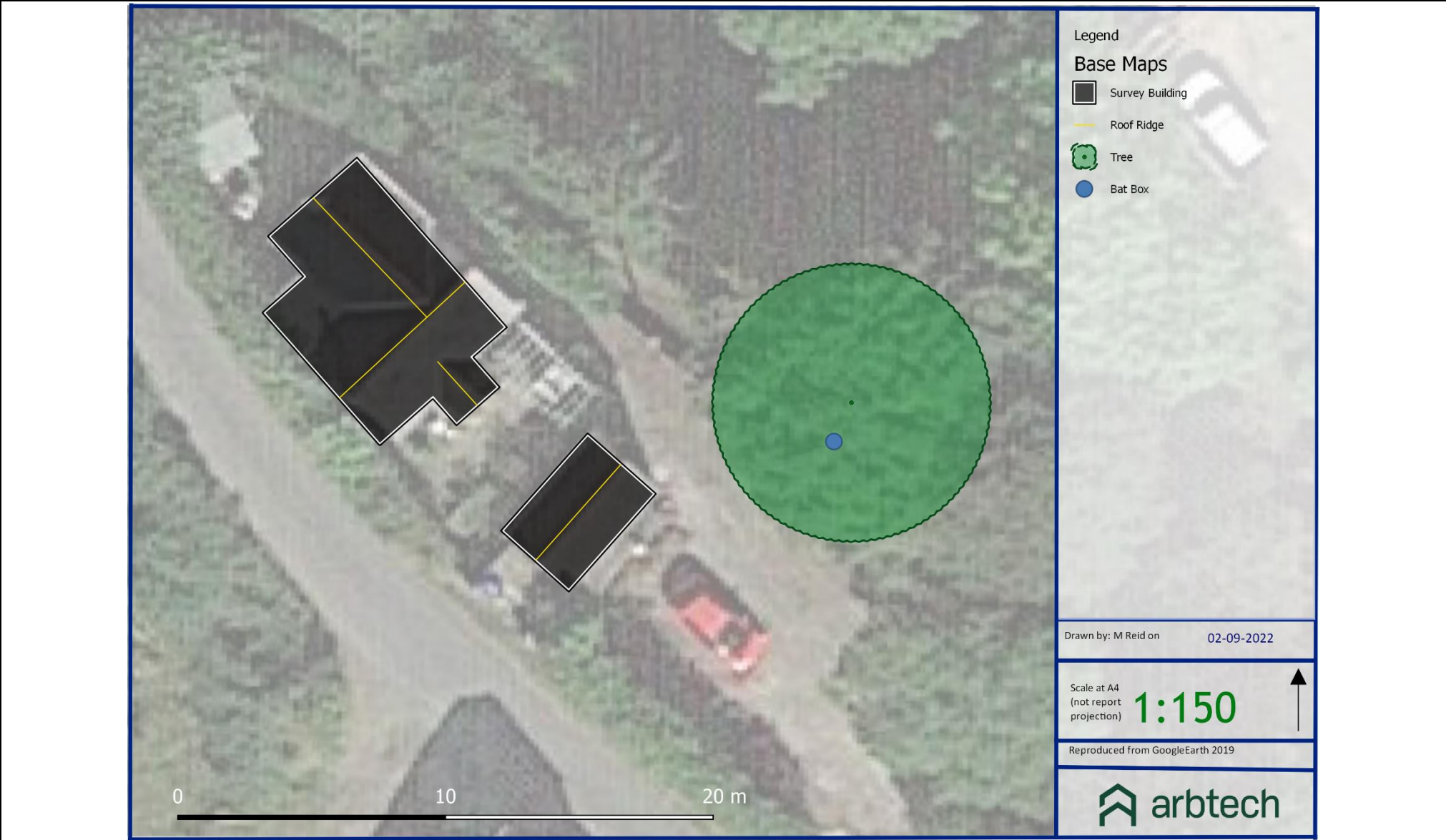


Figure 3b: Bat mitigation plan (bat box)

Lighting strategy

Lighting will be controlled across the developed site. Research into the effects of artificial lighting on bats has shown that it can impact upon bat emergence times and lead to a reduced foraging time. As bats are faithful to their roost sites and commuting routes, often returning to the same site for many years so the impact of lighting on emergence times and in turn reduced foraging times can ultimately result in the roosts and foraging habitat being abandoned with impacts on survival and fecundity. Research has shown that if lighting is increased by more than 1 lux (equivalent to full moonlight) this could have an adverse impact upon bat commuting routes (Stone, E.L. (ed.) [2013] Bats and Lighting: Overview of Current Evidence and Mitigation. Bats and Lighting Research Project, University of Bristol). Therefore, the new lighting will be strictly confined to the buildings and existing hard standing areas, thereby leaving dark corridors of not more than +1 lux, and preventing light spilling onto the site boundaries where the hedgerows are present. The following recommendations have also been made to prevent light spilling onto this area of the site, hence protecting the bat foraging areas and commuting routes:

- No lighting will be installed within or shining into the hedgerow boundaries (or bat boxes), thereby maintaining the existing dark areas within the developed site for bat commuting and roosting.
- Low impact lighting strategies will be adopted from the guidance outlined in the Bat Conservation Trust “Bats and Lighting” publications:
<https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/>

The lighting on the site will:

- Use narrow spectrum light sources to lower the range of species affected by lighting
- Use light sources that emit minimal ultra-violet light
- Avoid white and blue wavelengths of the light spectrum to reduce insect attraction and where white light sources are required in order to manage the blue shortwave length content they should be of a warm / neutral colour temperature <4,200 kelvin.
- Not use bare bulbs and any light pointing upwards. The spread of light will be kept in line with or below the horizontal.
- Light spill will be reduced via the use of low-level lighting used in conjunction with hoods, cowls, louvers and shields. Lights will also be directional to ensure that light is directed to the intended areas only.
- External lighting will be positioned below the eaves, be on PIR sensors that are sensitive to large objects only (so that they are not triggered by passing bats) and will be set to the shortest time duration to reduce the amount of time the lights are on.
- Wall lights and security lights will be ‘dimable’ and set to the lowest light intensity settings. There are several products on the market that allow the control of the light intensity and the duration that the lights are on. All lighting on the developed site will make use of the most up to date technology available.

These measures will ensure that existing bat foraging areas and commuting routes are protected from light from the developed site. It will also ensure the recurrent usage of the bat boxes that are to be placed around the site.

Appendix 5: Legislation and Planning Policy Related to Bats

LEGAL PROTECTION

All species of bat are fully protected under ***The Conservation of Habitats and Species Regulations 2017*** (as amended) through their inclusion on Schedule 2.

Regulation 43: Protection of certain wild animals - offences

(1) A person is guilty of an offence if they:

- (a) Deliberately captures, injures or kills any wild animal of a European protected species,
- (b) Deliberately disturbs wild animals of any such species,
- (c) Deliberately takes or destroys the eggs of such an animal, or
- (d) Damages or destroys a breeding site or resting place of such an animal,

(2) For the purposes of paragraph (1) (b), disturbance of animals includes in particular any disturbance which is likely—

- (a) To impair their ability:
 - (i) To survive, to breed or reproduce, or to rear or nurture their young; or
 - (ii) In the case of animals of a hibernating or migratory species, to hibernate or migrate; or
- (b) To affect significantly the local distribution or abundance of the species to which they belong.

Bats are also protected under the ***Wildlife and Countryside Act 1981*** (as amended) through their inclusion on Schedule 5. Under this Act, they are additionally protected from:

- Intentional or reckless disturbance (at any level)
- Intentional or reckless obstruction of access to any place of shelter or protection
- Selling, offering or exposing for sale, possession or transporting for purpose of sale

NATIONAL PLANNING POLICY (WALES)

Environment (Wales) Act 2016 and the Biodiversity Duty

The Environment (Wales) Act 2016 introduces a new biodiversity duty, which highlights biodiversity as an essential component of ecosystem resilience. This new duty replaces the biodiversity duty in the Natural Environment and Rural Communities Act 2006 (referred to as the NERC Act). Part 1 of the Act deals with Sustainable management of natural resources including Biodiversity and Resilience of Ecosystems Duty. The Environment Act enhances the current NERC Act duty to require all public authorities, when carrying out their functions in Wales, to seek to “maintain and enhance biodiversity” where it is within the proper exercise of their functions. In doing so, public authorities must also seek to “promote the resilience of ecosystems”. As under the NERC Act the new duty will apply to a range of public authorities such as the Welsh

Ministers, local authorities, public bodies and statutory undertakers. This ensures that biodiversity is an integral part of the decisions that public authorities take in relation to Wales. It also links biodiversity with the long-term health and functioning of our ecosystems, therefore helping to align the biodiversity duty with the framework for sustainable natural resource management provided in the Act.

Planning Policy Wales (2021)

Paragraph 6.4.3 of the document refers to Biodiversity and Ecological Networks and states:

The planning system has a key role to play in helping to reverse the decline in biodiversity and increasing the resilience of ecosystems, at various scales, by ensuring appropriate mechanisms are in place to both protect against loss and to secure enhancement. Addressing the consequences of climate change should be a central part of any measures to conserve biodiversity and the resilience of ecosystems. Information contained in SoNaRR, Area Statements and species records from Local Environmental Record Centres should be taken into account. Development plan strategies, policies and development proposals must consider the need to:

- support the conservation of biodiversity, in particular the conservation of wildlife and habitats;
- ensure action in Wales contributes to meeting international responsibilities and obligations for biodiversity and habitats;
- ensure statutorily and non-statutorily designated sites are properly protected and managed;
- safeguard protected and priority species and existing biodiversity assets from impacts which directly affect their nature conservation interests and compromise the resilience of ecological networks and the components which underpin them, such as water and soil, including peat; and
- secure enhancement of and improvements to ecosystem resilience by improving diversity, condition, extent and connectivity of ecological networks.

Biodiversity and Resilience of Ecosystems Duty (Section 6 Duty)

Planning authorities must seek to maintain and enhance biodiversity in the exercise of their functions. Planning authorities must also take account of and promote the resilience of ecosystems, in particular the following aspects:

- a) Diversity between and within ecosystems;
- b) The connections between and within ecosystems;
- c) The scale of ecosystems;
- d) The condition of ecosystems (including their structure and functioning); and
- e) The adaptability of ecosystems.

In fulfilling this duty, planning authorities must have regard to:

- a) The list of habitats of principal importance for Wales, published under Section 7 of the Environment (Wales) Act 2016;

- b) The State of Natural Resources Report (SoNaRR), published by NRW; and
- c) Any Area Statement that covers all or part of the area in which the authority exercises its functions.

Planning Authorities should also refer to up to date ecological survey information (where appropriate).

A proactive approach towards facilitating the delivery of biodiversity and resilience outcomes should be taken by all those participating in the planning process. In particular, planning authorities should demonstrate that they have sought to fulfil the duties and requirements of Section 6 of the Environment Act by taking all reasonable steps to maintain and enhance biodiversity in the exercise of their functions.

The broad framework for implementing the duty and building resilience through the planning system includes addressing:

- Diversity: to ensure mechanisms are in place to minimise further loss and that circumstances allow for species' populations to expand and recolonise their natural range (former range) or adapt to future change. This means development should provide a net benefit for biodiversity, and at the very least, with no significant loss of habitats or populations of species, locally or nationally and must provide a net benefit for biodiversity;
- Extent: to ensure mechanisms allow for the maintenance of existing assets and networks and promote the restoration of damaged, modified or potential habitat and the creation of new habitat. This means that planning choices should incorporate measures which seek the creation and restoration of green networks and linkages between habitats and maintaining and enhancing other green infrastructure features and networks;
- Condition: Ecosystems need to be in a healthy condition to function effectively, to deliver a range of important ecosystem services. Planning decisions should not compromise the condition of ecosystems. By taking an integrated approach to development, for example, which considers both direct and wider impacts and benefits it should be possible to make a positive contribution. Planning for the long term management of retained habitats is key to maintaining condition through for example, the use of planning obligations;
- Connectivity: to take opportunities to develop functional habitat and ecological networks within and between ecosystems and across landscapes, building on existing connectivity and quality and encouraging habitat creation, restoration and appropriate management. The opportunities could include enlarging habitat areas, developing buffers around designated sites or other biodiversity assets or corridors, including transport and river corridors, and the creation of 'stepping stones' which will strengthen the ability of habitats and ecological networks to adapt to change, including climate change; and
- Adaptability to change: primarily in the form of climate change, for both species (diversity) and ecosystems requires action to protect the extent, condition and connectivity of habitats, features and ecological networks. Development plans, planning proposals and applications which build on protecting designated sites and securing and enhancing green infrastructure will be key ways of addressing the attributes of ecosystems resilience identified in the Environment Act as well as facilitating social and economic resilience aspirations of the Well-being of Future Generations Act.

Good Practice Guide GPG 3 (October 2015) NRW Approach to Bats and Planning

As explained in Planning Policy Wales (Chapter 5 - Conserving and Improving Natural Heritage and the Coast), the presence of a European protected species is a material consideration for a development proposal that would be likely to result in disturbance or harm to the species or its breeding sites or resting places. Planning Policy Wales also explains that planning authorities should seek the advice of Natural Resources Wales for all planning applications likely to result in disturbance or harm to bats and should always consult them before granting permission. Local Planning Authorities address this by screening applications to identify when there is a reasonable likelihood that bats may be present and, therefore, when to require a bat survey and report that will confirm if bats are present and if they likely to be disturbed or harmed by the proposal. The overall requirement on Local Planning Authorities, Natural Resources Wales and developers is to avoid harm or disturbance to bats and their breeding sites and resting places, unless Natural Resources Wales has given a licence to allow the harm or disturbance. Natural Resources Wales may only give a licence if the requirements for derogation are met, including that disturbance or harm to individual bats (or to their breeding sites and resting places) would not be detrimental to the maintenance of the population.

LOCAL PLANNING POLICY***Wrexham Unitary Development Plan (2005)***

Accessed via: <https://www.wrexham.gov.uk/sites/default/files/2020-05/udp-statement.pdf>

Policy PS11

Encouragement will be given to proposals which improve the biodiversity value of sites and to the establishment of local nature reserves where the nature conservation and landscape interest of the land will be protected and enhanced.

Policy EC4

Development proposals should provide for the conservation and management of hedgerows, trees, orchards, woodland, wildlife and other natural landscape and water features, and include new planting in order to enhance the character of the landscape and townscape. Development which results in the loss or significant damage to valuable trees, important hedgerows or ancient woodland sites will not be permitted.

Policy EC6

Development either within or close to sites of biodiversity interest will only be permitted where it can be clearly demonstrated that the need for the development outweighs the need to safeguard the intrinsic nature conservation value of the site. Where such development is permitted, damage should be kept to a minimum, and compensatory measures should be provided. Measures to improve the biodiversity value of sites and enhance their natural conservation interest and landscape quality including the establishment of local nature reserves, will be supported.

EFFECT OF LEGISLATION AND POLICY ON DEVELOPMENT WORKS

A European Protected Species Licence (EPSL) issued by Natural Resources Wales will be required for works likely to affect a bat roost or for operations likely to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (e.g. survive, breed, rear young and hibernate). The licence is to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and their efficiency/success to be monitored. The legislation may also be interpreted such that, in certain circumstances, important foraging areas and/or commuting routes can be regarded as being afforded *de facto* protection, for example, where it can be proven that the continued usage of such areas is crucial to maintaining the integrity and long-term viability of a bat roost (Garland & Markham, 2008).

There are 17 species of bat breeding in Wales and Natural Resources Wales issues licences under Regulation 55 of the Habitats Regulations to allow you to work within the law.

Licences are issued for specific purposes stated in the Regulations, if the following three tests are met:

- The purpose of the work meets one of those listed in the Habitats Regulations (see below);
- That there is no satisfactory alternative;
- That the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status (FCS) in their natural range

The Habitats Regulations permits licences to be issued for a specific set of purposes including:

- include preserving public health or public safety or other imperative reasons of over-riding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment;
- scientific and educational purposes;
- ringing or marking; and,
- conserving wild animals.

Development works fall under the first purpose and Natural Resources Wales issues bat mitigation licences for developments.