

1 Executive Summary

- 1.1 The owners of the Welsh Evangelical Church in Cathays wish to demolish the existing church in order to construct a four-storey hotel including a mixed-use community space. The demolition of the existing church and re-development of the site will require consent from the local planning authority, Cardiff City Council.
- 1.2 A PRA conducted in June 2023 found no live bats and no evidence of bats. No bat droppings, staining or insect remains were found. However, the property has several features that offer potential for crevice roosting bat species, additional survey in the form of two dusk emergence/activity observations was recommended and subsequently commissioned.
- 1.3 Two dusk emergence/activity observations were carried out on the church in August 2023. No bats were seen to emerge during both of these observations. The majority of bat activity noted was of common pipistrelle bats commuting and foraging along Harriet Street, Rhymney Terrace and Rhymney Street. Species present during the survey include common pipistrelle, soprano pipistrelle and noctule bats.
- 1.4 Birds were also considered during the internal and external inspection of the church as part of the Preliminary Roost Assessment conducted in June 2023. No active or inactive nests were found during the internal/external inspection. Nothing was observed during both dusk observations to indicate birds are nesting at the Welsh Evangelical Church. General advice on the legal protection afforded to breeding birds is given in the report.

2 Introduction

- 2.1 The owners of the Welsh Evangelical Church in Cathays wish to demolish the existing church structure. At the time of writing this report, final plans for the re-development have not yet been finalised. However, it is proposed to build a new four storey hotel on the footprint of the existing church. The ground floor level of the new structure will consist of a mixed-use community space to replace the existing church, to be used for a variety of different proposes. The additional floors above will be used for hotel accommodation. The demolition of the existing church and re-development of the site will require consent from the local planning authority, Cardiff City Council.
- 2.2 In order to consider the presence or potential presence of protected species, a Preliminary Roost Assessment (PRA) was commissioned from Just Mammals Limited, and undertaken by a licensed Ecologist in June 2023. The assessment comprised a daytime visual inspection of the building, including external and internal survey. Details of the survey site location are given in Table 1 below.
- 2.3 The outcome of the PRA was that additional survey effort was required, due to the structure being assessed to have a 'moderate' level of potential to be used by crevice roosting bats. Two bat emergence/activity observations were conducted by Just Mammals Limited in August 2023, within the bat survey season, by a team of experienced ecologists and support staff.

Table 1: Survey Site Details

Address	Grid Reference	Altitude
Welsh Evangelical Church, 110 Harriet St, Cathays, Cardiff, CF24 4BX	ST 18538 77790	15m Above Ordnance Datum

- 2.4 Principal objectives of the survey effort were to:
- Determine if bats are roosting in the building and, if so, identify roost locations.
 - Identify the species and the type of roost (maternity, day, transitional etc).
 - Identify any important bat foraging or commuting behaviour in relation to the building.
 - Identify any important bat flight lines.
 - Determine if breeding birds are also using the building.
 - Identify potential impacts, if any, from the development proposals.
 - Gather sufficient information to be able to make appropriate recommendations in to minimise any impacts.
- 2.5 This report documents the findings of the assessment, which includes the daytime internal/external inspection and two bat activity observations in the active summer period and makes appropriate recommendations in light of the results.

3 Survey Team Experience

- 3.1 Lead surveyors were Diane Morgan and Grace Dooley. A team of ecologists participated in the survey and details of their experience are given in Table 2 below.
- 3.2 Co-authors of the report are Robert Morgan, Ecologist with Just Mammals Limited and Catherine Povey, employed by Just Mammals Limited as a Trainee Ecologist.

Table 2: Survey Team Experience

Name/Position/Detector	Licences	Experience
Robert Morgan Ecologist (TE)	BAT (NRW) S090915/1; expiry February 2024	Over eighteen years' experience with bats and is a Natural Resources Wales (NRW) licence holder, carrying out roost surveys, emergence surveys, radio tracking of lesser horseshoes and monitoring of important sites. He holds a City & Guilds Level 2 award for working in Medium Risk Confined Spaces. Rob has expertise in respect of dormice with over 25 years' experience monitoring dormouse boxes at a Local Nature Reserve and surveying for dormice at various other sites (NRW licence holder). He is also licenced to disturb barn owls under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) with seven years' experience surveying for this species (NRW licence holder). He has experience surveying for otters, water voles, reptiles, amphibians, birds and marsh fritillary butterflies. Robert is an Ecologist with Just Mammals Limited.
Diane Morgan BA (Hons) ACIEEM Senior Ecologist (TE)	Bat (NRW) S090641/1 expiry 31st January 2024	Considerable experience (over 20 years) of surveying structures for bats and has carried out ringing of Daubenton's bat as part of a multi-year project on the species. She has undertaken monitoring work on several important lesser horseshoe bat roosts and assisted in radio tracking projects on the same species. She holds a City & Guilds Level 2 award for working in Medium Risk Confined Spaces. Prior to her work as a consultant ecologist, Diane was the Director of Brecknock Wildlife Trust and was involved in a wide range of nature conservation work including species and habitat protection and conservation land management. Other areas of interest include otter, dormice, water voles, reptiles, amphibians, fungi and crayfish.
Grace Dooley BSc (Hons) MSc ACIEEM Senior Ecologist (TE)	Bat (NRW) S091842/2 expiry 10th November 2024	Grace holds an MSc in Conservation and Ecology and has over nine years' practical experience with ecological surveys and impact assessments for bats, great crested newts, badgers, birds, reptiles and botanical communities for projects ranging in size from small-scale householder development projects to large, multi-faceted Developments of National Significance (DNS). Grace holds survey licences for bats and great crested newts in Wales, and great crested newts in England. She is a Senior Ecologist with Just Mammals Limited and is an Associate Member of the Chartered Institute of Ecology and Environmental Management (ACIEEM).
Phoebe Williams BA (Hons) MSc Ecologist (TE)		A Geography graduate from the University of Exeter, and a former trainee at Gwent Wildlife Trust she has completed a Natural Talent trainee programme, studying Hemiptera at the National Museum of Wales. Phoebe holds a survey licence for great crested newts in Wales. She has experience carrying out bat surveys, botanical surveys, reptile survey and dormice surveys. She has also carried out practical habitat management work whilst volunteering for Gwent Wildlife Trust. Phoebe has completed a MSc in Wildlife and Conservation Management at the University of South Wales. She is currently employed as an Ecologist with Just Mammals Limited.
Daniel White LLB MSc QCIEEM Assistant Ecologist (TE)		Following qualification from the University of South Wales with an MSc in Wildlife and Conservation Management in 2021, Daniel joined Just Mammals Limited and is currently employed as an assistant ecologist. He has experience carrying out bat surveys, botanical surveys and surveys for reptiles, in addition to undertaking practical land management activities whilst volunteering with the Cambrian Wildwood.
Nigel Isaksson Senior Survey Assistant (TE)	Bat (NRW) S092876/1 valid to 31st July 2025	A Senior Survey Assistant with the Just Mammals Limited, with eighteen years' experience undertaking bat surveys, flight line observations, census counts, Nigel holds NRW licences to work with bat and dormice.
Xenia Williams BSc (Hons) MSc Survey Assistant (TE)		Xenia completed her BSc in Zoology at Cardiff University in 2017, and went on to study at the University of South Wales to undertake her MSc in Wildlife and Conservation Management. Xenia began her conservation career in 2022 when she joined Forest research as a Technical Analyst. She has great interest

		in the outdoors, and British wildlife. She started working with Just Mammals Ltd in April 2022 as a survey assistant, completing bat surveys, and helping with a water vole translocation project in the Gwent Levels.
Leigh Porter Survey Assistant (TE)		Leigh's enthusiasm and knowledge of all things wildlife is mainly self-taught. He is particularly interested in mammals and birds and is always looking to develop his knowledge further. Leigh previously volunteered with Vincent Wildlife Trust (VWT) assisting with bat counts of known roosts in Mid Powys. He is keen to improve skills in the environment and conservation sector and so became a survey assistant with Just Mammals in Spring 2023.
Vicki Powell BSc (Hons) PhD Survey Assistant (TE)		Vicki has a PhD in the conservation and ecology of an endangered species of bat. She has previously worked as an Ecological Consultant and has assisted with various protected species surveys, including bats, barn owls, great crested newts, badgers, reptiles and nesting birds. Vicki joined Just Mammals Limited in May 2023 to assist with bat surveys.
Hayley-Anne Morgan Survey Assistant (TE)		Hayley-Anne Morgan has been an avid lover of nature since childhood, she was fascinated by nature books and spent many hours looking through them. She loves frogs and toads, and recently Hayley took a one-day Bat ecology course which has led to a renewed curiosity in the natural world. Hayley began surveying with Just Mammals in the summer of 2023 and is keen to learn more.

Note: Detectors

TE = Time expansion (Pettersson D-240X)

4 Survey Methodology

- 4.1 A daytime visual assessment of the building was carried out in June 2023. The exterior inspection involved seeking signs of the presence of bats. The external survey examined the outer surfaces from the ground and looking for signs of bat presence including bat faeces (droppings) on ledges and walls. A high-powered lamp and a close focusing binoculars were used to examine potential access and roosting areas. Any gaps or crevices in the structure were inspected as closely as possible. The context of the building within the surrounding landscape was also assessed.
- 4.2 Internal survey searched for the presence of bats or the remains of dead bats (including dead juveniles and babies which might indicate the presence of a maternity site) and signs of bats including bat faeces (droppings) on floors, stored items, ledges, walls and other surfaces. The loft spaces and roof structure, which are a favoured roost location, were checked for live bats and a careful search for droppings and insect parts was conducted. Urine staining, both on paintwork and window glass, or staining on timbers caused by oil from bat fur were also searched for as well as discarded fragments of insects such as moth wings.
- 4.3 Two dusk observations were conducted in the summer period of 2023. To carry out this observation, the surveyors were equipped with Pettersson D-240X machines. These devices are particularly sensitive and excellent at separating species which employ the middle range frequencies for foraging (45 – 55 kHz). They are therefore very good at identifying the different pipistrelle species (*Pipistrellus sp.*), and the different myotis bats* (*Myotis sp.*) (*myotis bat is a collective term used where the species could not be specifically identified beyond this broad group). The myotis group encompasses seven species of British bat including Alcathe's (*Myotis alcathoe*); Bechstein's (*M. bechsteinii*); Brandt's (*M. brandtii*); Daubenton's (*M. daubentonii*); greater mouse-eared (*M. myotis*); Natterer's (*M. nattereri*); and whiskered bat (*M. mystacinus*).
- 4.4 The Pettersson D-240X machine can be used in heterodyne or time expansion modes and for the purposes of this survey, only the time expansion facility was used. The received signals were then downloaded to Roland R-05 recording devices for later analysis. The time expansion method is similar to making a high-speed tape recording of a bat's ultrasonic call and then playing it back at a slower speed. Digital technology is used to make the recording and slow it down for play-back. Since the signal is stretched out in time, it is possible to hear details of the sound inaudible with other types of detector.
- 4.5 Time expansion is also the only technique which preserves all characteristics of the original signal, which makes time expanded signals ideal for sound analysis. In addition to the simple echo-location calls which can be used for commuting, enabling the bat to find its way about, bats will also produce feeding 'buzzes' when foraging. These buzzes occur when the bat closes in on its prey and are a consequence of the Doppler Effect, which results in a feeding 'buzz' as the reflected signal shortens when the animal approaches its prey. Such buzzes are used to assess the importance of an area for foraging. The recorded echo-location calls are then interpreted using

BatSound sound analysis software. By use of the software, it is possible to separate the different species by analysis of the sonograms produced.

- 4.6 A night vision aid (NVA) was utilized in order to complement the bat emergence data gathered by trained observers. A Sony CX-11 camera, with night shot capability and with additional output provided by a Nightfox XB5 torches, emitting infra-red light at a wavelength of 850nm, was set up to observe the east facing elevation of the Welsh Evangelical Church, during both dusk emergence/activity observations.
- 4.7 Nesting birds were also considered at the time of assessment with the surveyor looking for signs of historic bird activity, nest remains, evidence of collections of bird dropping, feathers or any other indications of use by birds.

5 Site Description

- 5.1 The Welsh Evangelical Church is located at the north end of Harriet Street on the junction that connects with Rhymney Terrace. It is closely aligned to a north-west/south-east axis. The church is constructed in stone, with some brick and concrete blocks. It has a pitched roof that is covered with cement tiles, as well as cement ridge tiles. A parapet is present over both the north-west and south-east facing gable end walls. The roof is supported by a timber arched frame with timber rafters. It is unknown if there is a lining membrane present beneath the main roof. There is a single skylight on the north-east facing elevation of the main church roof. At the south-east facing gable end wall there is a large bay window. The fascia boards are timber. All doors, door frames and window frames are wooden. The rainwater products are all uPVC.
- 5.2 There are a number of ground floor level extensions built onto the south-west and the north-east facing elevations. The southern extension is built up against the neighbouring residential property. All of the extensions have hipped roofs covered with cement tiles and cement hip tiles. These roofs are supported by timber rafters and a 1F bitumen liner is present beneath the roof coverings. There are two skylights in the southern extension. Both extensions have timber fascia boards, wooden doors, door frames and window frames. The more modern northern extension has timber soffits.
- 5.3 At the south-east corner of the site, built up against the eastern boundary wall is a small outbuilding. This outbuilding is brick built. It has a mono-pitched roof covered with corrugated asbestos sheets, no lining membrane is present beneath the roof coverings. The roof is supported by a steel beam. It has a single wooden doorway in the north-west facing wall which has a timber frame.
- 5.4 Habitat connectivity to the site is relatively poor, there are scattered trees in the rear gardens of both Rhymney Street and Harriet Street that provide some connectivity. Approximately 45m to the east of the church, there are trees either side of the active railway line that runs roughly north to south through the city. The tree lines alongside the railway line provide connectivity to several features around the city, including Cathays Cemetery, Roath Park and Gardens, Heath Park, and Roath Park Lake which all will provide excellent foraging habitat for bats.

Desktop Study

- 6.1 The context of the site was considered with regard to statutory sites of nature conservation interest such as SSSIs, SACs, National Nature Reserves (NNRs), or Local Nature Reserves (LNRs) etc. Within a 2km radius there is one designated site; the Penylan Quarry SSSI is located approximately 1.52km to the north-east of the survey site. The development proposals are not considered likely to impact on any of the designated sites in the area.
- 6.2 A South East Wales Biodiversity Records Centre (SEWBReC) record search was commissioned. This revealed numerous bat records and a number of bird records within a 2km radius of the site (unique LERC reference number 0234-406). There were no historic records for bats at the property. The nearest record of a roost is at a property on Richards Street, close to the end of Rhymney Terrace; reportedly some 140m to the north-east. This record, which dates back to 2010 relates to an unidentified bat found hanging on a coat inside the house.
- 6.3 Of the 582 historic records of bats in the data set, 197 were for common pipistrelle species (*Pipistrellus pipistrellus*), with 191 of the records for soprano pipistrelle (*Pipistrellus pygmaeus*). The remaining 194 records being species such as brown long-eared (*Plecotus auritus*), noctule (*Nyctalus noctula*), Serotine (*Eptesicus serotinus*), Daubenton's bat (*Myotis daubentonii*), Natterer's bat (*Myotis nattereri*), Whiskered bat (*Myotis mystacinus*), unidentified myotis species

(*Myotis sp*), unidentified pipistrelle (*Pipistrellus sp.*) and several records that relates to just bats (*Chiroptera*).

- 6.4 There were also 46 records for birds within 1km of the property, 22 of these are records of swift (*Apus apus*). The remaining 24 records included common house martin (*Delichon urbicum*), Eurasian blue tit (*Cyanistes caeruleus*), spotted flycatcher (*Muscicapa striata*), great tit (*Parus major*), house sparrow (*Passer domesticus*), common redstart (*Phoenicurus phoenicurus*), black redstart (*Phoenicurus ochruros*), pied wagtail (*Motacilla alba*), starling (*Sturnus vulgaris*), barn swallow (*Hirundo rustica*), lesser black-backed gull (*Larus fuscus*), herring gull (*Larus argentatus*), peregrine falcon (*Falco peregrinus*), and barn owl (*Tyto alba*).

7 Survey Constraints

- 7.1 It was not possible to examine the main roof space of the church due to the height of the ceiling, even with fully extendable ladders it would be unsafe to attempt. Safe access to the main loft is likely only possible by means of a scaffolding tower. Additionally, it was not possible to gain access to the smaller loft voids on the southern elevation due to the small size of the loft hatches. No further constraints were encountered for the remaining parts of the building during the survey.
- 7.2 No constraints were encountered during both dusk bat activity observations conducted in August 2023.

8 Survey Results

- 8.1 Details of the survey activities and weather conditions are summarised in Table 3 below. Sunset times were ascertained in all cases by use of a geo-positioning system (GPS). Wind speeds shown employ the Beaufort scale.

Table 3: Summary of Survey Activity and Weather Conditions

Date	Survey Type	Timing	Weather Conditions
13/06/2023	Day time visual inspection, internal and external (RM, PW)	10.30 – 11.30 hours British Summer Time (BST)	Air temperature: 25°C Cloud cover: 0/8 oktas Wind speed: F2, light breeze Conditions: Dry
10/08/2023	Dusk emergence/activity observation (DM, XW, LP, NI)	19.55 – 22.00 hours BST (Sunset 20.48 hours)	Air temperature: 22.5°C – 21.3°C Cloud cover: 8/8 oktas Wind speed: F2, light breeze Conditions: Dry
31/08/2023	Dusk emergence/activity observation (GD, DW, VP, HM)	19.20 – 21.10 hours BST (Sunset 20.02 hours)	Air temperature: 18°C – 16°C Cloud cover: 8/8 oktas Wind speed: F0, calm Conditions: Dry
Surveyors	Diane Morgan (DM), Xenia Williams (XW), Leigh Porter (LP), Nigel Isaksson (NI), Grace Dooley (GD), Daniel White (DW), Hayley Morgan (HM), Vicki Powell (VP)		

- 8.2 Internal assessment of the Welsh Evangelical Church found no live bats. No evidence of bats was found internally, no bat droppings, staining or insect remains were noted. Nothing was found to indicate the presence of a bat roost inside the church.
- 8.3 Externally, survey revealed no live bats or evidence of bats in the form of bat droppings, staining or insect remains. However, the property was considered to offer potential access points which bats could exploit. These features were identified as:
- gaps at the eaves on the south-west facing elevation of the main church roof;
 - gaps at the eaves on the north-east facing elevation of the main church roof;
 - gaps at the eaves around the bay window at the south-east facing gable end wall of the church;
 - raised cement tiles around the skylight in the north-east facing elevation of the main church roof;
 - gaps beneath the cement tiles around the skylight in the south-west facing elevation of the southern extension;
 - raised leadwork where the southern extension joins onto the south-west facing wall of the church;
 - raised cement tiles on the half-hipped roof at the south-east corner;
 - gaps at the eaves of the lower southern extension roof;
 - gaps at the eaves of the lower northern extension roof;
 - gaps beneath the dry ridge and hip tiles on the smaller roofs of the northern extension;

- gaps in the brickwork over the large window in the north-west facing gable end wall;
- 8.4 A total of two dusk emergence/activity observations were undertaken, with results shown in Tables 4 and 5 in Appendix II. The first observation was conducted by four observers, on the evening of Thursday the 10th of August 2023. During this observation, no bats were seen to emerge from the church. In general, bat activity throughout the observation period was considered to be low. Commuting and foraging activity occurred in the area of the site by common pipistrelle, soprano pipistrelle and noctule bats. The dominant species present was common pipistrelle. Both common pipistrelle and soprano pipistrelle bats were observed commuting and foraging along Rhymney Terrace, Harriet Street and Rhymney Street. Several bats were also observed commuting through the gap between the south-west elevation of the church and the neighbouring residential property to the south. A single noctule was heard on site, although the animal was not seen by the observers, it is considered likely that the bat was commuting high above the site somewhere.
- 8.5 The second dusk observation was conducted on the evening of Thursday 31st August 2023, which was again conducted by four observers. No bats were seen to emerge from the church. The second dusk observation was dominated by common pipistrelle bats, with a reduced number of soprano pipistrelle bats present in the area. Commuting and foraging activity occurred much the same as during the first observation, only in reduced numbers of bats. Only common pipistrelle and soprano pipistrelle bats were recorded throughout the observation period.
- 8.6 Breeding birds were also considered during the inspection. No active or inactive bird nests were noted. A single lesser black-backed gull (*Larus fuscus*) was observed perching at the apex of the parapet on the south-east facing gable end wall of the church during the PRA survey. Nothing was observed during the survey to indicate birds are nesting anywhere in the structure. However, opportunities for birds to create nests were identified as:
- gaps at the eaves on the south-west facing elevation of the main church roof;
 - gaps at the eaves on the north-east facing elevation of the main church roof;
 - gaps at the eaves around the bay window at the south-east facing gable end wall of the church;
 - gaps at the eaves of the lower southern extension roof;
 - gaps at the eaves of the lower northern extension roof.
- 8.7 During both dusk bat activity observations carried out in August 2023, no bird activity associated with the Welsh Evangelical Church was observed.

9 Discussion and Conclusions

- 9.1 Survey results indicate that the Welsh Evangelical Church is not currently a bat roost. The owner wishes to demolish the existing church in order to construct a four-storey hotel with a mixed-use community space. The demolition of the existing church and re-development of the site will require consent from the local planning authority, Cardiff City Council. A PRA conducted in June 2023 found no live bats and no evidence of bats, but given that there were several features around the structure that offered potential for crevice roosting bat species, additional survey in the form of two dusk emergence/activity observations was recommended and subsequently commissioned.
- 9.2 Two dusk emergence/activity observations were carried out in August 2023. No bats were seen to emerge during these observations and no evidence for the presence of bats was found by way of bat droppings, staining or insect remains. Although the structure has potential to be used for roosting purposes, no evidence of such behaviour was noted during the survey. The building is currently not a bat roost and general advice regarding bats is given below.
- 9.3 Presence of bats at other times of year, apart from the summer, was also considered. In this respect the property is assessed to have negligible potential to be used by hibernating bats. There are no low-level features below 1.5 metres that are suitable for hibernating bats. It is not considered a suitable structure for hibernation.
- 9.4 The PRA conducted in June 2023 found no active or inactive bird nests internally or externally. There are a high number of swift records in close proximity to the property, no swifts were observed at the site. During both bat observations nothing was seen to indicate that birds are nesting in the building. All breeding birds are legally protected and once a nest is established it is an offence to disturb or destroy the nest under Part 1 of the Wildlife and Countryside Act 1981 (as amended). Advice concerning birds is given below.

10 Recommendations

- 10.1 The Welsh Evangelical Church in Harriet Street is currently not a bat roost. However, bats are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), whilst their roosting places are also protected under the provisions of the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019. All bats and their places of rest are fully protected under British legislation, and as such, where there is evidence for the presence of bats, or where there is potential for them to be present, detailed assessment is appropriate. Bats can be encountered unexpectedly during building work, and if this occurs, it is important to stop activity in the vicinity of the bat(s). It is possible that a bat will be in a torpid state and unable to fly off for several minutes or even up to 20 minutes. Advice must be sought from NRW or, if this is not possible, then from an ecologist with a licence to disturb bats. To proceed without taking advice may result in an offence being committed.
- 10.2 A Bat Conservation Trust study of the impacts of lighting on bats has considered the increased risk of bats being preyed on in well illuminated areas. Also, lighting was found to be harmful when present near woodland edges and hedgerows. Inappropriate lighting can result in the isolation of bat colonies and can affect insect behaviour, which then adversely affects bats. If the new re-development plans result in new external light fittings, then a lighting plan designed to minimise impacts on nocturnal wildlife must be prepared. External lighting features must ensure low output; fittings must be attached to external walls at a low level with all light directed downwards. There must be no upward light spill and shrouds or deflector fittings are a simple way of avoiding this. Lights must be on timers to ensure that lights are extinguished within 30 seconds of movement ceasing. It is also desirable that internal lighting is sunk into ceilings, rather than pendant lights, and this appears to reduce external lighting impacts if curtains or blinds are not used.
- 10.3 Breeding birds are protected under the provisions of the Wildlife and Countryside Act 1981 (as amended), and active bird nests cannot legally be disturbed or destroyed. Once a nest is established, the birds must be able to have access at all times until the young have fledged and the nest is no longer active. The bird breeding season commences as early as March for some species and continues to late August for species which rear a second or third brood. If an active nest is found, it must be retained and protected from disturbance. A cordon must be established for a safe working zone a suitable distance from the nest site, and not until the chicks have fledged can the nest be destroyed and the cordon taken down. To avoid nesting birds disrupting the development timetable, it is best for such work to be planned to avoid the breeding season.
- 10.4 Welsh Planning policy (PPW11) requires that development provides a positive outcome for local biodiversity. As an enhancement feature, it is recommended that a total of **three swift boxes** are installed at the site of the new hotel accommodation. There are a variety of different designs for swift nest boxes, the owner/developer must choose three boxes that are suitable for installation on the new building whether it is a built-in swift box or a box that is fitted to an external wall. Suitable locations for the nest boxes must be identified within the boundary of the site, they must be installed at a height high enough to avoid predation by cats and also avoid full direct sunlight. A north or north-west facing elevation is most suitable.

11 Bibliography

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Appendix I: Site Location Plan

Figure 1: Site location plan and aerial view



Appendix II: Results of Bat Activity Observations

Table 4: Welsh Evangelical Church, Cathays, Cardiff – Dusk Observation 10th August 2023

Time	Species (Common Name)	Recording No.	Observed Activity
21.12 hours	Common pipistrelle	1 NI	Commuting from south to north along Rhymney Street on the east side of the church
21.12 hours	Common pipistrelle	1 XW	Commuting from north-west to south-east along the southern elevation of the church, between the church and the residential house to the south
21.13 hours	Common pipistrelle	1 LP	Foraging along Harriet Street on the west side of the church
21.17 hours	Common pipistrelle	1 DM	Foraging to the north-east of the church along Rhymney Terrace
21.17 hours	Common pipistrelle	2 NI	Commuting from east to west across Rhymney Street on the east side of the church
21.18 hours	Common pipistrelle	2 LP	Foraging along Harriet Street on the west side of the church
21.20 hours	Soprano pipistrelle	2 DM	Foraging to the north-east of the church along Rhymney Terrace
21.20 hours	Soprano pipistrelle	2 XW	Commuting from north-west to south-east along the southern elevation of the church, between the church and the residential house to the south
21.23 hours	Soprano pipistrelle	3 LP	Foraging along Harriet Street on the west side of the church
21.26 hours	Soprano pipistrelle	3 NI	Commuting from south to north along Rhymney Street on the east side of the church
21.28 hours	Common pipistrelle	3 DM	Commuting along Rhymney Terrace from north-west to south-east on the north side of the church
21.28 hours	Common pipistrelle & soprano pipistrelle	4 NI, 3 XW	Both bats foraging over the road on the east side of the church and also foraging over the main church roof
21.29 hours	Noctule	4 DM	Bat heard but not seen by the observer, likely to be commuting high above the site somewhere, recorded at the north end of the church
21.29 hours	Soprano pipistrelle	4 LP	Foraging along Harriet Street on the west side of the church
21.31 hours	Common pipistrelle & noctule	5 LP	Common pipistrelle foraging along Harriet Street on the west side of the church. Noctule heard but not seen by the observer, recorded on the west side of the church
21.32 hours	Common pipistrelle	5 DM	Foraging to the north-east of the church along Rhymney Terrace
21.32 hours	Soprano pipistrelle	4 XW	Bat heard but not seen by the observer, thought to be foraging along Rhymney Street to the east
21.34 hours	Common pipistrelle	6 DM	Commuting along Rhymney Terrace from north-west to south-east on the north side of the church
21.34 hours	Soprano pipistrelle	5 XW	Commuting from north-west to south-east along the southern elevation of the church, between the church and the residential house to the south
21.35 hours	Soprano pipistrelle	6 LP	Foraging along Harriet Street on the west side of the church
21.37 hours	Soprano pipistrelle	6 XW	Bat heard but not seen by the observer, thought to be foraging along Rhymney Street to the east
21.37 hours	Common pipistrelle	7 XW	Bat heard but not seen by the observer, thought to be foraging along Rhymney Street to the east
21.39 hours	Common pipistrelle	8 XW	Bat heard but not seen by the observer, thought to be foraging along Rhymney Street to the east

Note: Highlighted records indicate emergence activity

Table 5: Welsh Evangelical Church, Cathays, Cardiff – Dusk Observation 31st August 2023

Time	Species (Common Name)	Recording No.	Observed Activity
20.26 hours	Common pipistrelle	1 DW	Foraging along Rhymney Terrace to the north-east of the church
20.30 hours	Common pipistrelle	1 GD, 1 HM	Foraging at the southern corner of the church, flew away heading south along Rhymney Street
20.33 hours	Common pipistrelle	2 GD, 2 HM	Foraging at the southern corner of the church and over Rhymney Street on the east side of the church
20.39 hours	Soprano pipistrelle	3 GD	Foraging at the southern corner of the church and over Rhymney Street on the east side of the church
20.39 hours	Common pipistrelle	1 VP	Foraging along the south-west facing elevation of the church from south-east to north-west then turned and flew back to the south-east
20.41 hours	Common pipistrelle	4 GD	Commuting from south to north along Rhymney Street then flew along the south-west facing rear elevation of the church heading west
20.42 hours	Common pipistrelle	2 DW	Foraging along Rhymney Terrace to the north-east of the church
20.42 hours	Common pipistrelle	5 GD, 3 HM	Commuting from south to north along Rhymney Street then flew along the south-west facing rear elevation of the church heading west
20.42 hours	Common pipistrelle	2 VP, 4 HM	Foraging along the south-west facing elevation of the church from south-east to north-west then turned and flew back to the south-east
20.45 hours	Common pipistrelle	3 DW	Foraging along Rhymney Terrace to the north-east of the church
20.47 hours	Common pipistrelle	5 HM	Foraging along Rhymney Street on the east side of the church
20.48 hours	Common pipistrelle	4 DW	Foraging along Rhymney Terrace to the north-east of the church
20.48 hours	Common pipistrelle	3 VP	Bat commuting along the rear south-west facing elevation of the church then flew south-west down Harriet Street
20.52 hours	Common pipistrelle x2	6 GD	Two bats heard but not seen by the observer, thought to be foraging along Rhymney Street to the east
20.56 hours	Soprano pipistrelle	7 GD	Bat heard foraging but not seen by the observer, thought to be foraging along Rhymney Street to the east
20.57 hours	Common pipistrelle	8 GD	Bat heard foraging but not seen by the observer, thought to be foraging along Rhymney Street to the east

Note: Highlighted records indicate emergence activity

Appendix III: Site Photographs

Plate 1: View of the Welsh Evangelical Church from Rhymney Terrace



Plate 2: View of the church from the north



Plate 3: View of the church from the south



Plate 4: View of the church from the east



Plate 5: South-east facing gable wall of the church



Plate 6: North-west facing gable wall of the church



Plate 7: North-east facing side of the main roof



Plate 8: South-west facing side of the main roof



Plate 9: Internal view of the church looking south-east



Plate 10: Internal ceiling beneath main roof



Plate 11: Inside the small loft space over the northern extension looking south-east



Plate 12: Inside the small loft space over the northern extension looking north-west



Plate 13: Gaps beneath ridge tiles



Plate 14: Gaps at the eaves on north and south facing elevations of the main roof



Plate 15: Gaps at the eaves around the bay window on the south-east elevation of the church



Plate 16: Gaps at the eaves on the south-west facing elevation of the main roof



Appendix IV: Ecology of British Bats

There are at least 18 species of bats breeding in Britain. Most of them are regarded as threatened due to a variety of factors including habitat loss, intolerance and disturbance/damage or loss of roosts. Of these species a number regularly use buildings at certain times of year in order to find safe secure roost sites. Often several different species can use a building over the course of the year, and not all species are present at the same time, making assessment of their presence complex.

Bats are highly mobile flying mammals, which in Britain, feed entirely on insects. They have evolved over seventy million years and have developed sophisticated mechanisms to allow them to effectively 'see' in the dark by using sound waves. This system is called echo-location which enables them to track and hunt down small moving insects whilst in flight, rather like radar does in a modern military fighter aircraft. It is possible to record this sound, and because each species of bat echo-locates in a different way, determine what the species is without actually handling the animal which made the call.

In winter, when their prey is scarce, British bats hibernate or enter torpor, in cool parts of caves, buildings (cavity walls), and tree cavities. They may wake occasionally and will feed if evening temperatures are greater than 7°C, when flying insects can be active. Generally however, activity during cold winters is very limited and bats only become fully active in spring, with late March and early April being a critical time for animals desperately trying to save energy whilst gaining weight. Disturbance during these months can therefore be more devastating to bats than at other times of year.

By late spring female bats will gather together in maternity roosts in order to give birth and rear their single baby in June. Such maternity roosts are often near to important foraging areas in order to save energy as flight requires vast energy resources. Flight routes to and from such roosts can therefore also be important and some bats are extremely light averse preferring dark locations without street or security lamps which can force them to take complex routes to reach foraging areas. Such lighting can also badly degrade foraging areas where they occur close to buildings and hedgerows and tree lines can be particularly important areas for bat foraging to take place particularly when close to the roost building.

Whilst females form maternity colonies, usually in warmer roofs or trees, male bats tend to seek out cooler sites which may not be so close to the foraging areas. Males are often solitary and do not exhibit the social behaviour that marks out females during the birthing period. Non-breeding females will also roost in this way when they have no need to spend energy on raising a single baby.

Several British bat species are known to rely heavily on buildings to roost. Of these species, the most likely are the soprano pipistrelle and the common pipistrelle bat. Other bat species regularly found in buildings are the brown long-eared bat; Natterer's bat; Brandt's bats and whiskered bat. Pipistrelle species and the small myotis or mouse-eared species (Brandt's, whiskered etc) often favour locations at the ridge or around the exterior shell of the structure. Brown long-eared and Natterer's tend to prefer living within the roof area of a building – large lofts being popular.

Other species that are known to use the internal areas of built structures such as barns include the two horseshoe species, the greater horseshoe bat (*Rhinolophus ferrumequinum*), and lesser horseshoe bat (*Rhinolophus hipposideros*), as well as western barbastelle bat (*Barbastella barbastellus*).

Appendix V: Relevant Legislation

Bats

All species of bat in Britain, and their places of rest are protected under the provisions of the Wildlife and Countryside Act 1981 (WCA), Section 9(1), 9(4)(a) and 9(4)(b) as amended by Schedule 12 of the Countryside and Rights of Way Act 2000. Further protection is afforded by the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019. In relation to structures used by bats for shelter or protection (i.e. roosts), this legislation makes it an offence to either intentionally or recklessly damage, destroy or obstruct access to any site used by bats, whether bats are present at the time or not, or to intentionally or recklessly disturb bats within a roost.

Infringements under this legislation include building demolition, removal of hollow trees, blocking, filling or installing grills over old mines or tunnels, building alteration or maintenance work, re-pointing of stone walls, getting rid of unwanted bat colonies, re-roofing, remedial timber treatment, re-wiring or plumbing in roofs, treatment of wasps, bees or cluster flies (Mitchell-Jones, 1992; Childs, 2001). Greater horseshoe bat, lesser horseshoe bat, Bechstein's bat, greater mouse eared bat and barbastelle are included in Annex II of the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019 and hence require special protection.

Maximum penalties for committing offences relating to bats or their roosts can amount to imprisonment for a term not exceeding six months or to fines of up to Level 5 on the standard scale under the Criminal Justice Act 1982/1991 (i.e. £5000 in April 2001) per roost or bat disturbed or killed, or to both. Bodies corporate and their directors/secretaries are liable for offences under the (Amendment) (EU Exit) 2019 Regulations and the WCA. Additionally, where such an offence results in the offender benefitting in a monetary form from the illegal action, confiscation or civil recovery of the proceeds can occur under the Proceeds of Crime Act 2002.

It is sensible to assess as soon as possible if bats are present at potential sites for development – preferable before the land is acquired. In some cases the period required for adequate survey work may span more than one calendar year. If a development, including demolition or change of use, is likely to impact on bats and their roosts then a licence will usually be required. Adequate survey results are a necessary input to any licence application. If bats are not found until late in the development stage this may result in delays while a licence is sought and even in offences being committed.

The law with respect to dwellings and other structures is applied equally. Where disturbance is deemed likely to have a significant effect on bats to survive, breed and rear their young or will affect the local distribution and abundance of the species, a European Protected Species licence issued by Natural Resources Wales. A licence application must demonstrate that the development will not be detrimental to the maintenance and conservation status of the species concerned.

This explanation must be regarded only as a guide to the law. For further details, reference must be made to the Wildlife and Countryside Act 1981 (as amended), the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019, and the Countryside and Rights of Way Act 2000.

Wild birds

All wild birds, their eggs and nests are protected by The Wildlife and Countryside Act 1981 (as amended). It is an offence, with certain exceptions, to:

- intentionally kill, injure or take any wild bird;
- intentionally take, damage or destroy the nest of any wild bird while it is in use or being built;
- intentionally take or destroy the egg of any wild bird;
- sell wild birds or put them on display for sale;
- use traps or similar items to kill, injure or take wild birds; and
- intentionally, or recklessly disturb any wild bird listed on Schedule 1 while it is nest building, or at a nest containing eggs or young, or disturb the dependent young of such a bird.

Penalties that can be imposed for criminal offences in respect of a single bird, nest or egg contrary to the Wildlife and Countryside Act 1981 (as amended) is an unlimited fine, up to six months imprisonment or both. In exceptional cases NRW and Natural England issues licences for specific purposes, so that legitimate work may be undertaken without breaking the law.