



**Preliminary Roost Assessment (PRA) and
Dusk Emergence Bat Surveys**

Godre'r graig Primary School

Graig road, Godre'r graig,
Swansea, SA9 2NY

Surveys conducted June, July and August 2023



Lee Gwyther - Grounded Trees Ltd

Address: 4 Spionkop Road, Ynystawe, Swansea, SA6 5AN

Web Site: <http://www.groundedtrees.uk>

E-mail: info@groundedtrees.uk

Telephone: 01792 843 471

Mobile: 07970 274 758

Natural Resources Wales Bat Licence no: S092911/1

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EXECUTIVE SUMMARY

Executive Summary
Background/Introduction A preliminary roost assessment (PRA) bat survey and nesting bird survey was carried out of Gordre'r Graig Primary School, Graig Road, Godre'r Graig, Swansea, SA6 5AN. (Grid reference SN75172 06874). A PRA survey was carried out 13th of June 2023 to support an application for planning permission with the Neath and Port Talbot Council local planning authority (LPA).
Building Description The building is a stone faced complex primary school and is divided into an infants on the northeast section and juniors in the main building. The roof areas consist of 11 pitches of Bangor slate and three smaller flat roofs. There are two loft spaces, which are insulated with yellow fibreglass material at floor level with black bitumen roofing felt.
Site Description The site is in a rural village location surrounded by dwelling houses, gardens to the west, south and east. There are stands of trees, mixed shrub and heath located to the north. There is a tree line along the north boundary of the site including some large mature trees. Much of the site is overgrown vegetative garden with mixed largely non-native trees at the front of the site, deemed to provide moderate quality foraging for bats.
Proposed Development The proposed works involves demolition of all buildings and structures on the site on health and safety grounds. There are no plans to rebuild on the site.
PRA Survey Results No bat droppings were found during the internal and external daytime physical inspection of the building. Between 40-50 butterfly wings were found in the boiler room that also has external access through an open window and a louvre door. Bat access points and roosting areas were found in the form the two loft spaces, gaps under ridge tiles, lifted or broken slates, gaps in broken or missing stonework, gaps under and behind soffits and fascia's, gaps around window frames, gaps under lead flashing. The building was deemed to have high bat roosting suitability.
Dusk Survey Results Four dusk emergence surveys were carried out 13th June, 14th June, 20th July and 25th August 2023. Several bats were noted to emerge from the building during the surveys, to include myotis species, Brown long-eared (<i>Plecotus auritus</i>), common and soprano pipistrelle bats. Common pipistrelle (<i>Pipistrellus pipistrellus</i>) and soprano pipistrelle (<i>Pipistrellus pygmaeus</i>) bats were noted to commute and forage all over the site with particular interest to north south aligned ridges on the main building. Greater horse-shoe (<i>Rhinolophus ferrumequinum</i>) bats were briefly recorded on site during one survey.
Evidence of Nesting Birds Nesting birds were seen to be entering at several locations throughout the building
Recommendations The proposed works are deemed to have an impact on multiple bat species that are roosting in the building. A mitigation plan in the form of a purpose-built bat house will need

be implemented to accommodate all species present on site to provide an alternative roosting area.

EPS Licence

Several bat species were noted to be emerging from several locations at the property during the surveys. It will therefore be necessary to apply for a European Protected Species (EPS) mitigation licence for bats with Natural Resources Wales (NRW) before work on the property can begin.

1. INTRODUCTION

1.1 Background

Grounded Trees Ltd was commissioned to assess the bat roost potential of the building to inform planning prior to demolition.

A preliminary roost assessment (PRA) bat survey and nesting bird survey was carried out on Gordre'r Graig Primary School, Graig Road, Godre'r Graig, Swansea, SA6 5AN (Grid reference SN75172 06874). The PRA survey was carried out 13th of June 2023 to support an application for planning permission with the Neath and Port Talbot Council local planning authority (LPA).



Aerial view of school and surroundings



Northeast view

1.2 Building Description

The building is a stone faced complex primary school and is divided into an infant school on the northeast section and juniors school in the main building. The roof areas consist of 11 pitches of Bangor slate and three smaller flat roofs. There are two loft spaces, which are insulated with yellow fibreglass material at floor level with black roofing felt.



Northwest corner of building



North side of building



Southwest corner of building



View of juniors from southeast



Roof of infants school



Roof of juniors school



Infants school



Adjoining area between infants and juniors schools



South side of juniors



Northside infants



Loft space of infants



Loft space of infants



Infants building northeast coner



Boiler room north side of building



Boiler room southeast side where butterfly wing feeding remains were found



Boiler room southwest corner



Roof structure juniors school

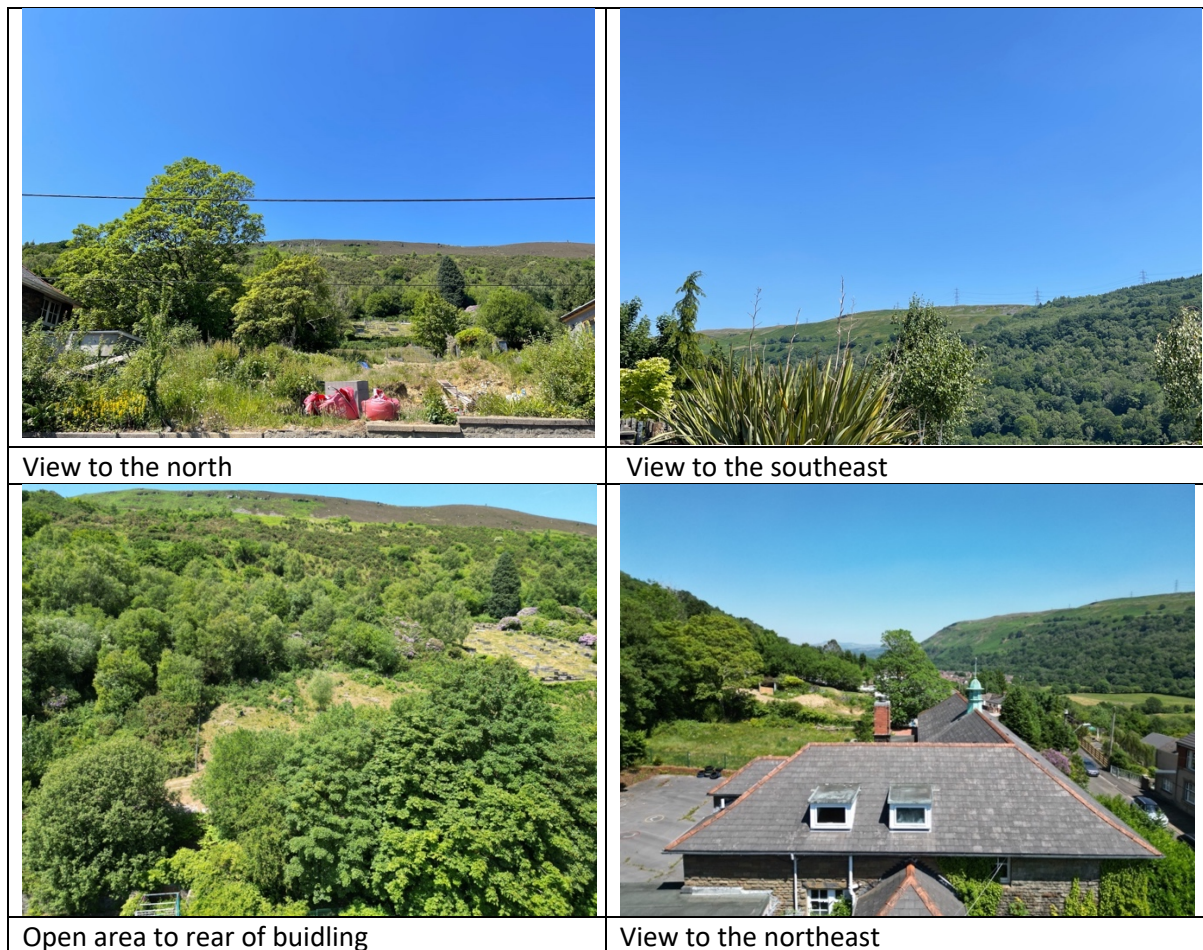


Roof structure juniors school

1.3 Site Description

The site is in a rural village location surrounded by dwelling houses, gardens to the west, south and east. There are stands of trees, mixed shrub and heath located to the north. There is a tree line along the north boundary of the site including some large mature trees. Much of the

site is overgrown vegetative garden with mixed largely non-native trees at the front of the site, deemed to provide moderate quality foraging for bats.



1.4 Proposed Development

The proposed works involves demolition of all buildings and structures on the site on health and safety grounds. There are no plans to build anything on the site other than a bat house as mitigation and compensation for the loss of bat roosts.

1.5 Aims of the Survey

A Preliminary Roost Assessment (PRA) bat survey was carried out with the aim to look for evidence of bats roosting and for structures within the building that may hold bat roosting potential. A search for evidence of nesting birds was also carried out as part of the survey. An assessment was then made to deem if the proposed works would affect any protected species.

1.6 General information About Bats and Buildings

External features of the building can potentially be used as roosting sites by e.g., Pipistrelle bat species. Pipistrelle bats are the most common bats out of the British species, and they are known to roost in buildings utilising areas such as cavity walls, soffits and fascia boards and

In-between tiles/slates and roofing felt. It is not practical to carry out a full physical examination of such building features, which is why the dusk emergence and dawn re-entry surveys will have to be carried out during summer months (May-September) when the bats are fully active. Access points as small as 1-2 centimetres can be used by bats to enter and exit their roosting sites. Most dwelling houses will have gaps of such size in roof areas as ventilation of the building would otherwise not be possible.

Internal areas such as loft spaces can potentially be utilised by bat species such as e.g. Brown Long-eared bats or Serotine bats, as these types of bats are known to commonly roost inside loft spaces. This can generally be discovered via droppings inside the loft, as the droppings will stay protected from weather elements.

Lesser and Greater horseshoe bats also roost inside buildings and generally require a larger sized opening for entry to the interior. They are more commonly found inside disused buildings and outbuildings.

1.7 Legislation Informing Planning Policy

In the UK all bat species and their roosts are protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species and Planning (various amendments) (England and Wales) Regulations 2017, until and unless superseded by The Conservation of Habitats and Species (Amendment) (EU Exit) ['CHSAEU'] Regulations 2019. In addition, nesting birds of all species (with certain exceptions) are protected by the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to damage, destroy or obstruct any place used by bats for breeding and shelter, disturb a bat, or kill, injure, or take a bat.

2. METHODOLOGY

The survey was carried out in accordance with the methods described in the Bat Conservation Trust (BCT) Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016).

2.1 Preliminary Roost Assessment (PRA) Methodology

A Preliminary Roost Assessment (PRA) bat survey of the building was carried out on the 13rd of June 2023 by Lee Gwyther under NRW bat licence ref: S092911/1, searching for evidence of bats in the form of live or dead bats, droppings, urine staining and insect feeding remains such as e.g. moth and butterfly wings.

A careful visual search using a LED Lenser L7 spotlight was conducted of the internal space. The tops of the storage items were checked for possible bat droppings, the floors spaces and window ledges and wall plates. The exterior of the building was surveyed for bat roosting potential and for droppings on walls and window ledges. The building was examined internally and externally using zoom photography to identify structural features that hold bat roosting potential. An endoscope (Ridgid CA-300) was used for spot checks of internal and external gaps. A telescopic ladder was used as necessary.

2.2 Bat Roosting Suitability

The bat roosting suitability was assessed according to the scale negligible, low, moderate or high. This assessment was used then to determine the number of surveys conducted for the buildings.

Negligible	This category describes buildings of a simple structure where all structural features can easily be surveyed with a visual inspection or investigated with an endoscope. For example, a simple wooden garden shed, a corrugated metal barn or precast concrete modular garage may fit this category.
Low	This category is used to describe simple structure buildings that have very few potential bat roosting features, but all areas cannot be surveyed visually or investigated with an endoscope.
Moderate	This category is used to describe buildings that have some potential to support roosting bats, but the structure is considered less than ideal in some way. Some but not all modern industrial and agricultural buildings may fit this category if they are of a simple structure with single layer walls and unlined roof areas
High	This category is used to describe buildings with multiple internal and external structural features suitable for roosting bats. Most brick built dwelling houses and timber or stone barns will be covered by this category. Features that may be used by bats are e.g. loft spaces and other smaller roof voids, gaps in-between clay tiles or slates and the roofing felt, cavities under ridge tiles, under soffits fascia and barge boards, by the brickwork of chimney stacks, under lead flashing, inside cavities of flat roofs, under wall hanging tiles, behind wooden cladding, inside cavity

	walls or other smaller wall cavities, in gaps and cracks of stone walls, and inside mortise and tenon joints of wooden structural beams
Confirmed	This category is used where evidence of bats such as live or dead bats or bat droppings are present, or where there are records of a bat roost in the building within the last 5 years

2.3 Dusk Emergence Survey Methodology

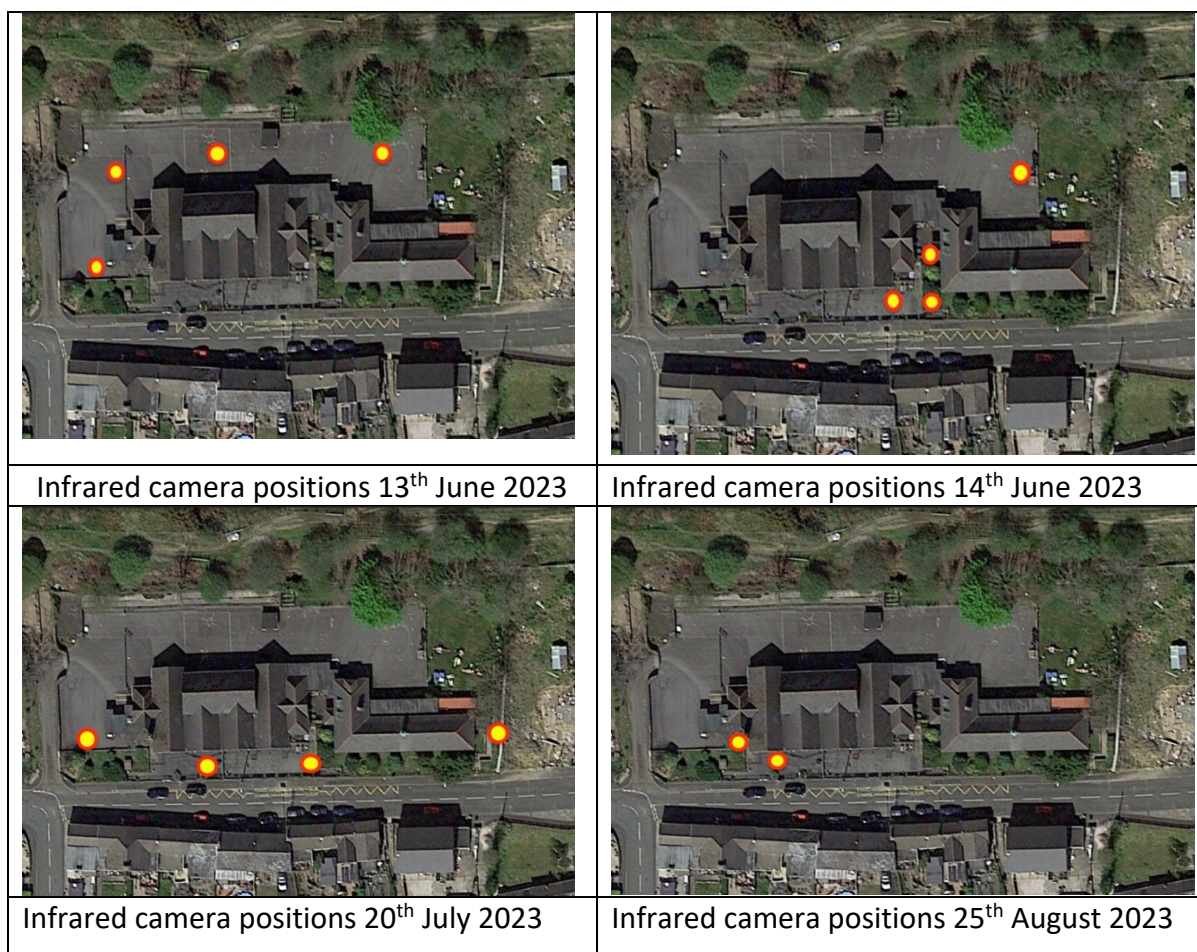
Two hour long emergence surveys of the building were conducted by five surveyors; Lee Gwyther, Greg Owens, Erika Dahlberg, Benjamin Livick and trainee Eleanor Hughes on the 13th of June, 14th of June and the 20th of July and by three surveyors; Tannith Stephens, Benjamin Livick and Erika Dahlberg on the 25th of August 2023.

All surveys started half an hour before the official sunset and were completed 1½ hour after sunset. The roof areas and other potential access points were observed, with bat passes recorded with Anabat Scout, Pettersson D1000X and Elekon Batlogger M bat detectors. A combination of patrolling and stationary surveying was used to be able to view the roof areas from different angles and to get as close as possible to all potential access points around the building. Brown long-eared bat calls can only be recorded from approximately 3-5 meters away. The building was observed to overview roof areas early in the evening while the surveyors move closer to the walls as it gets darker.

2.4 Infrared Video Camera Equipment

Night vision aids were used in adherence with interim professional guidance. The guidance justifies the use of dusk surveys only (no dawn re-entry surveys needed), providing that sufficient information has been gained from the surveys.

Infrared video cameras in the form of camcorders Canon XA10, Canon XA15, Panasonic HC-VX980, were used for filming. One Nightfox XB10, two Nightfox XB5 and three JC Illuminators were used as infrared illuminators of walls and roof areas. A Nightfox Corsac night vision scope with a zoom function and continuous video recording, was also used for spot checks of observations made. A passive Elekon Batlogger M bat detector was paired with one of the camcorders.



2.5 Weather Conditions

This information was taken from the BBC Weather online forecast for the area, to illustrate that the survey was conducted during suitable weather conditions. Bats are generally fully active in the months of May - September at temperatures above 10°C if there are favourable weather conditions such as no strong winds (less than 15 mph) and no overnight rain.

Table 1: Weather Conditions

Survey date	Sunset	Cloud cover	Start temp	End temp	Wind speed
13th June 2023	21:34	Clear Sky	21°C	21°C	8 mph
14 June 2023	21:35	Clear Sky	17°C	17°C	4 mph
20 th July 2023	21:22	Clear Sky	12°C	11°C	5 mph
25 th August 2023	20:18	6 Okta	14°C	11°C	4 mph

2.6 Sound Analysis

The bat sound recordings made during the surveys were analysed using BatSound 4 software (Pettersson Elektronik) and BatExplorer 2.1.7.0. software (Elekon). All bat call recordings were compared to published reference material such as British Bat Calls Jon Russ (2012) and to a private reference library of previous recordings made from known bat species.

2.7 Night Vision Video Recordings

The infrared video footage was reviewed on a PC screen at a later stage. A combination of using VLC Media Player for watching the footage in real time and use of MotionMeerkat software for motion detection was used to review the footage.

2.8 Survey for Nesting Birds

A visual search was undertaken for active bird nests, as well as any signs which might indicate either past or current nesting, such as inactive nests, bird skeletons, guano, birds carrying nesting material, food items, eggshells and calling chicks.

3. RESULTS

3.1 Protected sites

Statutory Protected Sites Designated for Bats Within 10km:

There are no SSSI or SAC designated for bats within the 10km radius of the site.

Other Protected Sites Within 2km:

There are thirteen parcels of restored ancient woodland, the nearest being 150m to the West. There are thirty parcels of ancient semi natural woodland, the nearest being 400m south-east. There are three parcels of ancient woodland of unknown category, the nearest being 800m south-east. There are two parcels of plantation on ancient woodland sites, the nearest being 800m south-east.

GWRHYD MEADOWS SSSI 1.5km North-West.

"An extensive series of meadows and wet pastures situated on the south-east facing slopes of Cefn Gwrhyd some 4 km north of Pontardawe. Lying at an altitude of 110 - 250 metres, the site drains towards the Cwm Du River (a minor tributary of the Tawe) and is the largest area of traditionally managed enclosed grassland within the former county of West Glamorgan and the old Llanelli Borough. Following the losses caused by agricultural improvement,

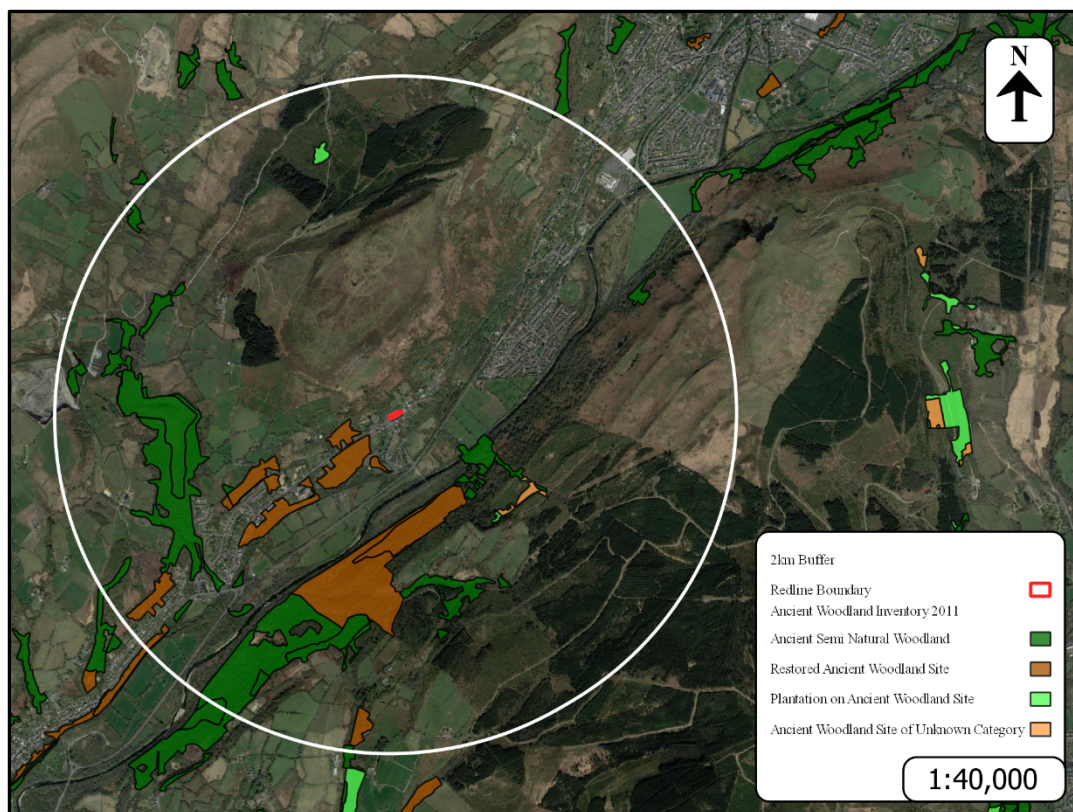
industrial development and afforestation, such sizeable tracts of grassland are now extremely uncommon within Wales as a whole."¹

COED CWM DU CILMAENGWYN Coed Cwm Du, Cilmaengwyn SSSI 1.15km south-west

"A predominantly sessile oak woodland with ash, elm, birch and alder locally abundant, and damp base rich flush area typical of such situations in the coalfield. Poorly drained wet meadows along the upper fringes of western slopes of the valley support stands of *Osumunda regalis*."²

CILYBEBYLL SSSI 1.3km South

"Cilybebyll is of special interest for its species-rich grasslands and wet pastures, which are host to several uncommon plant species. Such vegetation is now increasingly scarce in the Welsh lowlands, most having been lost to agricultural improvement."³

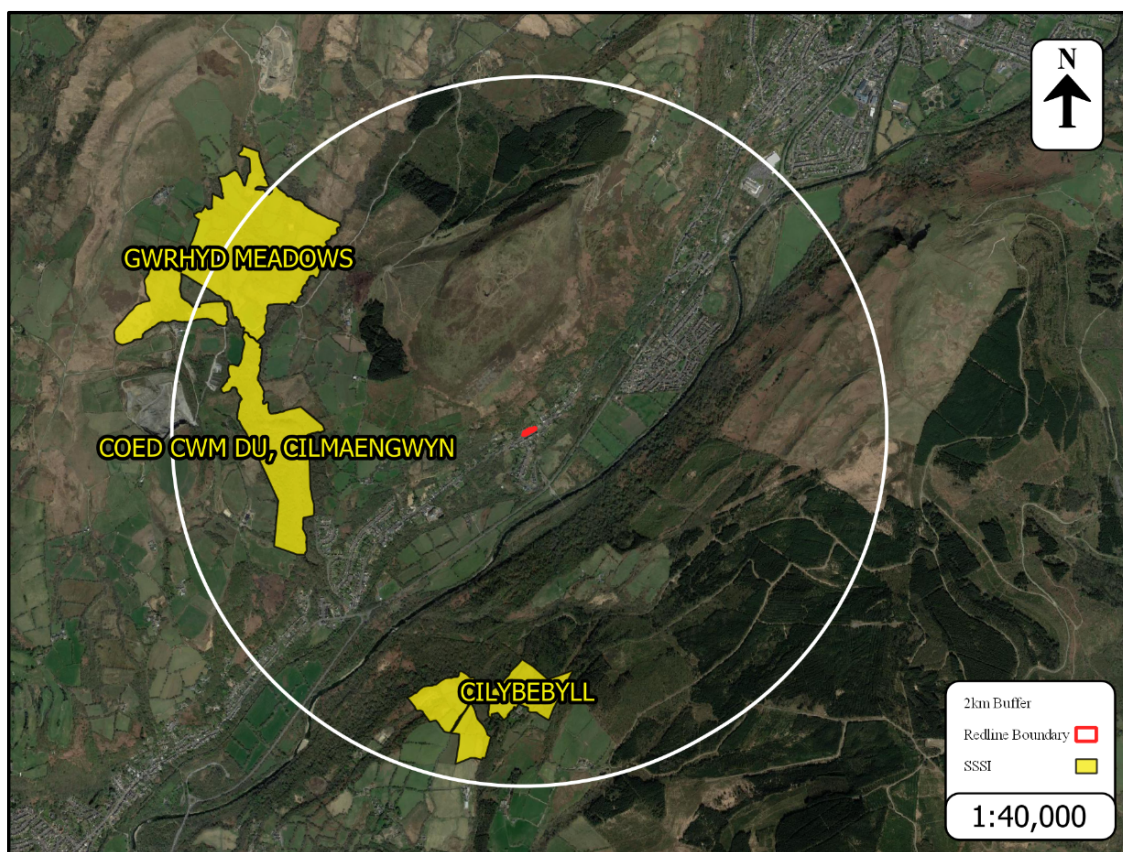


Protected Sites Within 2km (ancient woodland)

¹ https://naturalresources.wales/media/641082/SSSI_0349_Citation_EN001af1d.pdf

² https://naturalresources.wales/media/653809/SSSI_0857_Citation_EN0018f14.pdf

³ https://naturalresources.wales/media/666184/SSSI_1656_Citation_EN0014d4d.pdf



Protected Sites Within 2km (SSSI)

3.2 Artificial Lighting Levels

The site is assessed as being within Suburban Zone E3 of medium district brightness (Institute of Lighting Professionals, 2021). This zone is described as: well inhabited rural and urban settlements, small town centres of suburban locations. Several streetlights are present along the adjacent roads of the site, generating artificial lighting and decreasing the quality of the foraging and commuting bat habitat at the front of the building. The rear of the property is a dark zone with no external lighting leading to open mountain and wooded areas.

3.3 Evidence of Bats

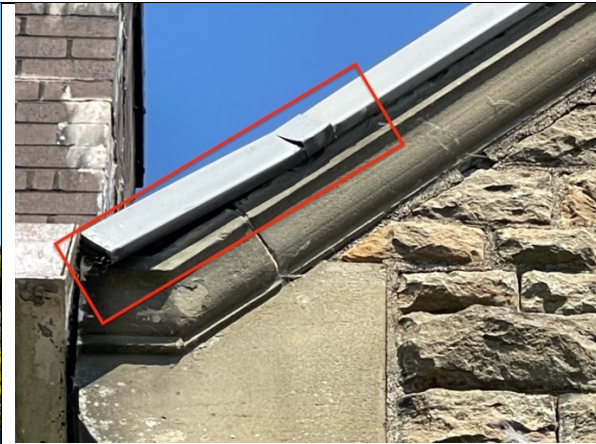
No bat droppings or other evidence of bats was found during the daytime internal and external physical inspection of the building. Although approximately 40-50 butterfly wings feeding remains were discovered in the boiler room on the southwest corner of the junior school, no bat dropping were found with the wing cases or in the boiler room.

3.4 Potential Bat Access Points and Roosting Areas

Potential bat access points and roosting areas were found in the form of the two loft spaces, one above the infants school and one above the juniors school. Louvered windows located in several places around the school appear to allow access into the building and potential

roosting areas, gaps under ridge tiles, gaps under broken or lifted slates, gaps under and behind soffits and fascias, gaps under lead flashing, gaps in broken or missing stonework. The boiler room has an open window on the south side and the door has a louvered section on the top half allowing access into that room.

Examples of potential access points below:

	
Louvered windows south sided of building	Gaps under capping
	
Gaps under soffit	Close-up of gap under soffit
	
Gap between stonework and soffit	Gaps under lead work and soffit



Gap behind fascia from missing stonework



Gap in broken stonework



Gaps between stonework and fascia



Missing stonework



Gaps between stonework and fascia



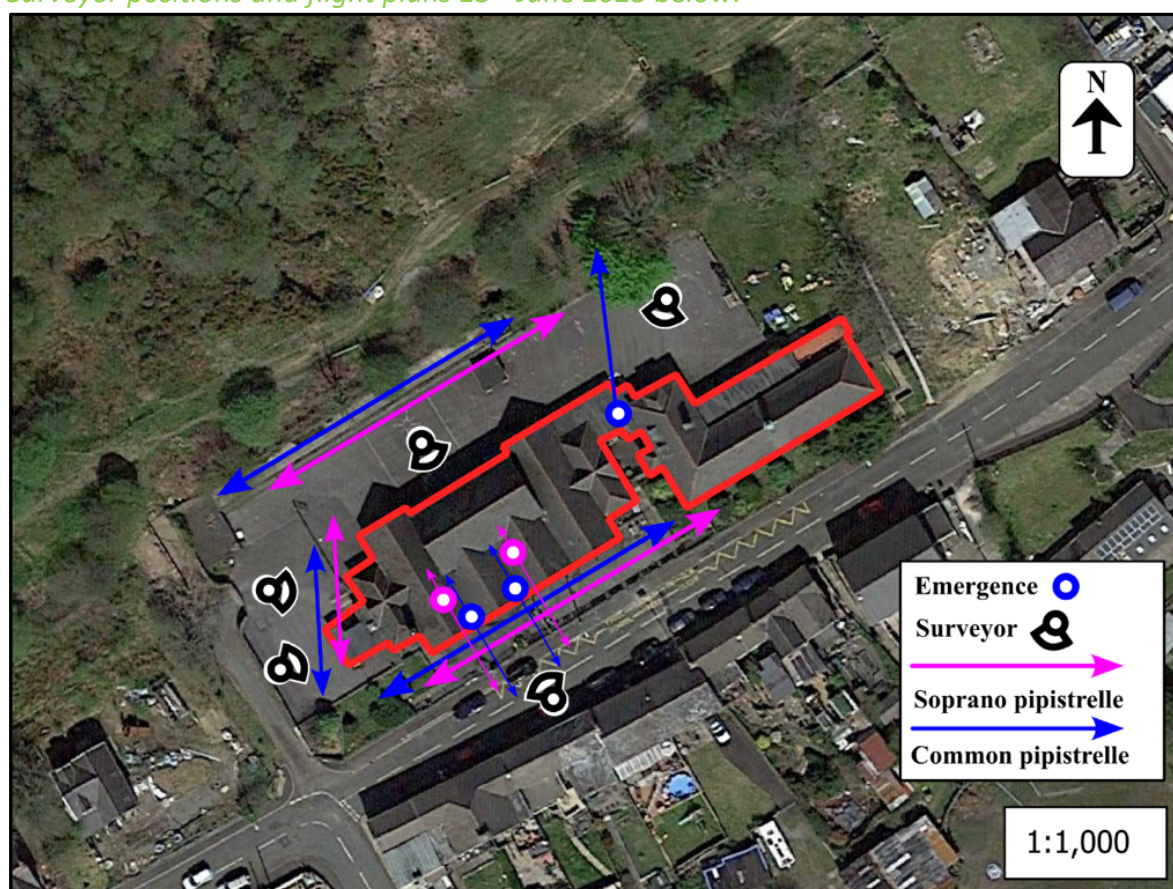
Gaps between stonework and soffit



3.5 Dusk Emergence Survey Results

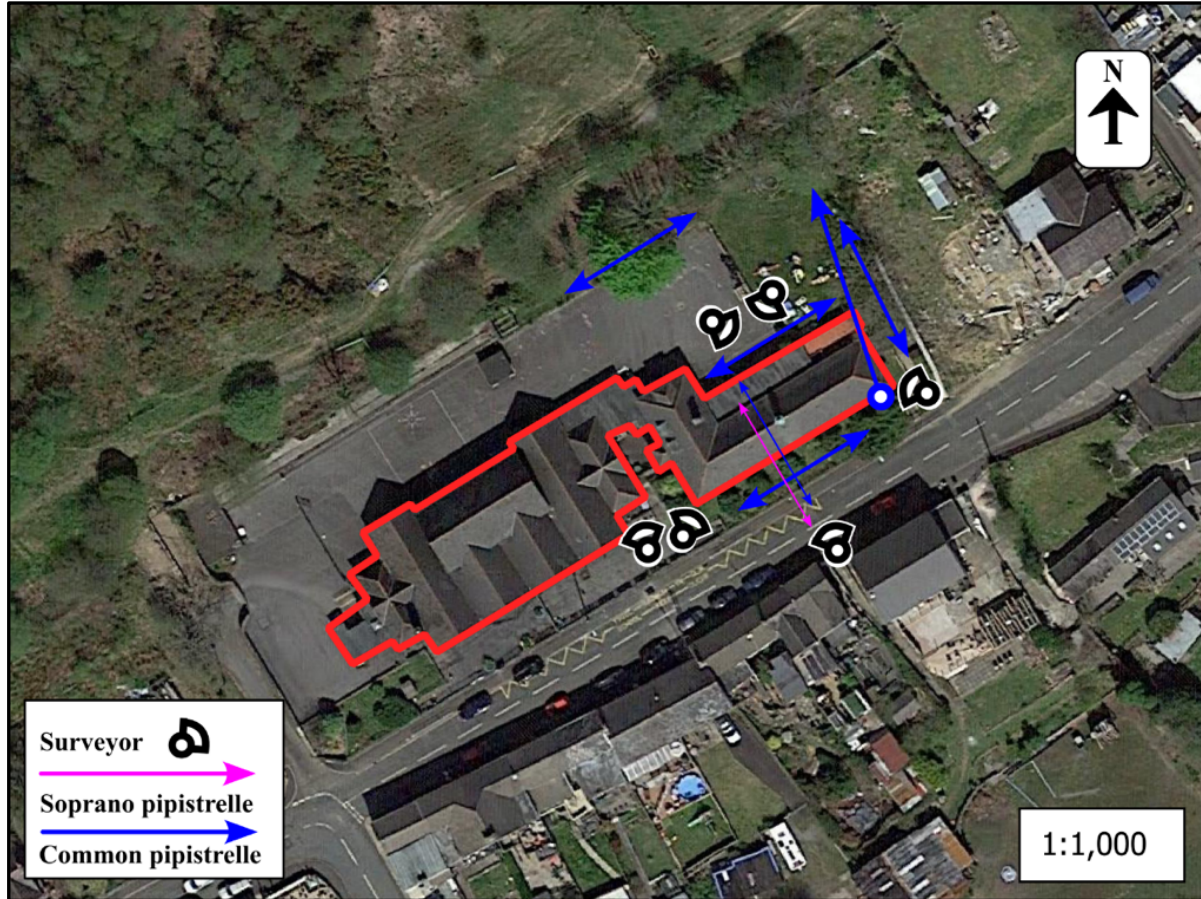
13th June 2023: Several common (*Pipistrellus pipistrellus*) and soprano (*Pipistrellus pygmaeus*) pipistrelle bats were observed to emerge from inside the valleys between the north-south aligned pitched roofs during the survey. Common pipistrelle bats (*Pipistrellus pipistrellus*) and soprano pipistrelle bats (*Pipistrellus pygmaeus*) were noted to commute and forage around the northern western and southern proximities of the building.

Surveyor positions and flight plans 13th June 2023 below:



14th June 2023: A common pipistrelle bat (*Pipistrellus pipistrellus*) was observed emerging from the gap at the top of a window frame on the south facing wall of the building. Common pipistrelle bats (*Pipistrellus pipistrellus*) were observed commuting and foraging on the North, East and South proximities of the building.

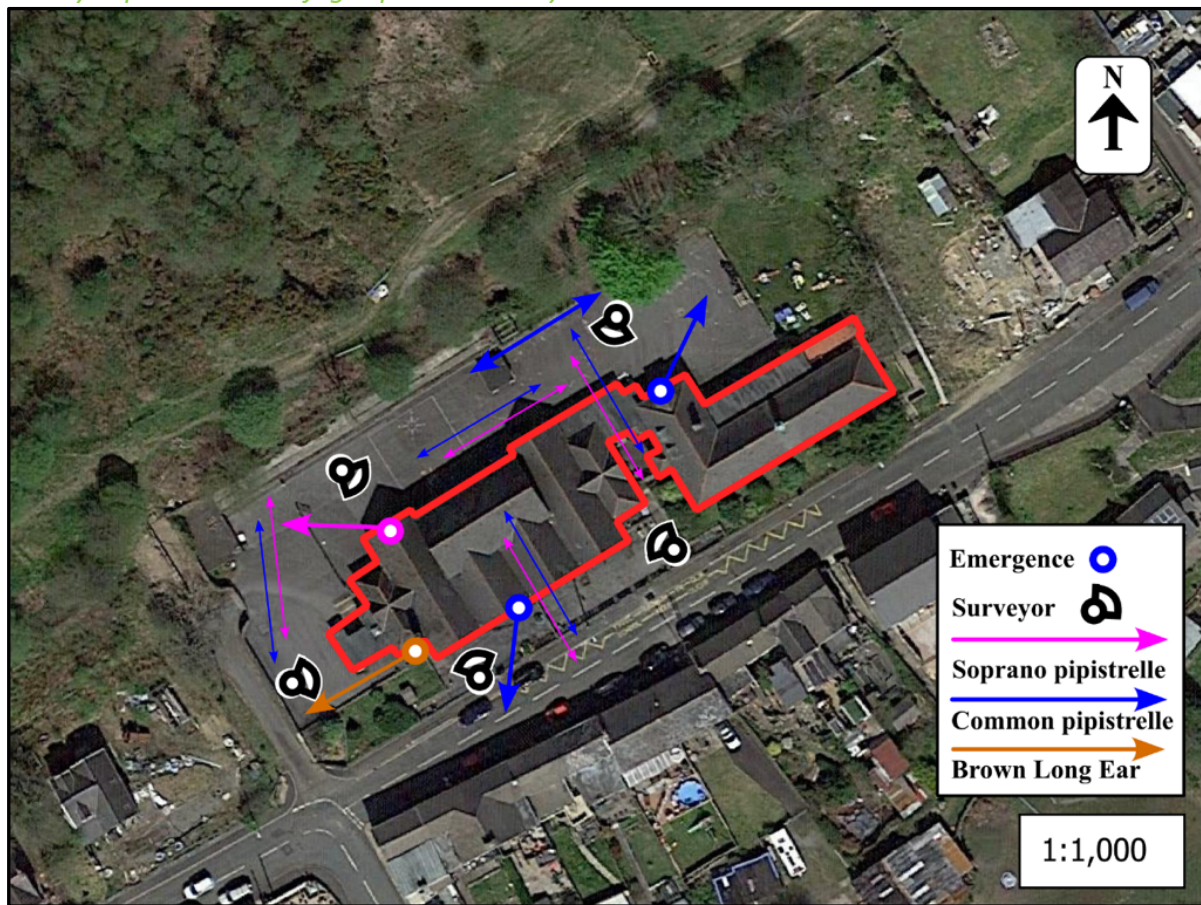
Surveyor positions and flight plans 14th June 2023 below:



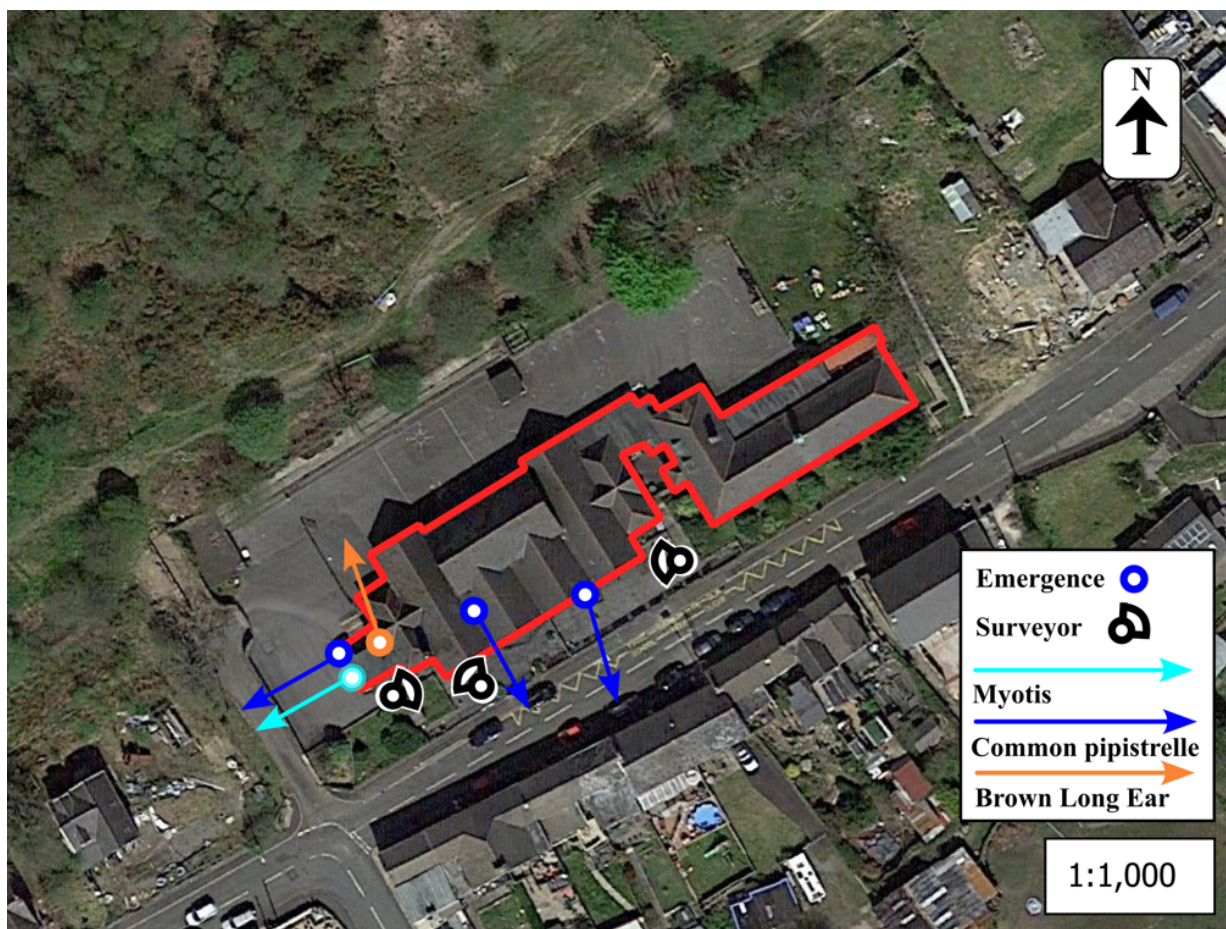
20th July 2023: A common pipistrelle bat (*Pipistrellus pipistrellus*) was observed emerging from the fascia on the gable end of the first north-south aligned pitched roof. Common pipistrelle (*Pipistrellus pipistrellus*) and soprano pipistrelle (*Pipistrellus pygmaeus*) bats were observed to emerge from inside the valleys between the north-south aligned pitched roofs during the survey. A common pipistrelle bat (*Pipistrellus pipistrellus*) was observed emerging from the North facing dormer window on the easternmost building on the site.

A soprano pipistrelle bat (*Pipistrellus pygmaeus*) was noted to emerge from the north facing gable end of the highest pitched roof of the main building. A brown long-eared bat (*Plecotus auritus*) emerged from the pitched roof above the boiler room.

Surveyor positions and flight plans 20th July 2023 below:



25th August 2023: Three common pipistrelle bats (*Pipistrellus pipistrellus*) were observed emerging from the western facing fascia on the flat roof to the far west of the site. A myotis bat) was observed emerging from the western facing fascia on the flat roof to the far west of the site. A brown long-eared bat (*Plecotus auritus*) emerged from the pitched roof above the boiler room.



Photos of confirmed locations of bat emergence below:



Emergence from between the valleys on every survey



Estimated locations of emergence in the valleys

	
Emergence Pipistrelle from infants northeast side	Emergence of Myotis and Pipistrelle bats southwest corner

3.6 Infrared Video Camera Results

No bats were captured on camera emerging from the building during any of the surveys.

3.7 Evidence of Birds

Nesting birds were seen to be entering and exiting from several points around the building during the PRA and the emergence surveys.

	
Bird nest under the arches on southwest corner	Birds noted entering and area on southwest corner among other locations around the building

4. EVALUATION

4.1 Discussion of Results

During the PRA survey no bat droppings or direct evidence of bats were found during the internal and external inspection of the building. There are two large loft spaces present at the property, one above the infant's building and one above the juniors building. The loft space above the infant's building was accessed and inspected during the PRA. No bats or evidence of bats was found at the time of the inspection of that loft space. Access into the loft space of the juniors school wasn't possible at the time due to some loft hatches not opening or them not being in the right location to get to the required areas.

Potential bat access points and roosting areas were found in the form of the two loft spaces, one above the infants building and one above the juniors. Louvered windows in several places around the school, in several places over the roof space there are gaps under ridge tiles, gaps under broken or lifted slates, gaps under and behind soffits and fascia's, gaps under lead flashing, gaps in broken or missing stonework. The boiler room has an open window on the south side, the door is louvered on the top half. The building has a complex roof structure with many points not visible from the ground. There are many potential roosting and entry/exit locations throughout all parts the building. The area surrounding the site is deemed to be providing moderate-quality foraging and commuting habitat for bats.

4.2 Suitability for Summer Roosts

The bat roosting suitability of the building as assessed according to the scale negligible, low, moderate or high (or confirmed bat roost) and the building was deemed to have high bat roosting suitability.

Suitability for different types of bats:

- High suitability for use by crevice-dwelling bats, as the building has multiple potential external features which could be used by roosting bats,
- High suitability for use by bats that roost inside loft spaces, as the building has a loft space with potential access points via the roof areas,
- Moderate suitability for use by horseshoe bat species that require large access points to fly through, as the building lacks larger sized openings.

4.3 Suitability for Winter Roosts

The building hasn't been surveyed during the winter months or for hibernating bats. The building has two boiler rooms and two loft spaces which could be suitable. There are large roof areas and many locations suitable for hibernation throughout the building.

4.4 Constraints

Infants building:

Several trees and large shrubs are in very close proximity to the building on the south and part of the west side obscuring areas of the building from view. The roof structure is large and complex, a view of all roof area is not possible due to the height and angles of them.



Biological Records Data Search: Due to the small-scale nature of this development it was decided that a data search with the local record centre was not necessary, following the completed emergence surveys and the results of those surveys there was still no need to complete the records search. This is in line with CIEEM's Guidelines for Accessing and Using Biodiversity Data (2020).

Juniors building loft space:

Access into the loft space of this part of the building wasn't possible at the time due to some loft hatches not opening or them not being in the right location to get to the required areas.

Emergence/roosting location of Brown long-eared bats:

Due to the complex roof structure it wasn't possible to pin point the exact emergence and roosting location of the brown long-eared bats during the surveys. One approximate location of emergence was noted to be above the boiler room on the southwest corner of the junior building, in very close proximity to the boiler room is a louvered window on the south facing pitched roof, this is potentially another emergence location. The photos below show the approximate emergence areas.



Estimated area of emergence above boiler room

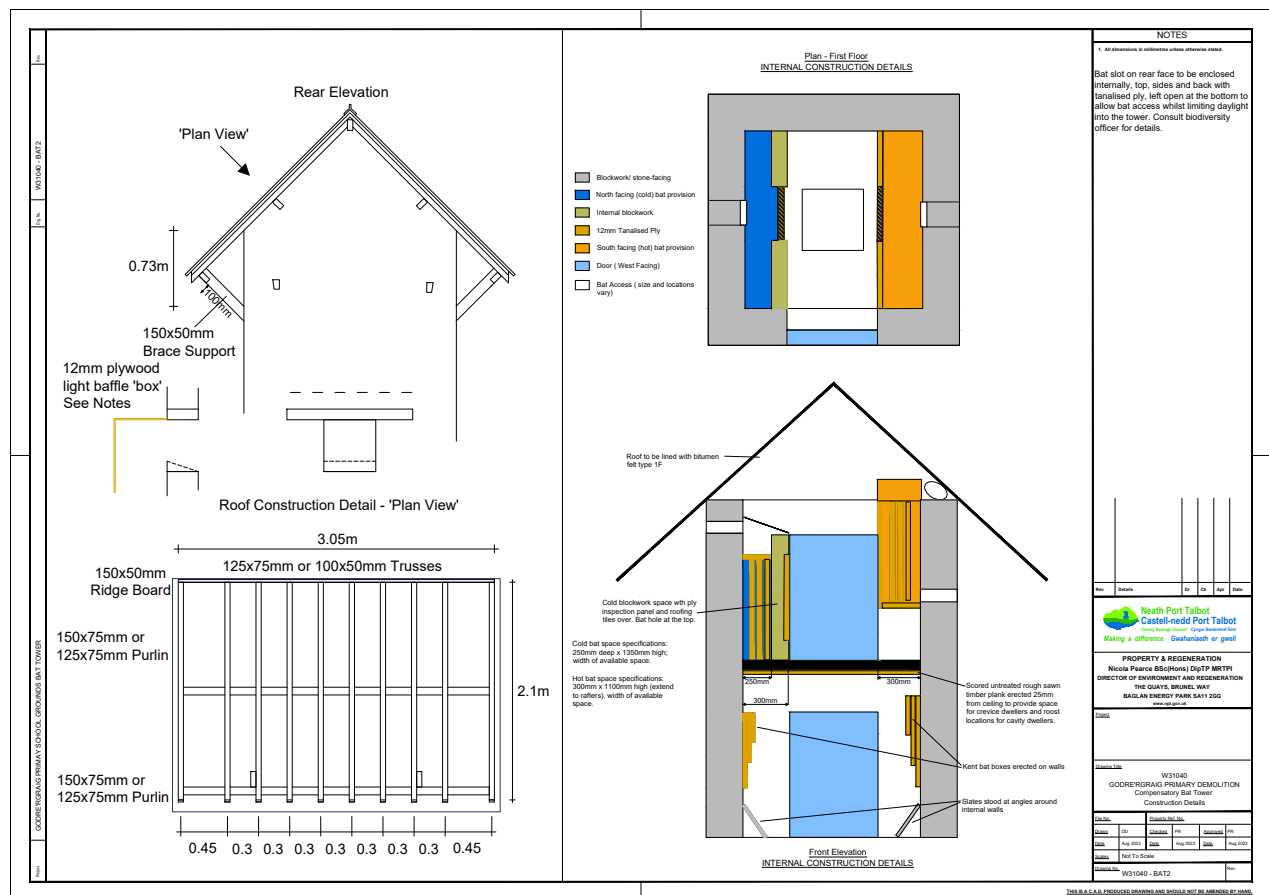


Another estimated location is the louvered window on south side pitched roof, chimney of boiler room can be seen in photo

5. RECOMMENDATIONS

The proposed works are deemed to have a negative impact on bats and the loss of multiple roosting locations for several bat species. A bat mitigation plan is being proposed by the client in the form of a purpose build bat house. The bat house will cater for several different species of bats and will be built in the northeast corner of the site. A schedule of works will need to be proposed to identify appropriate time restrictions to enable minimal impact during demolition works. It would be most appropriate for mitigations to be in place and fully functional prior to demolition works taking place. Soft stripping of the roofing areas should be undertaken under the direct supervision of an experienced bat ecologist. Any demolition work should also be completed under the direct guidance and advice of an experienced bat ecologist.

Proposed bat house below:



5.1 Survey Effort

The building was deemed to have high bat roosting suitability and to be within an area of moderate bat foraging and commuting suitability. Three bat dusk emergence surveys were therefore carried out in accordance with the BCT Bat Survey Guidelines 2016. Night vision cameras some paired with bat detectors were used during all four surveys. A further dusk emergence survey was conducted on an area where brown long-eared activity was at the highest which was also had the greater horseshoe bat presence in that area during one of the surveys.

The dusk emergence surveys, spaced apart by at least two weeks, were conducted during optimal weather conditions to illustrate the use of the building as a bat roost over a period of time. The surveys were conducted during the active bat season of May-September.

5.2 Longevity Period of Report

This report is valid for 18 months. A licence or planning application should ideally be submitted within this time and always using the most up to date survey data. Following Good Practice Guidelines (Collins, 2016), an updated survey maybe required if there is evidence and or conditions have changed since the last survey was completed.

5.3 Requirement for a European Protected Species licence

Several bat species were noted to be emerging from several locations at the property during the surveys. It will therefore be necessary to apply for a European Protected Species (EPS) mitigation licence for bats with Natural Resources Wales (NRW) before work on the property can begin.

6. REFERENCES

BCT (2022). *Interim Guidance Note: Use of night vision aids for bat emergence surveys and further comment on dawn surveys*. Bat Conservation Trust, London.

CIEEM (2020). *Guidelines for Accessing, Using and Sharing Biodiversity data in the UK*. <https://cieem.net/wp-content/uploads/2016/03/Guidelines-for-Accessing-and-Using-Biodiversity-Data-March-2020.pdf>

Collins, J (ed.) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)*. The Bat Conservation Trust, London.

Mitchell-Jones, A.J, and McLeish, A.P. (2004). *Bat Workers' Manual (3rd Edition)*. Joint Nature Conservation Committee, Peterborough.

Natural England and Countryside Council for Wales, (2007). *Disturbance and protected species: understanding and applying the law in England and Wales. - A view from Natural England and the Countryside Council for Wales*. United Kingdom.

Natural Resources Wales (2022). *SSSi Search*. <https://naturalresources.wales/guidance-and-advice/environmental-topics/wildlife-and-biodiversity/protected-areas-of-land-and-seas/find-protected-areas-of-land-and-sea/?lang=en>

Institute of Lighting Professionals (2021) *ILP Guidance Note GN01/21: Guidance for The Reduction of Obtrusive Light*. Warwickshire, UK.

Weinstein, Ben G. (2015). *MotionMeerkat: integrating motion video detection and ecological monitoring*. *Methods in Ecology and Evolution* 6.3:

7. Surveyor Experience

Lee Gwyther - Lee holds Class 2 bat licences in both Wales (NRW Ref: S092911/1) and England (NE Ref: 2020-46267-CLC-CLS). He is the managing director of Grounded Trees and Ecology, an arboriculture and ecology company specializing in bats and trees. For the past five years he has been taking part in a monitoring scheme looking at bat roosts within tree, including maternity roosts. He has experience of undertaking tree climbing surveys for bats, preliminary roost assessment (PRA) building inspections, on-site supervision of building works, dusk emergence and dawn re-entry bat surveys. For the past 5 seasons Lee has also been a bat carer for BCT covering South and West Wales.

Erika Dahlberg - Erika graduated from Portsmouth University with a BSc (Hons) in Animal Management and from Napier University Edinburgh with a PGDip in Wildlife Biology and Conservation. She has been working full-time as a bat ecologist since 2009. She holds Welsh (NRW Ref no: S091598-1) and English bat licences (NE Ref no: 2015-17115-CLS-CLS).

Ben Livick - Ben has a BSc in Ecology from Nene University Northampton and has been undertaking training in bat ecology and bat surveys with Erika Dahlberg since May 2019, so is now on his fifth season of conducting regular surveys. He also specialises in bat sound analysis using BatExplorer and BatSound software. He has 5 years of experience of sound analysis and has recently completed the BatAbility 'Certificate of Bat Acoustics Analysis' during 2023.

Greg Owen - Greg specialises as an arborist and has developed an interest in bats from his tree climbing work. He has been undertaking training in conducting bat surveys with both Lee Gwyther and Erika Dahlberg since May 2022.

Eleanor Hughes – Eleanor has a keen interest in bats and was shadowing another surveyor during this survey for training purposes, as she would like to develop skills and assist with further surveys.

Tanith Stephens - Tanith completed a degree in wildlife and conservation in Bristol University in 2022. She has been volunteering for seven wildlife rescue for the past 12 months, has been working as an ECoW over several sites and been completing on-going training in bat surveys on buildings and completing dusk emergence surveys during the 2023 season.

End Of Report