Cardiff County Council (CCC)

FITZALAN HIGH SCHOOL

Bat Survey Report

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Cardiff County Council (CCC)

FITZALAN HIGH SCHOOL

Bat Survey Report

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EXECUTIVE SUMMARY

Cardiff County Council (CCC) are seeking to redevelop / dispose of the Fitzalan High School site at Lawrenny Ave, Cardiff, CF11 8XB (central National Grid Reference: ST1595876034); herein called the 'Site' (see Figure 1). This consists of demolishing the existing high school, a proposed school replacement development, establishing a new grass rugby / sports pitch with two Multi Use Games Areas (with adjacent cycle parking area) (the 'Proposed Development'). The current Site was dominated by buildings, hardstanding and amenity grassland habitat with some scattered trees.

WSP UK Limited (hereafter referred to as 'WSP') was commissioned by CCC to undertake bat surveys of buildings within the Site.

A Preliminary Ecological Appraisal (PEA) and Preliminary Bat Roost Assessment (PBRA) was conducted by WSP in June 2022 (WSP, 2022), during which buildings were inspected from the ground to enable an assessment of their suitability for supporting bat roosts.

During the PEA, approximately 10 bat droppings in total were found at two locations on one building on the Site (B1). In addition, a desk study record from September 2021 was of an unidentified bat found within the swimming pool building on the Site (B19). An adult common pipistrelle *Pipistrellus pipistrellus* bat, was recorded in March 2019, within one of the buildings (unspecified) at the Site. Of the 26 buildings on Site, 17 were assessed as having confirmed use or as being suitable to support roosting bats: Low: five buildings; Moderate: seven buildings; High: two buildings; and Confirmed Use: three buildings. The remaining nine buildings were assessed as having negligible suitability to support bat roosts. Dusk emergence surveys of the 17 buildings with confirmed use or suitability were subsequently commissioned.

Dusk emergence surveys of the 17 buildings took place between July and September 2022. Overall, across all dusk emergence survey visits, the surveys recorded roosts within buildings B4, B5 and B24. Evidence of bat use (bat droppings) were also recorded within buildings B1 and B5. The DNA analysis of collected bat droppings confirmed soprano pipistrelle *Pipistrellus pygmaeus* use within B1 and B5. All bats recorded emerging from buildings B4, B5 and B24 were also soprano pipistrelle. All roost sizes ranged from one to five individual bats which indicate that all B1, B4, B5 were B24 support a summer day roost or a transitional roost. No bats were recorded emerging from, or returning to, a roost within B19 but a desk study record indicates past usage of an unidentified bat species. Based on observed bat activity across the Site, the species recorded on Site and the fact that no roosts were found during surveys of B19 in 2022, this is presumed as also a pipistrelle bat and also of a summer day roost, or as a transitional roost.

It is considered extremely unlikely that maternity roosts or other roosts of high conservation status are currently present within the buildings on Site. All roosts are considered to be of a low conservation status and as such, the loss of these roosts in unlikely to result in a significant negative impact on local bat populations.

All bats and their roosts are protected by UK legislation but this protection can be derogated by obtaining a Natural Resources Wales (NRW) development licence and delivering appropriate mitigation. A development licence will therefore be required from NRW to enable the works to

proceed lawfully. This licence will detail the requirement for the provision of alternative roosting opportunities, the exclusion of bat roosts prior to demolition of buildings, an Ecological watching brief, a sensitive lighting scheme, and the timing of works to avoid key sensitive periods of the year for bats i.e., the maternity season (May-August) and to avoid the periods December to February when there is a risk of pipistrelle bats being present in torpor / hibernation.

Ecological enhancements in relation to landscape and provision of future roosting opportunities are provided. These include the provision of additional roosting opportunities, inclusion of nectar-rich plant species in soft landscaping areas, the creation of new and the enhancement of existing linear vegetation (tree-lines and hedgerows) and the provision of standing water-bodies.

1 INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1. WSP UK Limited (hereafter referred to as 'WSP') was commissioned by Cardiff County Council (CCC) to undertake bat surveys of Fitzalan High School Site at Lawrenny Ave, Cardiff, CF11 8XB, (central National Grid Reference: ST1595876034); herein called the 'Site' (see Figure 1).

1.1.2. It is understood that CCC is seeking to redevelop / dispose of the Site. This consists of demolishing the existing high school, a proposed school replacement development, establishing a new grass rugby / sports pitch with two Multi Use Games Areas (with adjacent cycle parking area) (the 'Proposed Development'). The current Site was dominated by buildings, hardstanding and amenity grassland habitat with scattered trees.

1.2 ECOLOGICAL BACKGROUND

1.2.1. A Preliminary Ecological Appraisal (PEA) and Preliminary Bat Roost Assessment (PBRA) was conducted by WSP in June 2022 (WSP, 2022), which included an extended Phase 1 Habitat survey and desk study.

1.2.2. The desk study returned 17 records of bat roosts within 2 km of the Site from within the last 10 years. Two records were found within the Site. The first record was of an adult common pipistrelle bat, recorded in March 2019, which was found within one of the buildings (unspecified) at the Site. The second record was in September 2021, when an unidentified bat was found within the swimming pool building at the Site (B19).

1.2.3. The next nearest roost record was of a soprano pipistrelle bat *Pipistrellus pygmaeus* roost, 250 m east of the Site. Other roost records were for lesser horseshoe bats *Rhinolophus hipposideros* (closest roost – 615 m from the Site), common pipistrelle *Pipistrellus pipistrellus* (closest roost – 654 m from the Site), and brown long-eared bat *Plecotus auritus* roost (closest roost – 1319 m from the Site).

1.2.4. A further 182 records of foraging or commuting bats were also returned, comprising nine species of bat: common pipistrelle, soprano pipistrelle, noctule *Nyctalus noctula*, serotine *Eptesicus serotinus*, Leisler's bat *Nyctalus leisleri*, lesser horseshoe, Daubenton's Bat *Myotis daubentonii*, brown long-eared bat, and Nathusius pipistrelle *Pipistrellus nathusii*.

1.2.5. As part of the PEA, all trees and buildings on Site and immediate surroundings were inspected from the ground to enable an assessment of their suitability for supporting bat roosts. During the PEA, a total of approximately 10 bat droppings were found at two locations at one building on the Site (B1). DNA analysis of collected bat droppings confirmed soprano pipistrelle *Pipistrellus pygmaeus* use within B1 (see Appendix C).

1.2.6. Of the 26 buildings on Site, 17 were assessed as having confirmed use or as being suitable to support roosting bats (assessed as low, moderate or high) as followed:

- Negligible: nine (B9, B11, BB12, B13, B14, B17, B22, B25, and B26);
- Low: five (B10, B15, B18, B21, and B23);
- Moderate: seven (B3, B5, B7, B8, B16, B20, and B24);
- High: two (B2, and B6); and

- Confirmed: three (B1, B4, and B19).

1.2.7. Buildings were classified as having confirmed use based on evidence found during the PBRA (droppings) and / or due to desk study records. provided by a bat care organisation / anecdotal record reported by grounds staff at Fitzalan High School. Full details of the PBRA and detailed external building descriptions are included within the PEA report (WSP, 2022). No trees on Site were identified with bat roost suitability and therefore are not considered further in this report.

1.3 BRIEF AND OBJECTIVES

1.3.1. CCC commissioned WSP to complete bat surveys of the Site. The brief was to:

- Complete dusk emergence surveys of buildings with potential to support bat roosts to establish the presence or likely absence of bat roosts on Site; and
- Evaluate the value of the Site for roosting bats and make recommendations as to how proposals should account for bats with respect to legislation, planning and biodiversity policy.

1.3.2. The results of these surveys and subsequent recommendations are included in this report.

2 METHODS

2.1 DESK STUDY

2.1.1. A desk study was undertaken in June 2022 as part of the PEA and PBRA to review existing ecological baseline information available in the public domain and to obtain information held by relevant third parties. To provide the baseline data for the ecological desk study, the following information was requested from South East Wales Biodiversity Records Centre (SEWBReC):

- Records of legally protected and notable species including bat species within 2 km of the Site;
- Records of statutory sites designated for nature conservation value within 2 km of the Site, extended to 10 km for International Sites (Special Areas of Conservation (SAC) and Special Protection Areas (SPA)) and internationally designated Ramsar sites;
- Records of non-statutory sites designated for nature conservation value within 2 km of the Site; and
- Woodland listed on the Ancient Woodland Inventory within 1 km.

2.1.2. Some bat records or additional information related to bat records were also obtained by a local bat care organisation and discussions with grounds staff at Fitzalan High School The findings of the desk study related to bats have been incorporated within Section 3.1 of this report. The full information from the desk study is included in the PEA report (WSP, 2022).

2.2 EXTERNAL BUILDING INSPECTION

2.2.1. During the PBRA, the buildings on Site were inspected to enable an assessment of their potential to support bat roosts, and to search for evidence indicating the current or historic use by roosting bats.

2.2.2. A visual inspection of the exterior of the buildings using binoculars and a high-powered torch was completed to search for features which may provide access or roosting opportunities for bats. Where suitable features were noted, their location and a brief description of their character was recorded. Additionally, each feature was visually inspected for evidence indicating use by roosting bats such as droppings, urine staining, and scratch marks / characteristic staining (from fur oils).

2.2.3. The buildings on Site were categorised in line with the descriptions in Table 2-1 and shown on Figure 2. Based on the features present and the location of the building, the potential for different types of bat roost was also considered. For the purpose of this preliminary roost assessment, potential roost types were grouped as follows (from Collins, 2016):

- Maternity (breeding roost);
- Summer / transitional (to include transitional, satellite, night and day roosts); and
- Hibernation.

Table 2-1 - Roost Suitability Categorisation

Category	Description
Confirmed	Building with features confirmed to be used by roosting bats either by historic records (verified appropriately), or evidence recorded during survey.

Category	Description
High	A building with one or more potential roost sites that are suitable for supporting large roosts on a regular basis/for longer periods of time because of their size, shelter, protection, conditions and suitable surrounding habitat.
Moderate	A building with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status.
Low	A building with one or more potential roost sites that could be used by individual bats opportunistically. 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 larger numbers of bats.
Negligible	Building with no potential opportunities for roosting bats, or very few or minor features in an isolated/unsuitable location such that the presence of a roost is considered highly improbable. e.g. isolated from suitable foraging or commuting habitats.

2.2.4. Full details of the PBRA and detailed external building descriptions are included within the PEA report (WSP, 2022). Bat droppings found during the PBRA were collected and sent to the University of Warwick for DNA analysis to determine species.

2.3 DUSK EMERGENCE SURVEY

2.3.1. The buildings on Site were subject to further surveys to watch and listen for bats emerging from, or returning to, roost. The level of survey effort employed was proportional to the assessed level of suitability for roosts to be present in line with best practice survey guidelines (Collins, 2016):

- Three emergence surveys required on buildings with confirmed / high roost suitability;
- Two emergence surveys required on buildings with moderate roost suitability; and
- One emergence survey required on buildings with low bat roost suitability.

2.3.2. Additional roost characterisation surveys were undertaken where roosts were identified midway through the original survey effort. In these instances, the number of surveys were altered to provide sufficient effort to characterise the type of roost present. The number and timing of survey visits is shown in Table 2-2. Surveyor locations were utilised to fully cover the Potential Roost Features (PRFs) and are shown on Figure 3.

2.3.3. The dusk emergence surveys began 15 minutes before sunset and continued until 90 minutes after sunset.

2.3.4. The surveys were conducted using a combination of Canon XA20 Infra-red (IR) camera, ZxTech 4K IR camera, Night fox Red HD IR Night Vision Goggles, and Nightfox Vulpes HD IR binoculars; all with external IR illuminators.

2.3.5. The surveyors used Elekon Bat logger M bat detectors and Echo Meter Touch (EMT) 2 Bat Detector to listen to and record echolocation calls of bats observed. During the dusk emergence surveys, surveyors mapped the flight-lines used by any bats observed and noted any features used by the bats to exit / enter the buildings. Incidental records of bat activity in the vicinity of the surveyor locations were also collected.

2.4 DATA ANALYSIS

2.4.1. The recordings of bat echolocation calls collected during the emergence surveys were analysed using specialist computer software (Elekon BatExplorer). The analysis enables confirmation of species or species group based on call parameters, and the relative activity of different species of bats by counting the minimum number of bats recorded within discrete sound files. Once triggered by ultrasound, the Bat logger detectors record sound files with a duration of up to 15 seconds, which may contain a number of individual bat passes, or discrete groups of ultrasound 'pulses'.

2.4.2. It should be recognised that a series of separate sound files may represent a series of different bats commuting within the range of an automated detector, or a smaller number of bats repeatedly triggering the detector (e.g. bats making repeated foraging passes within the range of a detector).

2.4.3. Where possible, bat calls are identified to species level. However, if present, species of the genus *Myotis* are grouped together in most cases as their calls are similar in structure and have overlapping call parameters, making species identification problematic (Russ, 2013). For *Pipistrellus* species the following criteria based on measurements of peak frequency are used to classify calls:

- Common pipistrelle ≥ 42 and <49KHz;
- Soprano pipistrelle ≥ 51KHz;
- Nathusius pipistrelle <39KHz;
- Common / soprano pipistrelle ≥49 and <51KHz; and
- Common / Nathusius pipistrelle ≥39 and <42KHz.

2.4.4. In addition, the following categories are used for calls which cannot be identified with confidence due to the overlap in call characteristics between species or species groups:

- *Myotis/ Plecotus* sp.;
- *Nyctalus* sp. (either Leisler's bat or noctule);
- Serotine / Leisler's; and
- Serotine/ *Plecotus* sp.

2.4.5. Recordings made during the dusk emergence surveys were analysed by a suitably experienced analyst. Analysis was subject to a full quality assurance review by an analyst of equal or higher level of experience. Where required, the Infrared footage was watched and analysed following the survey using available video footage software to confirm bat emergences and / or re-entry and roost locations. Footage was watched at real-time.

2.5 DATES OF SURVEY AND PERSONNEL

2.5.1. All bat surveys were led by experienced surveyors who hold a Natural Resources Wales (NRW) bat survey licence, with a minimum 8 years' experience of ecological survey, including extensive bat survey experience. The timing of survey visits is summarised in Table 2-2 below.

Table 2-2 - Dates of Dusk Emergence Survey Visits

Building Reference	Bat Roost Suitability (from the PBRA)	Date of Survey 1	Date of Survey 2	Date of Survey 3
B1	Confirmed	11/07/2022	09/08/2022	30/08/2022

Building Reference	Bat Roost Suitability (from the PBRA)	Date of Survey 1	Date of Survey 2	Date of Survey 3
B2	High	11/07/2022	22/08/2022	12/09/20022
B3	Moderate	11/07/2022	22/08/2022	n/a
B4	Confirmed	12/07/2022	15/08/2022	14/09/2022
B5	Moderate	14/07/2022	18/08/2022	01/09/2022
B6	High	03/08/2022	16/08/2022	07/09/2022
B7	Moderate	08/08/2022	31/08/2022	n/a
B8	Moderate	01/08/2022	25/08/20022	n/a
B10	Low	01/08/2022	n/a	n/a
B15	Low	18/07/2022	n/a	n/a
B16	Moderate	18/07/2022	22/08/2022	n/a
B18	Low	02/08/2022	n/a	n/a
B19	Confirmed	13/07/2022	17/08/2022	07/09/2022
B20	Moderate	20/07/2022	24/08/2022	n/a
B21	Low	20/07/2022	n/a	n/a
B23	Low	25/07/2022	n/a	n/a
B24	Moderate	21/07/2022	09/08/2022	25/08/2022

2.5.2. The timing and weather conditions of the dusk emergence survey visits are summarised in Appendix A below.

2.6 NOTES AND LIMITATIONS

2.6.1. Ecological survey data is typically valid for two years unless otherwise specified, for example if conditions are likely to change more quickly due to ecological processes or anticipated changes in management.

2.6.2. Records held by local biological record centres and local recording groups are generally collected on a voluntary basis; therefore, the absence of records does not demonstrate the absence of species, it may simply indicate a gap in recording coverage.

2.6.3. No internal building inspections were undertaken as part of this survey effort due to health and safety considerations. It was also considered that any internal inspection, if undertaken, would not have been comprehensive and would not have yielded significant different result to that of the

external inspections. Combined with the dusk emergence surveys that were undertaken, this is not considered to be a significant limitation.

2.6.4. No dawn re-entry surveys were undertaken as part of this survey effort. However, the level of survey effort for the buildings present on the Site was in line with industry best practice survey guidelines (Collins, 2016). This is considered an appropriate level of survey effort to establish the likely absence of bat roosts or to provide a suitable baseline for assessing the potential effects of the Proposed Development on buildings B1, B4, B5, B19 and B24 and their associated bat roosts. In addition, the use of infrared cameras was utilised with all surveyors to provide greater confidence in the results of the dusk surveys as per best practice guidance (BCT, 2022).

2.6.5. Bats typically demonstrate seasonal use of different roosts and being highly mobile species, may be roosting elsewhere during the period a building was surveyed. For this reason, bats may use other buildings on Site but remain undetected.

3 RESULTS AND EVALUATION

3.1 OVERVIEW

Across all survey effort (desk study records, external building inspections, DNA analysis of bat droppings found on Site and dusk emergence surveys), the following bat roosts have been recorded as shown in Table 3-1.

Table 3-1 – Roost Summary

Building Reference	Number of bat roosts	Confirmed during 2022 surveys (Y/N)	Bat Species (maximum count)	Roost Location
B1	1	Y	Soprano pipistrelle (1)	Southern and northern gable end – a total of approximately 10 bat droppings located below two gaps between facias and brick wall (Confirmed Roosting Feature (CRF 1-1 & CRF 1-2)
B4	2	Y	Soprano pipistrelle (5)	Western gable end – Two gaps between metal eaves and brick wall (CRF 4-1 & CRF 4-2)
B5	1	Y	Soprano pipistrelle (1)	North elevation - Gap between metal eaves and brick wall (CRF 5-1)
B19	1	N	Unidentified bat species (1)	Unknown
B24	1	Y	Soprano pipistrelle (4)	Western gable end - Gap between raised clay tile (CRF 24-1)

3.2 DESK STUDY RECORDS

3.2.1. An adult common pipistrelle bat, recorded in 2019, was found within one of the buildings (unspecified) at the Site. In addition, in 2021, an unidentified bat was found within the swimming pool building at the Site (B19). It is unknown whether these bats were roosting within the buildings or if the records were of incidental activity.

3.3 EXTERNAL BUILDING INSPECTION

3.3.1. Evidence of bat use (bat droppings) was recorded on the exterior of buildings B1 and B5.

3.3.2. The DNA analysis of collected bat droppings confirmed soprano pipistrelle use within B1 and B5. The laboratory results are included in Appendix C.

3.3.3. Full details of the PBRA and detailed external building descriptions are included within the PEA report (WSP, 2022).

3.4 DUSK EMERGENCE SURVEY

3.4.1. Overall across all dusk emergence survey visits, the surveys recorded the following roosts within buildings B4, B5 and B24:

- B4: soprano pipistrelle bats;
- B5: soprano pipistrelle bats; and
- B24: soprano pipistrelle bats.

3.4.2. Based on the number of bats recorded during these dusk emergence surveys, the roosts recorded during the dusk emergence surveys are considered as summer day roost and / or transitional type roosts. These are also considered likely suitable hibernation locations for pipistrelle species.

3.4.3. A summary of the roosts recorded during dusk emergence surveys are included within Tables 3-2 – 3-6 and shown on Figures 4.

3.4.4. Bat species were mainly limited to pipistrelle bat species, in particular soprano pipistrelle bats. Activity was predominately along the boundaries of the Site. Occasional noctule bats were also recorded commuting over the Site. Full raw data tables of bat activity recorded over all surveys are given in Appendix A. Cloud cover is measured in oktas and wind speed is measured on the Beaufort scale. Rainfall is assessed based on the following criteria as: 0=none, 1=drizzle, 2=light, 3=moderate, 4=heavy.

Table 3-2 - Summary of Dusk Emergence Survey Results of Building 1

Visit Number	Emergences during survey (Y / N)	Species Roosting and number	Roost Location	Roost Type
Visit 1, 2 and3	N	Soprano pipistrelle (assumed 1 individual based on low numbers of droppings)	Southern and northern gable ends - approximately 10 bat droppings located below gap between facias and brick wall (CRF 1-1 & CRF 1-2)	Summer day roost / transitional. These are also considered likely suitable hibernation locations for pipistrelle species.

Table 3-3 – Summary of Dusk Emergence Survey Results of Building 4

Visit Number	Emergences during survey (Y / N)	Species Roosting and number	Roost Location	Roost Type
Visit 1	Y	Soprano pipistrelle x 3	Western gable end – Gap between metal eaves and brick wall (CRF 4-1)	Summer day roost / transitional. These are also considered likely suitable hibernation locations for pipistrelle species.
Visit 2	Y	Soprano pipistrelle x 5	Western gable end – Two gaps between metal eaves and brick wall (CRF 4-1 & CRF 4-2)	
Visit 3	Y	Soprano pipistrelle x 3	Western gable end – Gap between metal eaves and brick wall (PRF 4-1)	

Table 3-4 - Summary of Dusk Emergence Survey Results of Building 5

Visit Number	Emergences during survey (Y / N)	Species Roosting and number	Roost Location	Roost Type
Visit 1	Y	Soprano pipistrelle x 1	North elevation - Gap between metal eaves and brick wall (CRF 5-1)	Summer day roost / transitional. These are also considered likely suitable hibernation locations for pipistrelle species.
Visit 2	N	n/a	n/a	
Visit 3	N	n/a	n/a	

Table 3-5 - Summary of Dusk Emergence Survey Results of Building 19

Visit Number	Emergences during survey (Y / N)	Species Roosting and number	Roost Location	Roost Type
Visit 1/2/3	N	Unidentified bat species (1)	Unknown – seen within swimming pool building (B19) by members of staff after removing ceiling panels within B19.	Summer day roost / transitional. These are also considered likely suitable hibernation locations for pipistrelle species.

Table 3-6 - Summary of Dusk Emergence Survey Results of Building 24

Visit Number	Emergences during survey (Y / N)	Species Roosting and number	Roost Location	Roost Type
Visit 1	Y	Soprano pipistrelle x 1	Western gable end - Gap between raised clay tile (CRF24-1)	Summer day roost / transitional. These are also considered likely suitable hibernation locations for pipistrelle species.
Visit 2	N	n/a	n/a	
Visit 3	Y	Soprano pipistrelle x 1	Western gable end - Gap between raised clay tile (CRF24-1)	

4 IMPLICATIONS FOR DEVELOPMENT

4.1 OVERVIEW

4.1.1. In the absence of mitigation, the Proposed Development will result in the destruction of confirmed bat roosts within buildings B1, B4, B5, B19 and B24 and possible injury to or killing of individual bats roosting within the buildings at the time of demolition. No roosts of high conservation importance have been recorded, with the identified roosts used by low numbers of common species of bats. All roosts were categorised as being a summer day roost / transitional roosts. These are also considered likely suitable hibernation locations for pipistrelle species.

4.1.2. Appropriate mitigation for the number and range of roosts recorded is required to meet legal compliance. The legislation and planning policy relevant to bats and their roosts set out below is therefore relevant. Recommendations as to how the legislation and planning policy may be satisfied are set out in Section 5.

4.2 LEGAL COMPLIANCE

4.2.1. Bats and their roosts are afforded a high level of protection under The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, the legislation means that it is an offence to:

- Deliberately capture, injure or kill a wild bat;
- Deliberately disturb wild bats; '*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.' and

- *Damage or destroy a breeding site or resting place used by this species.*

4.2.2. Protection is also afforded under the Wildlife and Countryside Act 1981 (as amended) with respect to disturbance of animals when using places of shelter, and obstruction of access to places of shelter.

4.2.3. Due to the high level of protection afforded to bats and their habitat, mitigation for this species is governed by a strict licensing procedure administered by NRW (normally, planning permission must be obtained before a licence can be sought). Licencing is subject to three tests, as defined under the Habitats Regulations, these must also be applied by the planning authority before granting permission for activities affecting bats. For permission to be granted the following criteria must be satisfied:

- The proposal is necessary '*to preserve public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment'*;
- '*There is no satisfactory alternative'*; and

- The proposals '*will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range'*.

4.2.4. Certain species of bats including the barbastelle bat *Barbastella barbastellus*, Bechstein's bat *Myotis bechsteinii*, noctule bat, brown long-eared bat, common pipistrelle, soprano pipistrelle bat, greater horseshoe bat *Rhinolophus ferrumequinum* and lesser horseshoe bat are also listed as Priority Species under Section 7 of the Environment (Wales) Act 2016. Under Section 7 of the Environment (Wales) Act 2016, Welsh Ministers must take all reasonable steps to maintain and enhance the living organisms and types of habitats included on any list published under this section and encourage others to take such steps.

4.3 PLANNING POLICY COMPLIANCE

4.3.1. At the national level the Planning Policy Wales (2021) (PPW) forms the basis for planning system decisions with respect to conserving and enhancing the natural environment, including bats.

4.3.2. The PPW sets out, amongst other points, how at an overview level the 'planning system should contribute to and enhance the national and local environment by:

- *…recognising the wider benefits of ecosystem services;* and
- *minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures…'*

4.3.3. A list of principles which local planning authorities should follow when determining planning applications is included in the PPW, and includes the following:

- *'- if significant harm resulting from a development cannot be avoided…adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
- *- …opportunities to incorporate biodiversity in and around developments should be encouraged;* and
- *- planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland…unless the need for, and benefits of, the development in that location clearly outweigh the loss…'*

4.3.4. Mitigation, compensation and enhancement measures are recommended in Section 5 to enable the Proposed Development to be compliant with the above legislation and planning policy.

5 RECOMMENDATIONS

5.1 MITIGATION AND COMPENSATORY MEASURES

5.1.1. When determining a planning application in relation to a proposal that will affect bats and / or their roosts, the local planning authority must ensure that they are satisfied that three tests, as set out in Regulation 55 of the Habitat Regulations 2019 (as amended), are likely to be met (see Section 4.2). To satisfy the third test, if roosts will be directly affected by works, a mitigation strategy should be prepared based on recommendations within this report demonstrating that it will be feasible to progress the Proposed Development and maintain the favourable conservation status of bat species identified on Site. Once planning permission has been obtained, this strategy may then be refined and form the basis of a licence application to NRW to permit the commencement of works affecting confirmed bat roosts.

5.1.2. A NRW development licence must be obtained before any works are undertaken on buildings B1, B4, B5, B19 and B24 (including the destruction of the roosts) being done so under the watching brief of a suitably qualified, licenced ecologist. A detailed mitigation strategy will be included within the NRW development licence however in summary, the following items should be included:

- Provision of alternative roosting opportunities (e.g., bat boxes / built-in roost features) at a minimum ratio of 2:1 (two new roost opportunities to the loss of a single roost to development) within the Site for use by common and soprano pipistrelle bats including other species;
- The bat boxes should be installed in positions where they are out of reach of people from the ground (so as to limit interference) and high enough to deter cats and other predators (without being placed too high as this makes maintenance more difficult and can leave the boxes exposed to weather, particularly strong winds). In practice, placing them between 3 and 4.5 metres from the ground is optimal. Boxes should be placed in a range of locations at slightly different heights and facing in slightly different directions to give a choice of roost site options (Mitchell-Jones, 2004). The direction of the boxes should be selected to avoid facing them into the prevailing weather and will preferably be positioned facing in a southerly direction (i.e. south-west through south to south-east) where they will receive a good degree of sunlight;
- Exclusion of bat roosts prior to demolition of buildings via the installation of one-way exclusion devices;
- Ecological watching brief to include the soft strip removal of roofing materials, weatherboarding, external cladding and window and door lintels under the supervision of a licensed bat ecologist. These works should be timed to avoid key sensitive periods of the year for bats i.e., the maternity season (May-August) and to avoid the periods December to February when there is a risk of pipistrelle bats being present in torpor / hibernation;
- Sensitive lighting scheme to include provision of ‘dark corridors’ around the footprint of the bat boxes and / or built-in roost features and alongside sensitive foraging and commuting habitat, the use of ‘bat-friendly’ lighting models and measures to minimise light spill where possible. Destruction of confirmed roosts being done so under the watching brief of a suitably qualified, licenced ecologist; and
- Any bat boxes installed as part of compensation will be done so under the watching brief of an ecologist and in accordance with best practice (Mitchell-Jones, 2004).

5.2 LIGHTING DESIGN

5.2.1. Artificial lighting can deter bats from accessing highly illuminated habitat, including roosting features. There is a risk that high levels of artificial light-spill onto roost features or retained trees and linear vegetation could deter bats from accessing suitable roost features. Any lighting scheme for the Proposed Development should be be designed to avoid lighting roost features and to maintain dark wildlife corridors around retained vegetation and to habitats located outside the Site, which would avoid this detrimental impact. Future development and implementation of a lighting scheme should be conducted in collaboration with a suitably experienced ecologist to ensure bat habitats remain unlit.

5.2.2. It is recommended that the lighting strategy for the Site seeks to:

- Use the minimum light levels necessary for the relevant task / function. This may equate to reducing light intensity, and/or using the minimum number or light sources or minimum column height;
- Use hoods, louvres or other luminaire design features to avoid light spill onto retained and newly created areas of vegetation likely to be used by foraging and commuting bats;
- Use narrow spectrum light sources where possible to lower the range of species affected by lighting, specifically avoiding shorter wavelength blue light, using instead warm/neutral colour temperature <4,200 kelvin lighting (BCT, 2014b); and
- Use light sources that emit minimal ultra-violet light to avoid attracting night-flying invertebrate species which in turn may attract bats to the light.

5.2.3. Where possible, consideration should also be given to varying the lighting levels in particularly ecologically valuable areas. For example, it may be possible to reduce lighting levels or perhaps even switch installations off after certain times e.g. between 00:00 and sunrise in the vicinity of tree lines of proposed landscaping. This use of “adaptive lighting” can tailor the installation to suit human health and safety as well as wildlife needs (BCT, 2014b).

5.2.4. In addition, measures to restrict the retrospective installation of inappropriate exterior lighting on residential units should be considered.

5.3 FURTHER SURVEYS

5.3.1. To provide robust and up-to-date data for assessment of likely impacts on protected species, it is generally considered good practice to repeat surveys should a period of two years lapse between a survey being completed and the Proposed Development commencing. This should be addressed even if planning permission has been granted, since bats are protected by legislation entirely outside the planning system and would be a requirement of the NRW development licence.

5.3.2. Repeat surveys would be required if works are not completed by September 2024.

5.4 ECOLOGICAL ENHANCEMENT MEASURES

5.4.1. Planning policy promotes the inclusion of ecological enhancement; accordingly, it is recommended that consideration is given to the following enhancement measures:

- Inclusion of nectar-rich plant species in soft landscaping areas that are attractive to night-flying insects to enhance foraging opportunities for bats;

- Creation of new, and the enhancement of existing linear vegetation (tree-lines and hedgerows) within a landscaping scheme to provide additional commuting corridors across the Site for bats;
- Provision of standing water-bodies to provide an additional foraging resource for bats using the site, which may benefit *Myotis* and *Nyctalus* bats in particular; and
- Installation of bat bricks or bat tubes (above those required for mitigation and / or compensation of the known roosts) into the fabric of any new buildings and / or installation of additional bat boxes to suitable retained trees to increase the roosting opportunities on Site for bats.

6 CONCLUSIONS

6.1.1. Buildings B1, B4, B5, B19 and B24 have been confirmed to support soprano pipistrelle summer day roosts (non-breeding). Demolition of these buildings as part of the Proposed Development will result in the destruction of the roosts. All roosts are considered to be of a low conservation status. As such, the loss of these roosts is unlikely to result in a significant negative impact on local bat populations and the favourable conservation status of the species.

6.1.2. A development licence from NRW will be required in order to allow the development to be carried out in compliance with legislation pertaining to bats. A summary of proposed mitigation measures have been provided, including replacement roost provision, demolition-phase measures and a sensitive lighting strategy. Details of these mitigation measures will be included in the NRW development licence application.

6.1.3. Ecological enhancements in relation to landscape and provision of future roosting opportunities are provided.

7 REFERENCES

7.1 PROJECT REFERENCES

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7.2 TECHNICAL REFERENCES

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8 FIGURES

Figure 1 - Site Location Plan

Figure 2 - Building Locations and Bat Roost Suitability

Figure 3 – Dusk Emergence Survey: Surveyor Locations

Figure 4 – Confirmed Roost Features