# Ysgol Gyfun Gymraeg Glantaf Secondary School Bat Survey Report

Cardiff Council

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## Quality Information

| Prepared by | Checked by | Verified by | Approved by |
|---|---|---|---|
| BL<br>Consultant Ecologist | BN<br>Senior Ecologist | AD<br>Associate Director | KW<br>Technical Director |

## Revision History

| Revision | Revision date | Details | Authorized | Name | Position |
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## Prepared for:

Cardiff County Council

## Prepared by:

AECOM Limited
Fifth Floor, 5 Callaghan Square
Cardiff CF10 5BT
United Kingdom

aecom.com

# Table of Contents



# Tables

# 1. Executive Summary

AECOM was commissioned by Cardiff County Council to undertake dusk emergence surveys for bats upon four buildings assessed as having suitability to support roosting bats at Ysgol Gyfun Gymraeg Glantaf Secondary School hereafter referred to as 'the Site'. The central grid reference for the Site is ST 14995 78692 and the Site boundary is shown on Figure 1.

This bat survey report includes the methodologies and results of the bat roost surveys and outlines potential impacts and recommendations for mitigation and enhancement.

The dusk emergence surveys were recommended by Wardell Armstrong following their Preliminary Ecological Appraisal (PEA) of the Site on 25 March 2022 (Wardell Armstrong, 2022). As part of the PEA, a Preliminary Roost Assessment (PRA) of all building elevations facing the proposed area of development and a Preliminary Ground Level Roost Assessment (PGLRA) of all trees within and immediately adjacent to the Site was completed (Wardell Armstrong, 2022). The PRA identified three building elevations with Potential Roosting Features (PRFs) of Moderate Suitability to support roosting bats, two building elevations with PRFs of Low Suitability to support roosting bats and three building elevations with no PRFs, as such are of Negligible Suitability to support roosting bats. The PGLRA assessed all potentially impacted trees as having Negligible Suitability to support roosting bats and were not surveyed further.

The Site is currently in use as a secondary school. The Site comprises multiple school buildings and outbuildings of varying construction types, hardstanding, improved grassland (playing fields), hedgerows, and scattered trees. The Site is bounded by palisade fencing on its southwestern boundary where it abuts woodland and scrub adjacent to the River Taff footpath.

Cardiff County Council's proposed development involves the construction of a new 'Special Resource Base' for 60 pupils on an approximately 1.2 ha of improved grassland within the grounds of the Ysgol Gyfun Gymraeg Glantaf Secondary School.

Confirmed summer, day roosts have been confirmed on two building elevations: B2c and B2d. Two common pipistrelle *Pipistrellus pipistrellus* were recorded emerging from PRF B2c_Ref_01, and one common pipistrelle was recorded re-entering PRF_B2c_Ref_02 on building elevation B2c. A suspected soprano pipistrelle *Pipistrellus pygmaeus* was recorded emerging from PRF_B2d_Ref_01 on building elevation B2d. No bats were recorded emerging from the building elevations B2a, B2b and B3 during the dusk emergence surveys although do have potential roost features that could support roosting bats.

Bat activity was detected during all dusk emergence surveys undertaken at the Site. Three species of bat were recorded, including: noctule *Nyctalus noctula*, soprano pipistrelle and common pipistrelle.

Noctule were active throughout all surveys, foraging and commuting at height over the improved grassland on the Site. Common and soprano pipistrelle were recorded foraging and commuting in association with the buildings on Site, and over the improved grassland on the Site.

No loss of PRFs are anticipated as a result of the proposed development. The proposed development will not be in proximity to the confirmed roosting features. As such roosting bats are unlikely to be impacted by the proposed development and no loss, obstruction or modification of roosts are anticipated.

There is potential for noise during the proposed development to disturb day, summer roosting bats in the event they are present within the confirmed roosting features within building elevations B2c and B2d. However, the level of noise as a result of the proposed development is unlikely to exceed the noise level currently experienced at the school. As such noise will have a negligible impact on summer roosting bats.

A lighting design has not been confirmed at the time of writing. It is understood that additional lighting will be required on the new 'Special Resource Base' Without mitigation, any new lighting scheme could spill onto confirmed roosts, the Site boundaries or retained tree lines and scrub which are suitable for foraging and commuting bats. This could cause bats to avoid these areas and/or create severance of commuting routes. Recommendations for mitigation with regards to external lighting have been made following best practice guidance have been made. Once drafted the lighting design should be reviewed by a suitably experienced ecologist prior to it being finalised to ensure there are no impacts to bats.

Further dusk emergence surveys are required to be undertaken in May/ June 2023 prior to the commencement of works in summer 2023 on the four building elevations (B2a, B2b, B2c and B2d) and building B3. One emergence survey is recommended on building elevations B2a and B2b and building B3. Due to the presence of confirmed roosts on building elevations B2c and B2d two emergence surveys; separated at least 14 days apart, are recommended. This would provide an updated understanding of how bats utilise the Site, PRFs and confirmed roost features. Emergence surveys undertaken in May/ June 2023 are during the bat maternity period, as such it may be possible to record the presence of maternity roosting bats, should they be present.

Further hibernation assessments and surveys may be required if impacts are predicated during the bat hibernation period (November/December – March, inclusive, depending on weather conditions) on buildings with potential to support hibernating bats, and the impacts cannot be reduced to a sufficient level under Precautionary Method of Working (PMW). Hibernations surveys may be required for any buildings within the Survey Area identified as having hibernation suitability where there is a risk of disturbing hibernating bats. Buildings assessed as Low bat roost suitability are unlikely to support hibernating bats.

Currently, a European Protected Species Mitigation Licence (EPSML) will not be required for the proposed development. Should updated emergence/ re-entry surveys result in further roost's being identified which may be impacted by the proposed development, and EPSML maybe required.

Recommendations for enhancements such as bat box provision have been made.

The Executive Summary is intended only as a synopsis of the full report, refer to the full text for further details.

# 2. Introduction

AECOM was commissioned by Cardiff County Council to undertake dusk emergence surveys for bats upon four buildings assessed as having suitability to support roosting bats at Ysgol Gyfun Gymraeg Glantaf Secondary School hereafter referred to as 'the Site'. The dusk emergence surveys were recommended by Wardell Armstrong following their Preliminary Ecological Appraisal (PEA) of the Site on 25 March 2022 (Wardell Armstrong, 2022). As part of the PEA, a Preliminary Roost Assessment (PRA) of all building elevations facing the proposed area of development and a Preliminary Ground Level Roost Assessment (PGLRA) all trees within and immediately adjacent to the Site was completed (Wardell Armstrong, 2022). The PRA identified three building elevations with Potential Roosting Features (PRFs) of Moderate Suitability to support roosting bats, two building elevations with PRFs of Low Suitability to support roosting bats and three building elevations with no PRFs, as such are of Negligible Suitability to support roosting bats. The PGLRA assessed all potentially impacted trees as having Negligible Suitability to support roosting bats and were not surveyed further. The central grid reference for the Site is ST 14995 78692 and the Site boundary is shown on Figure 1.

The dusk emergence surveys for bats were carried out to inform the construction of a 'Special Resource Base' (hereafter referred to as the 'proposed development') within the Site. The dusk emergence surveys were conducted on the five building elevations assessed with suitability to support roosting bats within the Site. Building elevations assessed as having Negligible Suitability to support roosting bats: B1, B2e and B4 were not surveyed further.

This bat survey report includes the methodologies and results of the dusk emergence surveys for bats and outlines potential impacts and recommendations for mitigation and enhancement.

## 2.1 Site Location and Description

The Site is located in north Cardiff on Bridge Road, Cardiff, CF14 2JL, South Wales (see Figure 1).

The Site is currently in use as a secondary school and is comprised of multiple school buildings and outbuildings of varying construction types, hardstanding, improved grassland (playing fields), hedgerows, and scattered trees. The Site is bounded by palisade fencing on its southwestern boundary where it abuts woodland and scrub adjacent to the River Taff footpath.

Roads surround the Site on all but its southwestern and eastern boundary (A4054 and Gabalfa Road). The land use to the north and east of the Site is primarily housing. The River Taff runs along the south and west of the Site.

## 2.2 Proposed Development

Cardiff Council's proposed development involves the construction of a new 'Special Resource Base' for 60 pupils on approximately 1.2 ha of improved grassland within the grounds of the Ysgol Gyfun Gymraeg Glantaf Secondary School. The design of the proposed development is still in the early stages, there is no confirmed proposed development summary or commencement date for the works. At the time of writing, it is presumed works will take place during the school summer 2023 holiday period, during daytime hours.

Two new, permanent access routes are proposed to be created, leading to the proposed development. The first access route will start from the River Taff footpath and may require scrub and tree removal. The second access route is to be located between two existing buildings within the Site.

## 2.3 Objectives

The objectives of the bat survey and report were:

- To establish the presence or likely absence of any bat roosts within the Site;
- To highlight any potential ecological constraints in relation to bats;
- To outline further survey work that may be required;
- To make recommendations for a European Protected Species Mitigation Licence (EPSML) (if required); and,
- To make recommendations for mitigation to avoid impacts to bats.

## 2.4 Legislation

All bat species native to the UK are protected under Regulation 43 of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. All bat species and their roosts in Wales are fully protected under Schedule 5 of the Wildlife and Countryside Act (WCA) 1981 (as amended). They are also included in Schedule 2 of the Conservation of Habitats and Species Regulations 2018, known as The Habitats Regulations. The WCA 1981 was amended by the Countryside and Rights of Way Act (CRoW) 2000 which adds an extra offence of recklessly disturbing roosting bats or obstructing access to their roosts; makes species offences arrestable, increases the time limits for some prosecutions and increases penalties.

The WCA, the Habitats Regulations and the CRoW Act, together, make it an offence, among other things, to recklessly, deliberately or intentionally:

- capture, injure or kill any wild animal which is a European Protected Species (EPS),
- disturb wild animal of any such species; and,
- damage or destroy a breeding or resting site of any such animal.

Disturbance is defined as that which is likely to impair their ability:

- to survive, to breed or reproduce, or to rear or nurture their young; or,
- in the case of animals of a hibernating or migratory species, to hibernate or migrate; or,
- affect significantly the local distribution or abundance of the species to which they belong.

A bat roost is defined as "*any structure or place (including trees) which any bat uses for shelter and protection*". Because bats tend to re-use the same roosts, legal opinion is that the roost is protected whether or not bats are present at the time.

If the proposed development is likely to destroy or disturb bats or their roosts, then a European Protected Species Mitigation Licence (EPSML)) will be required from Natural Resources Wales (NRW), which would be subject to appropriate mitigation and working methods to protect bats.

This is a brief summary of the legislation. When dealing with individual cases, the client is advised to consult the full texts of the relevant legislation and obtain further legal advice.

## 2.5 Quality Assurance

This survey and subsequent report were undertaken in line with AECOM's Integrated Management System (IMS). Our IMS places great emphasis on professionalism, technical excellence, quality, environmental and Health and Safety management. All staff members are committed to establishing and maintaining our certification to the international standards BS EN ISO 9001:2015 and 14001:2015 and ISO 45001:2018. In addition, our IMS requires careful selection and monitoring of the performance of all sub consultants and contractors.

All AECOM Ecologists who worked on this project follow the Chartered Institute of Ecology and Environmental Management (CIEEM) code of professional conduct (CIEEM, 2022) when undertaking ecological work.

# 3. Methodology

## 3.1 Desk Study

The desk study was completed as part of the PEA Report undertaken in April 2022 by Wardell Armstrong, please refer to the PEA Report for the methodologies used (Wardell Armstrong, 2022). AECOM did not undertake a desk study as part of this bat survey report.

## 3.2 Preliminary Roost Assessment

An external PRA of the elevations of building 1 (B1), building 2 (B2), building 3 (B3) and building 4 (B4) facing the location of the proposed development was undertaken on 25th March 2022 by Wardell Armstrong (Wardell Armstrong, 2022). The elevations of B2 were divided into five sections: B2a to B2e, due to their disconnected roof structures and different construction types. The elevations of each section have been assessed separately for their suitability to support roosting bats. Table 1 provides details regarding how structures are assessed in terms of their suitability to support PRFs suitable to support roosting bats. Refer to the PEA Report for the methodologies used (Wardell Armstrong, 2022).

**Table 1. Criteria for Assessing the Suitability of PRFs**

| PRF Suitability | Descriptions for Buildings |
|---|---|
| Known or Confirmed | Confirmed signs of bat presence/ occupation (droppings, oily staining around entry points, insect remains, odour, scratching) and actual bat presence. |
| High | A structure with one or more PRFs that are obviously suitable for use by larger numbers of bats on a more regular basis and potential for longer periods of time due to their size, shelter, protection, conditions (e.g. temperature, humidity, height above ground level, light levels or levels of disturbance) and surrounding habitat.<br>Can include structures with points of access to the interior of the building and poorly maintained fabric providing ready access points for bats into structures, but at the same time not draughty. Structures of traditional stone, brick or timber construction. Structures with large (>20 cm) roof timbers with mortice joints, cracks and holes. Structures of pre or early 20$^{th}$ century construction. Structures with large complicated and/or uncluttered roof spaces providing unobstructed flying spaces. Structures with weather boarding and/or hanging tiles with gaps. Structures with accessible south facing roofs. Structures with proximity to good foraging habitat such as woodland, wetland, water and /or good hedgerows. |
| Moderate | A structure with one or more PRFs that could be used by bats due to their size, shelter, protection, conditions (e.g. temperature, humidity, height above ground level, light levels or levels of disturbance) and surrounding habitat but unlikely to support a roost of high conservation status.<br>Can include structures with some potential to support roosting bats, but fewer PRFs than a high-risk building. PRFs may include areas suitable for crevice dwelling and/or access points into structures. Some proximity to foraging habitat. |
| Low | A structure with one or more potential roost sites that could be used by individual bats opportunistically.<br>However, these potential roost sites do not provide enough space, shelter protection, appropriate conditions and/or suitable habitat to be used on a regular basis or by large numbers of bats (i.e. unlikely to be suitable for maternity or hibernation). |
| Negligible | No features suitable for roosting bats.<br>Can include structures constructed from unsuitable materials e.g. prefabricated with steel and sheet material. Structure is draughty, light and cool buildings with no roosting opportunities. High levels of regular disturbance including external and/or internal lighting. Building is isolated from areas of foraging habitat. |

*Source: Category descriptions drawn from Collins, 2016 and Mitchell-Jones, 2004 to be applied using professional judgement*

## 3.3 Bat Dusk Emergence/ Dawn Re-entry Surveys

Dusk emergence and/or dawn re-entry surveys were required to determine the presence or likely absence of roosting bats in accordance with the criteria outlined in Table 2.

**Table 2. Recommended Survey Effort for Emergence/Re-entry Surveys**

| Roosting Suitability | Survey Effort |
|---|---|
| High | Three separate survey visits. At least one dusk emergence and a separate dawn re-entry survey. The third visit could be either a dusk or dawn. |
| Moderate | Two separate survey visits. One dusk emergence and a separate dawn re-entry survey. |
| Low | One survey visit. One dusk emergence or dawn re-entry survey (structures).<br>No further surveys required (trees). |
| Negligible | No further surveys required. |

*Source: Category descriptions drawn from Collins, 2016 to be applied using professional judgement.*

Two dusk emergence surveys to confirm presence/likely absence of summer roosting bats was undertaken in August and September 2022 on the building elevations assessed as having Moderate Suitability to support roosting bats (building elevations B2a, B2b and B2d, see Figure 1).

A single dusk emergence survey to confirm presence/ likely absence of summer roosting bats was undertaken in August 2022 on the building elevations assessed as having Low Suitability to support roosting bats (building elevations B2c and B3, see Figure 1.)

Surveys paid due regard to Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016). The survey consisted of a surveyor (a suitably experienced ecologist) standing at a vantage point looking at PRFs on the five building elevations identified during the PEA (Wardell Armstrong, 2022). Surveyors positioned themselves so that bats could be observed leaving or returning to the PRF. Bat activity noted around the Site during the emergence survey was also recorded by the surveyors.

Dusk emergence surveys started 15 - 30 minutes before sunset and ended 1.5 – 2 hours after sunset, as detailed in Table 3. All surveys paid due regard to Bat Conservation Trust (BCT) guidelines (Collins, 2016) for weather conditions, where it is stated that surveys should be carried out in conditions close to optimal i.e., no rain or strong wind and with temperatures above 10°C at sunset, as detailed in Table 3. Survey weather conditions during the emergence surveys undertaken on 08 September 2022 were deemed suboptimal due to heavy, continuous rain, see Section 2.4.

In addition to direct observation, each surveyor was equipped with an 'Elekon Batlogger M' to detect and record bat calls. Sound recordings were made in full spectrum Wave Audio File ('WAV') to allow subsequent verification of species or species groups, where required. Records of emergence/ re-entry were subsequently analysed using Elekon's BatExplorer software to identify the species of bat present. Reference was made to bat call identification guidance (Russ, 2012) where necessary. Surveyors were aided with infrared cameras with infrared torches, to assist with identifying emerging bats.

The location of the building elevations and surveyor vantage points are shown in Figure 1. Photographs of the surveyor vantage points are provided in Appendix A: Photographs 1, 2, 3, 4 and 5.

**Table 3. Bat Dusk Emergence Survey Dates and Weather Conditions**

| Building Elevation | Date | Sunset | Survey Start Time | Survey End Time | Number of Surveyors | Weather (Start) | Weather (End) |
|---|---|---|---|---|---|---|---|
| B2c | 17.08.22 | 20:02 | 20:32 | 22:02 | 2 | Wind (mph): 2.4<br>Cloud Cover (Oktas): 8<br>Temperature (C): 19.8 | Wind (mph): 2.4<br>Cloud Cover (Oktas): 8<br>Temperature (C): 19.8 |

| Building Elevation | Date | Sunset | Survey Start Time | Survey End Time | Number of Surveyors | Weather (Start) | Weather (End) |
|---|---|---|---|---|---|---|---|
| | | | | | | Humidity (%): 78.0 | Humidity (%): 78.0 |
| B3 | 17.08.22 | 20:02 | 20:32 | 22:02 | 2 | Wind (mph): 2.4<br>Cloud Cover (Oktas): 8<br>Temperature (C): 19.8<br>Humidity (%): 78.0 | Wind (mph): 2.4<br>Cloud Cover (Oktas): 8<br>Temperature (C): 19.8<br>Humidity (%): 78.0 |
| B2a | 23.08.22 | 20:20 | 19.50 | 21:50 | 2 | Wind (mph): 0<br>Cloud Cover (Oktas): 8<br>Temperature (C): 22.5<br>Humidity (%): 70.7 | Wind (mph): 0<br>Cloud Cover (Oktas): 2<br>Temperature (C): 17.3<br>Humidity (%): 82.6 |
| B2a | 08.09.22 | 19:44 | 19:31 | 20:10 | 1 | Wind (mph): 0<br>Cloud Cover (Oktas): 8<br>Temperature (C): 19.3<br>Humidity (%): 78.8 | Wind (mph): 0<br>Cloud Cover (Oktas): 8<br>Temperature (C): 16<br>Humidity (%):88 |
| B2b | 23.08.22 | 20:20 | 19:50 | 21:50 | 1 | Wind (mph): 0<br>Cloud Cover (Oktas): 8<br>Temperature (C): 22.5<br>Humidity (%): 70.7 | Wind (mph): 0<br>Cloud Cover (Oktas): 2<br>Temperature (C): 17.3<br>Humidity (%): 82.6 |
| B2b | 08.09.22 | 19:44 | 19:31 | 20:10 | 2 | Wind (mph): 0<br>Cloud Cover (Oktas): 8<br>Temperature (C): 19.3<br>Humidity (%): 78.8 | Wind (mph): 0<br>Cloud Cover (Oktas): 8<br>Temperature (C): 16<br>Humidity (%):88 |
| B2d | 23.08.22 | 20:20 | 19:50 | 21:50 | 2 | Wind (mph): 0<br>Cloud Cover (Oktas): 8<br>Temperature (C): 22.5<br>Humidity (%): 70.7 | Wind (mph): 0<br>Cloud Cover (Oktas): 2<br>Temperature (C): 17.3<br>Humidity (%): 82.6 |

| Building Elevation | Date | Sunset | Survey Start Time | Survey End Time | Number of Surveyors | Weather (Start) | Weather (End) |
|---|---|---|---|---|---|---|---|
| B2d | 08.09.22 | 19:44 | 19:31 | 20:10 | 2 | Wind (mph): 0<br>Cloud Cover (Oktas): 8<br>Temperature (C): 19.3<br>Humidity (%): 78.8 | Wind (mph): 0<br>Cloud Cover (Oktas): 8<br>Temperature (C): 16<br>Humidity (%):88 |

## 3.4 Limitations

Bat surveys offer only 'snapshots' of the location being assessed and do not take account of potential future changes in abundance or diversity of bats at a given site. However, by completing surveys to best practice, the risks of providing unrepresentative assessments are reduced.

The methodology adopted, and the sources of information used by AECOM in providing its services are outlined in this report. The work described in this report was conducted between August 2022 and January 2023 and is based on the conditions encountered and the information available during the said period of time. The scope of this Report and the services are accordingly factually limited by these circumstances. AECOM disclaim any undertaking or obligation to advise any person of any change in any matter affecting the report, which may come or be brought to AECOM's attention after the date of the report.

The dusk emergence surveys were recommended by Wardell Armstrong following their PEA of the Site on 25 March 2022 (Wardell Armstrong, 2022). As part of the PEA, a PRA of all building elevations facing the proposed area of development and a PGLRA all trees within and immediately adjacent to the Site was completed (Wardell Armstrong, 2022). AECOM did not undertake/ or update these assessments by Wardell Armstrong and have assumed them as factual and accurate assessments. AECOM disclaim any responsibility for any potential inaccuracies or mistakes within these assessments.

Survey weather conditions during the dusk emergence surveys at building elevations B2a, B2b and B2d on 08 September 2022 were deemed suboptimal due to heavy, continuous rain as such was cancelled 41 minutes into the survey at 20:10). An additional survey was not deemed necessary on building elevations B2a, B2b and B2d as two bat emergences and a return to roost were recorded on building elevations B2c and B2d during this survey. Therefore, these results combined with previous survey results are deemed sufficient to confirm roosting status of the building. Recommendations for a pre-works emergence survey on the building elevations in May/ June 2023 will confirm or indicate any changes to the status of the roosts prior to works commencing. Should new roosts or a change in roost status be identified further surveys and mitigation maybe required upon consultation with a suitably qualified bat ecologist.

Building elevations B2a, B2b and B2d were assessed as having Moderate suitability to support roosting bats. PRFs assessed as having Moderate suitability to support roosting bats, may also have suitability to support maternity roosting bats. The optimum period to survey for maternity roosting bats is between mid-May to early-August. The two emergence surveys undertaken on these building elevations were undertaken out of this optimum period for recording maternity roots, as such should maternity roosting bats be present, they may have gone un-recorded. Recommendations for a pre-works emergence survey on the building elevations in May/ June 2023 will likely identify maternity roosting bats should they be present. Should a maternity roost of bats be identified further surveys and mitigation maybe required upon consultation with a suitably qualified bat ecologist.

Upon completion of lighting design for the proposed development it may be recommended that a bat emergence survey take place prior to the proposed development works in June/July 2023 to gather updated bat roost and activity data.

There are deemed to be no further significant limitations to this bat survey report.

# 4. Results

## 4.1 Desk Study

Desk study results in relation to bats extrapolated from the PEA Report (Wardell Armstrong, 2022) are summarised in Table 4. For full desk study results, refer to Table 1 and Table 3 in the PEA Report (Wardell Armstrong, 2022).

**Table 4. Desk Study Results in Relation to Bats**

| Designation/Feature | Description |
|---|---|
| Internationally and Nationally Designated Sites for bats within 10 km | There are no internationally or nationally designated sites for bats within 10 km of the Site. |
| Locally Designated Sites for bats within 2 km of the Site | There are no locally designated sites for bats within 2 km of the site. However, two Sites of Importance for Nature Conservation (SINC) have listed bats as important species recorded.<br><br>River Taff SINC<br>**Distance and Direction:** 50 m south of the Site.<br>**Description:** The river is important for migratory fish, otter *Lutra lutra*, wildfowl and bankside vegetation acts as a major wildlife corridor. Bats, otter, Atlantic salmon *Salmo salmar*, brown trout *Salmo trutta*, grass snake *Natrix helvetica* and kingfisher *Alcedo atthis* are amongst the diverse species recorded in and around the River Taff SINC. The SINC is designated for watercourses.<br><br>River Ely SINC<br>**Distance and Direction**: 1.75 km southwest of the site.<br>**Description:** The river is important for migratory fish, otter, wildfowl and bankside vegetation and acts as a major wildlife corridor. Numerous important species have been recorded along the River Ely, including bats, otter, palmate newts *Lissotriton helveticus* and smooth newts *Lissotriton vulgaris*, kingfisher and barn owl *Tyto alba.* |
| Bat records from the last 10 years within 2 km | **Field Records:** brown long-eared bat *Plecotus auritus*, common pipistrelle *Pipistrellus pipistrellus*, Daubenton's bat *Myotis daubentonii*, Nauthusius's pipistrelle *Pipistrellus nathusii*, noctule *Nyctalus noctula*, pipistrelle sp. *Pipistrellus* sp., soprano pipistrelle *Pipistrellus pygmaeus* and whiskered bat *Myotis mystacinus* are recorded incidentally within 2 km of the site either foraging or commuting in the last 10 years.<br>**Roost Records:** There are 25 recorded roosts within 2 km of the Site within the last 10 years. Bats recorded roosting include common pipistrelle, soprano pipistrelle, pipistrelle sp., Nauthusius's pipistrelle, brown long-eared bat, lesser horseshoe bat *Rhinolophus hipposideros* and Daubenton's bat. The nearest roost record within the last 10 years is of an unknown bat species approximately 0.5 km east of the site boundary. |

## 4.2 Preliminary Roost Assessment

A summary of the PRFs recorded during the PRA, surveyed during the dusk emergence survey for bats are provided in Table 5. Full results of the PRA are detailed in Appendix 4 of the PEA Report (Wardell Armstrong, 2022).

**Table 5. Preliminary Roost Assessment Results**

| Building Elevation | Description | Bat Roost Suitability |
|---|---|---|
| B1 | No external PRFs were identified. | Negligible |
| B2a | Three external PRFs identified:<br>1. **B2a_Ref_01** Gap under roof edge at south west corner, 10 m high. The 60 cm long by 3 cm wide gap.<br>2. **B2a_Ref_02**- Hole at corner of concrete cladding above a window on the south east elevation, 4 m high. 6 cm gap.<br>3. **B2a_Ref_03**- possible gaps along base of concrete slab along southeast elevation 4 m high. | **Moderate** |

| Building Elevation | Description | Bat Roost Suitability |
|---|---|---|
| | Appendix A: Photograph 1. | |
| B2b | Two external PRFs identified:<br>1. **B2b_Ref_01**- gap between b2a and b2b brickwork. 5 m long.<br>2. **B2b_Ref_02**- potential gap under roof capping along edge of building.<br>Appendix A: Photograph 2. | **Moderate** |
| B2c | Two external PRFs identified:<br>1. **B2c_Ref_01**- south elevation of building. loose soffit panel with gap underneath.<br>2. **B2c_Ref_02**- potential gaps under cladding.<br>Appendix A: Photographs 3, 6 and 7. | **Low** |
| B2d | Two external PRFs identified:<br>1. **B2d_Ref_01**- 3 cm gap at corner of soffit/ flashing/roof capping.<br>2. **B2d_Ref_02**- 3 cm gap at corner of soffit/flashing/roof.<br>Appendix A: Photographs 4 and 8. | **Moderate** |
| B2e | No external PRFs were identified. | Negligible |
| B3 | Three external PRFs identified:<br>1. **B3_Ref_01**- 3 cm gap in broken vent on southwest elevation 2m high.<br>2. **B3_Ref_02**- Gap at end of soffit box on southwest elevation.<br>3. **B3_Ref_03**- Gap at end of soffit box on southwest elevation.<br>Appendix A: Photograph 5. | **Low** |
| B4 | No external PRFs were identified. | Negligible |

## 4.3 Dusk Emergence Surveys

Confirmed summer, day roosts have been confirmed on two building elevations: B2c and B2d. Two common pipistrelle were recorded emerging from PRF B2c_Ref_01, and one common pipistrelle was recorded re-entering PRF_B2c_Ref_02 on building elevation B2c. A suspected soprano pipistrelle was recorded emerging from PRF_B2d_Ref_01 on building elevation B2d. No bats were recorded emerging from the building elevations B2a, B2b and B3 during the dusk emergence surveys although do have potential roost features that could support roosting bats. Results of the dusk emergence surveys are provided in Table 6.

**Table 6. Dusk Emergence Survey Results**

| Building Elevation | Survey Date | Results |
|---|---|---|
| B2a | 23.08.2022<br>08.09.2022 | No bats were recorded emerging or re-entering from the PRFs on building elevation B2a. |
| B2b | 23.08.2022<br>08.09.2022 | No bats were recorded emerging or re-entering from the PRFs on building elevation B2b. |
| B2c | 17.08.2022 | Two common pipistrelles were recorded emerging from building elevation B2c, PRF B2c_Ref_01 during the dusk emergence survey on 08.09.2022 on the adjacent building elevation B2d.<br>(Appendix A: Photograph 6. Figure 1, PRF B2c_Ref_01).<br>One common pipistrelle was recorded re-entering from building elevation B2c, PRF B2c_Ref_02 during the dusk emergence survey on 08.09.2022 on the adjacent building elevation B2b.<br>See (Appendix A: Photographs 3, 6 and 7. Figure 1, PRF B2c_Ref_02). |
| B2d | 23.08.2022<br>08.09.2022 | One bat (suspected soprano pipistrelle) was recorded emerging from building elevation B2d, PRF B2d_Ref_01 during the dusk emergence survey on 23.08.2022 at 21:14.<br>(Appendix A: Photographs 4 and 8. Figure 1, PRF B2d_Ref_01). |

| Building Elevation | Survey Date | Results |
|---|---|---|
| B3 | 17.08.2022 | No bats were recorded emerging or re-entering from the PRFs on building B3. |

## 4.4 Ad-Hoc Bat Activity

### Emergence Surveys

Bat activity was detected during all dusk emergence surveys undertaken at the Site. Three species of bat were recorded: noctule, soprano pipistrelle and common pipistrelle.

Noctules were active throughout all surveys, foraging and commuting at height over the improved grassland on the Site. Common and soprano pipistrelle were recorded foraging and commuting in association with the buildings on Site, and over the improved grassland on the Site.

# 5. Potential Impacts

## 5.1 Roosting Bats

**Confirmed Roosts - Building Elevations B2c and B2d**

Two common pipistrelles were recorded emerging and one common pipistrelle was recorded re-entering from building elevation B2c. One suspected soprano pipistrelle was recorded emerging from building elevation B2d.

No loss of PRFs are anticipated as a result of the proposed development, PRFs will be retained. The proposed development is not in proximity to the confirmed roosting features. As such roosting bats are unlikely to be impacted by the proposed development and no loss, obstruction or modification of roosts are anticipated.

There is potential for noise during the proposed development to disturb day, summer roosting bats in the event they are present within the confirmed roosting features within building elevations B2c and B2d. However, the level of noise as a result of the proposed development is unlikely to exceed the noise level currently experienced at the school. As such noise will have a negligible impact on summer roosting bats.

A lighting design has not been confirmed at the time of writing. It is understood that additional lighting will be required on the new 'Special Resource Base'. Should the new lighting be positioned so that it could illuminate confirmed roosts, PRFs or dark commuting corridors amongst the buildings there is potential for light spill to disturb roosting bats. Light pollution may result in bats deserting their roosts, becoming 'entombed' in their roosts or delaying emergence times so that the time available to forage is reduced and as such bats behaviours maybe affected negatively.

**Building elevation B2a and B2b, and Building B3**

No bats were recorded emerging/ re-entering from building elevations B2a and B2b or building B3.

Building elevations B2a and B2b and building B3 did not support summer roosting bats at the time of survey. As such roosting bats are assumed likely absent.

However, PRFs present on building elevations B2a and B2b and building B3 could be used opportunistically by confirmed roosting pipistrelle species in the adjacent building elevations B2c and B2d.

No loss of PRFs are anticipated as a result of the proposed development. The proposed development is not in proximity to the PRFs. As such roosting bats are unlikely to be impacted by the proposed development and no loss, obstruction or modification of PRFs are anticipated.

There is potential for noise and vibration during the proposed development to disturb day, summer roosting bats in the unlikely event they are present within PRFs within building elevations B2a and B2b or building B3.

## 5.2 Foraging and Commuting Bats

### 5.2.1 Direct Habitat Loss

The clearance of an undetermined area of improved grassland within the Site to facilitate the proposed development will not impact on foraging and commuting bats. There is habitat of a greater value in the wider landscape as such the impact on foraging and commuting bats is negligible.

### 5.2.2 External Lighting

Without mitigation, any new lighting scheme required for the proposed development could spill onto the confirmed roosts, PRFs, or boundaries of retained or created habitats, which are suitable for foraging and commuting bats. This could cause bats to avoid these areas, find alternative roosting sites and/or create severance of commuting routes.

# 6. Recommendations for Further Surveys and Mitigation

## 6.1 Further Surveys and Licensing

Further dusk emergence surveys are required to be undertaken in May/ June 2023 prior to the commencement of works in summer 2023 on the four building elevations (B2a, B2b, B2c and B2d) and building B3. One emergence survey is recommended on building elevations B2a and B2b and building B3. Due to the presence of confirmed roosts on building elevations B2c and B2d two emergence surveys; separated at least 14 days apart, are recommended. This would provide an updated understanding of how bats utilise the Site, PRFs and confirmed roost features. Emergence surveys undertaken in May/ June 2023 are during the bat maternity period, as such it will allow a more accurate assessment of the likely value of the Site for maternity roosting bats.

Hibernation assessments and surveys may be required if impacts are predicted during the bat hibernation period (November/December – March, inclusive, depending on weather conditions) on the elevations of building B2 and B3 if the impacts cannot be reduced to a sufficient level under a Precautionary Method of Working (PMW). Hibernations surveys may be required for any buildings within the Survey Area identified as having hibernation suitability where there is a risk of disturbing hibernating bats. Buildings assessed as Low bat roost suitability are unlikely to support hibernating bats.

Currently, an EPSML is not required for the proposed development. Should updated emergence/ re-entry surveys result in further roost's being identified which may be impacted by the proposed development, and EPSML maybe required.

## 6.2 Mitigation

The mitigation hierarchy has been considered and should be implemented when designing the proposed development. A summary is provided below.

Mitigation Hierarchy:

1. Avoidance – Seek options that avoid harm to ecological features (for example, by locating on an alternative Site or use of technology, or timing to eliminate impact);
2. Mitigation – Negative effects should be avoided or minimised through mitigation measures, either through the design of the project or subsequent measures that can be guaranteed – for example, through a condition or planning obligation;
3. Compensation – Used as last resort to offset impacts; and,
4. Enhancement – Seek to provide net benefits for biodiversity over and above requirements for avoidance, mitigation or compensation.

### 6.2.1 Bat Roosting

As building elevations B2c and B2d are confirmed roosts, and building elevations B2a and B2b, and building B3 remain suitable for roosting bats, a PMW will be required for any works in proximity to these building elevations/ building to facilitate the proposed development which may impact upon confirmed roosts or features with suitability for roosting bats. The PMW will detail the appropriate method of works including timing of the works.

Should a maternity roost of bats be identified in the recommended pre-works emergence surveys then a NRW bat licensed ecologist should be contacted for advice on how to proceed.

### 6.2.2 Disturbance

Bats are particularly susceptible to disturbance impacts during the sensitive maternity period. Notwithstanding future surveys (see Section 6.1), a PMW should be in place to avoid potential disturbance, to include the following measures.

- A no-works buffer should be in place around building elevations with confirmed roosts and with bat roost suitability to minimise the impacts from noise and vibration. The buffer will be agreed with an appropriately experienced and licensed bat ecologist based on the type of work being undertaken; and,

- PMW will be required for works in proximity to the impacted building elevations/ buildings during the hibernation period (November/December – March, inclusive, depending on weather conditions). If impacts cannot be reduced such that they no longer pose a risk to hibernating bats, works must be timed to avoid the hibernation period. Alternatively, survey work can be completed to determine whether hibernation roosts are present (see Section 5.1).

If roosts are subsequently found during the future surveys, and/or if the proposed development changes to require works to additional buildings with suitability for roosting bats, the proposed development will need to be re-assessed by an appropriately experienced ecologist and further mitigation will be required.

## 6.3 External Lighting

There are British Standards relating to various components of lighting and there are guidelines that relate to crime prevention, prevention of vehicular accidents and amenity use (ILP, 2018). There is no legislation requiring an area or road to be lit (ILP, 2018). However, there is legislation requiring bats to be protected against disturbance, which includes light disturbance.

The following recommendations, in line with best practice guidance, should be incorporated into any new lighting scheme at the Site:

- in the first instance, external lighting must be designed to avoid light spill onto vegetated habitats, and trees and structures with suitability to support roosting bats, and avoid spilling beyond the Site boundary;
- light spill onto sensitive areas (such as bat boxes and green corridors) should be limited to levels of 0.5, 1 or 3 lux or less dependent on the bat species present on the Site;
- ideally, though unlikely to be feasible due to the street lighting, lighting design must maintain a 'dark corridor' to allow use of the habitat for foraging, commuting and roost access; and,
- lighting design should be considerate to PRFs of the new building, including any new bat boxes, to not negate any future use of these PRFs.

Suggestions for mitigating external lighting and achieving the lighting recommendations above are outlined in the ILP Bats and Lighting Guidance Note (ILP, 2018) and best practice guidance (BCT, 2014 and Gunnell *et. al.,* 2012). These include:

- only light areas which need to be lit, and use the minimal level of lighting required to comply with guidance such as Institute of Lighting Engineers Guidance Notes for the Reduction of Obtrusive Light (2021);
- avoid aesthetic lighting which has no other function, and up lighting of trees and buildings;
- use the lowest level of illumination required for purpose;
- where lighting is proposed, use lighting modelling programs to indicate where the light spill will occur;
- LED luminaires should be used where possible due to their sharp cut off, low intensity, good colour rendition and dimming capability;
- a warm white spectrum (ideally <2700 Kelvin) should be adopted to reduce blue light component;
- avoid neutral white, cool white and blue spectrums of light;
- all luminaires should lack or have negligible UV elements, avoid white and blue spectrums of light;
- eliminate bare lamps and any upward pointing light;
- luminaires should be mounted on the horizontal, i.e., no upward tilt (only luminaires with an upward light ratio of 0% with good optical control should be used);
- the spread of light should be at or near the horizontal, flat cut off lanterns are best;
- luminaires should feature peak wavelengths higher than 550 nm to avoid the component of light most disturbing to bats;
- reduce the height of lighting columns as light at low levels reduced impact; higher mounting heights allow lower main beam angles, which can assist in reducing glare;
- for pedestrian lighting, use low level lighting that is as directional as possible, below 3 lux at ground level but preferably below 1 lux;

- where lighting columns are in proximity (adjacent to) vegetated habitats and structures with suitability to support roosting bats and where light spill onto these PRFs is predicted by the lighting models, the luminaries must be moved or fitted with light control systems to reduce light spill onto these PRFs;
- any external security lighting should be set to motion sensors and short (1 minute) timers;
- limit the times that the lights are on to provide some dark periods; and/or dimming of lights during certain periods; the proposed new lighting could be turned off or dimmed by 75 % from 22:00 until 06:00 daily;
- avoid using reflective surfaces under lights; and,
- do not use a lamp greater than 150 W for security lighting.

This will also maintain the value of the Site and adjacent habitats for other nocturnal species.

Once drafted the lighting design should be reviewed by a suitably experienced ecologist prior to it being finalised.

# 7. Recommendations for Enhancing Site Ecology

## 7.1 Bat Box Provision

Prior to the commencement of works at the Site, it is recommended that bat boxes are installed onto the building on the opposite side to the proposed development to provide an enhancement in the form of additional roosting opportunities for bats away from potential works disturbance.

These should be situated on the north and/or northeast faces of the school building with the greatest connectivity to the surrounding foraging habitat. To increase the probability of their use, it is recommended that the bat boxes are installed away from any existing light spill and above the height of the existing street lighting columns. The probability of use would also increase if the external lighting around the Site could be reduced and/or controlled to increase the level of darkness at night.

Where possible, new roost features should be situated away from light spill, with clear flight paths towards green corridors and suitable foraging habitats to be used by bats i.e. the potential green corridor of the hedge and tree line along the River Taff footpath to the north and north east of the proposed development. Advice from a suitably qualified ecologist should be sought when drawing up the specifications for bat roosts and locations.

# 8. References

Bat Conservation Trust, (2014). Artificial Lighting and Wildlife. Interim Guidance: Recommendations to help minimise the impact artificial lighting. London: Bat Conservation Trust. June 2014.

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Gunnell, K., Grant, G., & Williams, C. (2012). Landscape and urban design for bats and biodiversity. London: Bat Conservation Trust.

Institute of Lighting Professionals (ILP) (2021). Guidance Note 1 for the reduction of obtrusive light 2021. Bats and the Built Environment series.

ILP (2018). Guidance Note 08/18 Bats and artificial lighting in the UK, Bats and the Built Environment series.

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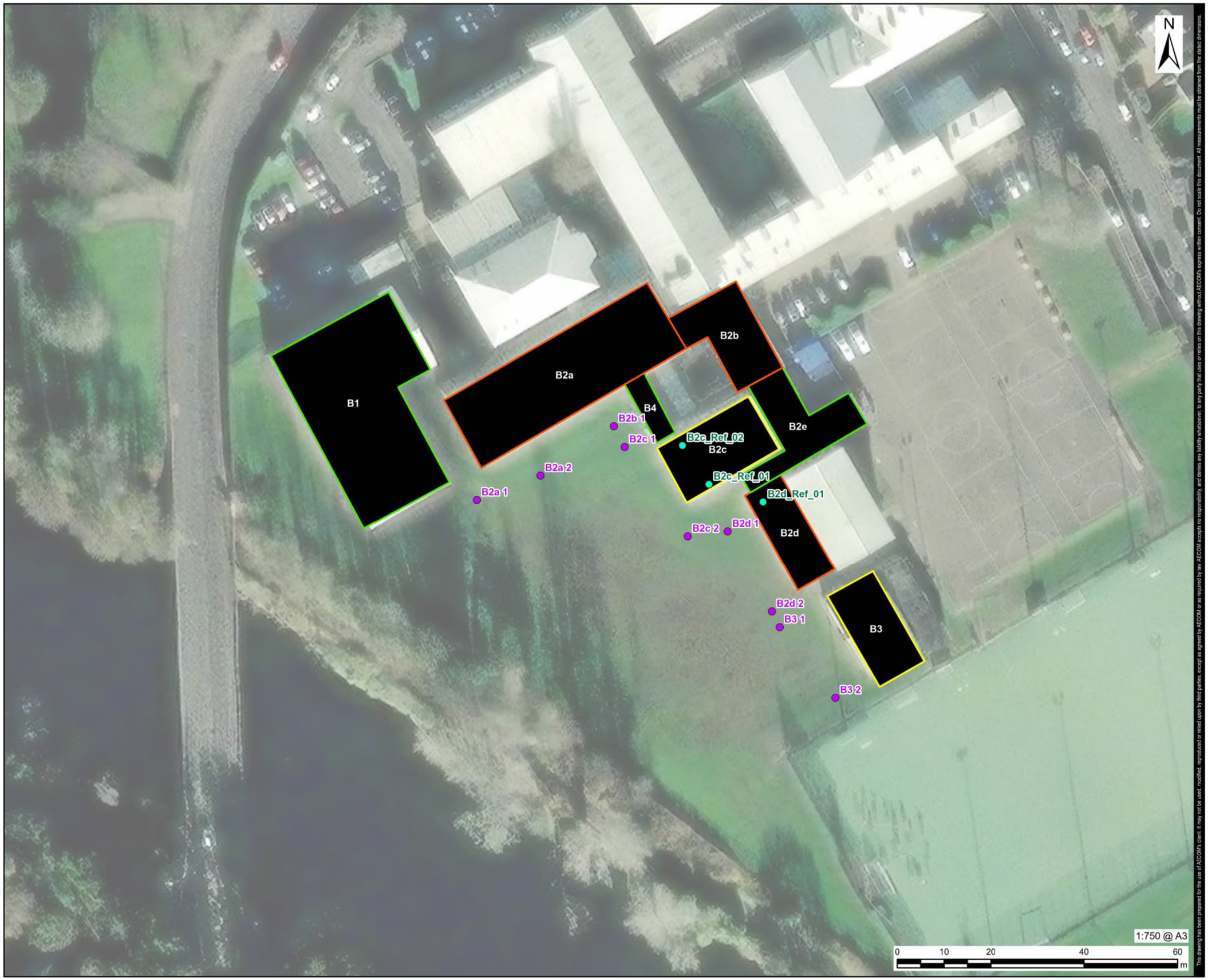
Russ, J. (2012) British Bat Calls: A Guide to Species Identification. Bat Biology and Conservation. Pelagic Publishing. ISBN: 1907807268.

Wardell Armstrong (2022). Preliminary Ecological Appraisal. April 2022.

# 9. Figure 1. Bat Survey Results






Revision: 0 Drawn: BM Checked: AM Approved: BL Date: 2022-11-30

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AECOM

**PROJECT**

Ysgol Gyfun Gymraeg Glantaf

**CLIENT**

Cardiff County Council

**CONSULTANT**

AECOM Limited
1 New York Street
Manchester, M1 4HD
www.aecom.com

**LEGEND**

- Surveyor Location
- Bat Roost Features

Bat Roost Suitability - Building

- Negligible
- Low
- Moderate

**NOTES**

Maxar, Microsoft

**ISSUE PURPOSE**

FINAL

**PROJECT NUMBER**

60687936

**FIGURE TITLE**

Bat Roost Structures

**FIGURE NUMBER**

Figure 1

# Appendix A Site Photographs

**Photograph 1:** Building elevation B2a surveyor vantage point.

**Photograph 2:** Building elevation B2b surveyor vantage point.

**Photograph 3:** Building elevation B2c surveyor vantage point.

**Photograph 4:** Building elevation B2d surveyor vantage point.

**Photograph 5:** Building elevation B3 surveyor vantage point.

**Photograph 6:** Building elevation: B2c, PRF: B2c_Ref_01. South elevation of building. loose soffit panel with gap underneath. Emergence of two common pipistrelle confirmed from this feature on 08.09.2022.

| | |
|---|---|
|  |  |
| **Photograph 7:** Building elevation: B2c, PRF: B2c_Ref_02. Potential gaps under cladding. Re-entry confirmed of one common pipistrelle from this feature on 08.09.2022 | **Photograph 8:** Building elevation: B2d, PRF: B2d_Ref_01. On west elevation of building. Gap at corner of soffit/ flashing/roof capping.<br><br>Emergence confirmed of suspected soprano pipistrelle from this feature on 23.08.2022. |