Cory's Building and Merchants House
Bute Street
Cardiff
CF10 5BP

An **Ecological Survey Report By:**

Just MAMMALS Limited

On **Behalf Of:**

Dukes EDUCATION

June **2022**

Client	**Dukes Education**
Project Name	**Cory's Building and Merchants House, Bute Street, Cardiff CF10 5BP**
Report Title	**An Ecological Survey Report**
File Reference	**BAT1917 Report (2022)**

Status	Name	Position	Date
Author	**Diane Morgan** **BA (Hons) ACIEEM**	**Senior Ecologist**	**27th June 2022**
Reviewer	**Phillip L Morgan** **CEnv MCIEEM**	**Assistant Principal Ecologist**	**30th June 2022**

Directors: Diane Morgan BA (Hons) ACIEEM Carola Hoskins BA (Hons) MSc ACIEEM Robert Morgan
Registered Office: Suite 131 – 136, Plas y Ffynnon, Cambrian Way, Brecon LD3 7HP
Web Site: www.justmammals.co.uk **Email:** diane@justmammals.co.uk **Telephone:** 01874 623616
Registered In: Wales **Registration Number:** 13099914 **VAT No:** 821 6376 35

Contents

List of Tables

List of Figures

List of Plates

1 Executive Summary

1.1 It is proposed to relocate an education facility to the properties known as Cory's Building, and Merchants House, at the southern end of Bute Street in Cardiff. The proposals include renovation and conversion of these two structures as well as the construction of a new and linked building within the existing courtyard area. Within the same scheme, and contained within a separate ecology report, is land nearby, known as Plot 5, beside Pierhead Street, which is proposed to provide accommodation for the students of this educational establishment. Ecological assessment was conducted in summer 2022, in order to support a planning application to Cardiff City Council and consider the presence of protected species and the potential for impacts on legally protected species as a consequence of the proposed development activity.

1.2 Daytime assessment of Cory's Building and Merchants House was undertaken by an experienced Senior Ecologist and an assistant in April 2022. A Preliminary Ecological Appraisal and Preliminary Roost Assessment were conducted on the two buildings, and the land to the rear, within an enclosed courtyard. Evidence for the presence of bats was identified in the north-west part of Merchants House, and nesting herring gulls were found on the roof of Cory's Building, with 3 active nests containing eggs. Locations on the roof of Merchants House look highly suitable for nesting seagulls with the likelihood of nests becoming established there too. Internal spaces of both buildings are used by breeding pigeons. The courtyard, to the rear of Merchants House, features disturbed ground, rubble, and fast colonising plant species, which exploit waste ground. No potential for other protected species, such as reptiles was identified, as the site is isolated and too small, with insufficient suitable habitat, to support reptiles, but modest opportunities are present for breeding birds, within discarded materials, buddleja vegetation, and the brick wall around the courtyard.

1.3 To follow up on the evidence noted during the Preliminary Roost Appraisal, by way of bat droppings found within Merchants House, targeted bat observations of the two buildings was conducted by a team of ecologists, with a series of dusk surveys in May and June 2022. A large quantity of data was gathered and night visual aids resulted in video film of bat emergence/entry activity. A low status roost for common pipistrelle was confirmed within the window casements of three boarded up windows, on the rear elevation, first floor of Merchants House, at the north-west corner area. A summer day roost used by a low number of animals, with no maternity colony is present. No roosts were detected elsewhere on Merchants House. No roosts were identified on Cory's Building. The courtyard, at the rear of the buildings, was significant for a high level of foraging, which commenced before sunset with bats arriving from the tree line on Lloyd George Avenue; east of the site.

1.4 The proposed development will bring these two landmark buildings back into economic use within a part of Cardiff where substantial investment has occurred in recent years. This process will destroy the identified bat roost at the rear of Merchants House, where bats have exploited the boarded-up state of the building in recent years. Bats are fully protected in British legislation, as well as their places of rest, known as roosts. Therefore, in addition to planning consent and Listed Building Consent, it will also be necessary to apply to Natural Resources Wales for a European Protected Species licence, and to obtain said licence prior to any alteration or modification to parts of Merchants House which contain bat roosts. A suitable and appropriate scheme of mitigation for the species identified to be present is provided in this report, as well as additional information on the licence process. A sensitive lighting scheme for the site must be designed to ensure that artificial lighting does not have a detrimental impact on the proposed mitigation measures, and that unnecessary lighting is created affecting a variety of nocturnal animals including the bat species foraging around the tree line to the east of the site.

1.5 No other protected species was identified. A juvenile red fox was present in the courtyard in June 2022, emerging from dense scrub vegetation and leaving a few minutes later through the gateway. Guidance is provided for protection for terrestrial wildlife such as hedgehog during changes to the site. When considering the nature conservation significance of the site recognised criteria (Bat Mitigation Guidelines 2004 and Good Practice Guide: NRW Approach to Bats and Planning October 2015), the nature conservation status of the site is assessed to be low due to the likely presence of a low number of bats or a single common species – namely common pipistrelle.

1.6 Breeding herring gull were noted on the flat roof of Cory's Building, and feral pigeons are breeding inside both buildings. Breeding birds are protected under the Wildlife and Countryside Act 1981 (as amended). To avoid the risk of encountering and disturbing nesting birds, the removal of shrub vegetation from the courtyard is advised to be timed to occur outside the bird breeding season. Advice is given for the protected status of breeding birds.

1.7 Invasive non-native plants were considered. Buddleja is present in the courtyard but no other invasive plant such as Himalayan balsam or Japanese knotweed was found.

1.8 The site supports two Section 7 priority species as listed under the Environment (Wales) Act 2016 – namely common pipistrelle bat and herring gull. Survey identified a high level of bat foraging activity over the courtyard. Overall the site is assessed to be a medium level of ecological value. Enhancements for biodiversity are required to meet current planning policy as specified by Planning Policy Wales 11 and Future Wales policy documents. A landscape design within the new educational facility must be designed with plants selected to bring benefits for biodiversity. Recommendations are provided in this report.

2 Introduction

2.1 Just Mammals Limited was commissioned by Dukes Education to carry out an ecological assessment of a site containing Cory's Building and Merchants House, at the southern end of Bute Street, in Cardiff. These two structures, which are Listed Buildings Grade II, are proposed for development to provide new facilities for the relocation of an educational establishment, and the surveys will inform the planning process. As well as modifying and converting Cory's Buildings and Merchants House from their historic use as office space, the project will include the construction of a new structure within the courtyard area, with internal links to the rear of the two existing buildings. The site is located at NGR ST 19132 74647, at an altitude of 9m.

2.2 Situated in the Cardiff Bay area of the City, close to Mermaid Quay and the Millennium Centre, the area has undergone considerable urban regeneration and investment in recent years. Cory's Building and Merchants House are significant landmark structures within the built environment which have been vacant for some time with previous development plans failing to move forward. Just Mammals initially conducted an ecological assessment of the buildings in summer 2017, with a series of dusk and dawn observations for bats. Plans were approved for conversion to apartment dwellings, and the construction of new hotel accommodation. Following the issuing of planning consent, a European Protected Species (EPS) licence for bats was issued by Natural Resources Wales for Cory's Building and Merchants House. However, it is now apparent that no construction work has progressed under that licence and the buildings have transferred to different ownership.

2.3 This report details the findings of the Preliminary Ecological Appraisal (PEA), Preliminary Roost Assessment (PRA), and targeted bat surveys conducted in summer 2022. It considers the overall ecological value of the site and the degree to which its re-development could potentially impact biodiversity. Additionally, it makes recommendations to minimise impacts to protected wildlife and proposes enhancements for biodiversity in line with British legislations and Welsh planning policy.

3 Survey Team Experience

3.1 The project leader and author of this report is Diane Morgan. She was assisted by a team of ecologists and survey assistants. Table 1 below details their relevant experience.

Table 1: Survey Team Experience

Name/Position	Licences	Experience
Diane Morgan BA (Hons) ACIEEM Senior Ecologist (TE)	S090641/1; expiry January 2024	Considerable experience (nearly 30 years) of surveying built 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. Diane is a Senior Ecologist with Just Mammals Limited and is an Associate Member of the Chartered Institute of Ecology and Environmental Management (ACIEEM)
Phil Morgan CEnv MCIEEM Assistant Principal Ecologist (TE)	S091084/1; expiry April 2024	Nearly 40 years' experience of undertaking building, tree and cave surveys for all bat species. In addition, he has undertaken foraging and flight line surveys using heterodyne and other echo location equipment and in 1991 made a significant contribution to a Bristol University run project, which established the methodology used in the National Bat Monitoring Programme. Phil has also undertaken numerous radio tracking exercises on both lesser horseshoe and

		Daubenton's bats. He holds Natural Resources Wales (NRW) licence for other protected species including otter, great crested newt. Phil is an Assistant Principal Ecologist with Just Mammals Limited. He is a Chartered Environmentalist with the Society for the Environment (CEnv), and a full Member of the Chartered Institute for Ecology and Environmental Management (MCIEEM)
Grace Dooley BSc (Hons) MSc ACIEEM Senior Ecologist	S088729/3; expiry November 2022	Grace has an MSc in Conservation and Ecology and has over 8 years' practical experience with surveys and impact assessments for bats, great crested newts, badgers, birds, reptiles and botanical communities for projects ranging from small-scale householder development projects to 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 an Associate Member of the Chartered Institute of Ecology and Environmental Management (ACIEEM)
Phoebe Williams BA (Hons) MSc Student CIEEM Ecologist (TE)		A Geography graduate from the University of Exeter, and a former trainee at Gwent Wildlife Trust, Phoebe has completed a Natural Talent trainee programme, studying Hemiptera at the National Museum of Wales. Practical experience includes survey work for dormice, plants, newts, reptiles, and invertebrates. She has also carried out practical habitat management work whilst volunteering for Gwent Wildlife Trust. Phoebe has completed an MSc in Wildlife and Conservation Management at the University of South Wales. She is an Ecologist with Just Mammals Limited
Daniel White LLB MSc QCIEEM Trainee Ecologist		Following qualification from the University of South Wales with an MSc in Wildlife and Conservation Management in 2021, Daniel has joined Just Mammals Limited as a Trainee Ecologist. He has experience of reptile surveys, having previously conducted presence/absence surveys for non-native Aesculapian snakes. In addition to carrying out botanical surveys, river surveys and small mammals trapping, he has also undertaken practical land management activities whilst volunteering with Cambrian Wildwood
Nigel Isaksson Senior Survey Assistant (TE)	S089854/1; expiry July 2023	Nigel is a Senior Survey Assistant with Just Mammals Limited. He has sixteen years' experience undertaking bat surveys, flight line observations, and census counts, and holds a Natural Resources Wales (NRW) licence to disturb bats and dormice
Ben Gibson BA (Hons) Survey Assistant (TE)		A graduate of Cambridge University with a degree in Natural Sciences, Ben specialised in Plant Science in his final year studies. Ben is a Survey Assistant with Just Mammals Limited with thirteen years' experience of undertaking bat surveys flight line observations, and census counts
Thalia Godwin BSc (Hons) Survey Assistant (TE)		A graduate of the University of Plymouth, Thalia is developing her skills and knowledge in the environment and conservation sector. She is a Survey Assistant with Just Mammals Limited
Mark Davies Survey Assistant (TE)		Mark has a keen interest in wildlife and a desire to understand more about the natural history of the Brecon Beacons National Park where he lives. Mark is a Survey Assistant with Just Mammals Limited

Note: Detectors TE = Time expansion (Pettersson D-240X)

4 Survey Methodology

4.1 Prior to the site visit, a desktop study was undertaken, which involved a standard search area of a 2km radius from the site (using a central grid reference), using the web-based MAGIC database (www.MAGIC.gov.uk). Details of statutory sites, designated for nature conservation were obtained. These included sites with statutory designations of international importance; Special Areas of Conservation (SACs), Special Protected Areas (SPAs) and Ramsar sites, as well as sites of national importance; Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs).

4.2 The South-East Wales Biodiversity Records Centre (SEWBReC) was consulted for records of Protected and Priority species and Phase 1 habitats within 1km of the site (package B). The record centre also provided details of any Local Nature Reserves and Sites Important for Nature Conservation (SINC) within 1km.

4.3 A Preliminary Ecological Appraisal (PEA) and Preliminary Roost Assessment (PRA) were conducted on the 28th April 2022. Details of the survey activity and weather conditions are provided in Table 2. The PEA comprised a survey employing the Phase 1 habitat survey methodology. This

is a standardised technique for classifying and mapping British habitats. The site and its boundaries were appraised according to the standard methodology detailed in the 'Handbook for Phase 1 habitat survey' (JNCC 2010). All areas within the survey zone were inspected and assessed for indicators of ecological value, including the presence and/or field signs of any protected or rare habitats and species. The site was walked over, recording plant species and features onto a custom-made recording sheet. Habitats and notes were drawn onto a map of the survey site and photographs were taken. A coloured Phase 1 habitat map was produced (see Appendix II).

4.4 Assessment for the presence or potential presence of protected species, such as bats, otters, hazel dormouse, badger, reptiles and amphibians, was undertaken by considering the features of the site. For consideration of great crested newt (*Triturus cristatus*) potential presence, ponds within 500m of the site were identified using Ordnance Survey maps and aerial imagery. Other priority species listed under Section 7 of the Environment (Wales) Act were also considered, such as west European hedgehog (*Erinaceus europaeus*).

4.5 A daytime visual assessment was carried out on the two buildings Cory's Building and Merchants House, seeking signs of and potential for the presence of bats. Internal inspection of the buildings looked at construction features and searched for bats or the remains of dead bats (including dead juvenile bats and babies, which might indicate the presence of a maternity site), and other signs (e.g. bat faeces (droppings)), on floors, ledges, walls, stored items and other surfaces. External survey of the two buildings was conducted. A high-powered lamp was used to examine potential access points and roosting areas. Any gaps or crevices were inspected as closely as possible. The context of the buildings within the surrounding landscape was also assessed.

4.6 The buildings were subjected to a series of dusk emergence/activity observations in May and June 2022, to consider the presence of roosting bats. This type of survey is appropriate to count the number of any roosting bats, identify species and determine the roost location and key access points. A team of surveyors was used and positioned at strategic vantage points during the visits. Surveyors recorded all bat activity but particularly focussed their attention on whether bats emerged from the buildings. Surveyors documented the time, bat species and behaviour. This survey schedule was based on BCT's Bat Surveys Good Practice Guidelines (Collins 2016) specifically in relation to buildings with a 'high' level of suitability for day-roosting bats.

4.7 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 myotid bats* (*Myotis sp.*) (*myotid bat is a collective term used where the species could not be specifically identified beyond this broad group). The myotid group encompasses seven species of British bat including Alcathoe's (*Myotis alcathoe*); Bechstein's (*M. bechsteinii*); Brandt's (*M. brandtii*); Daubenton's (*M. daubentonii*); mouse-eared (*M. myotis*); Natterer's (*M. nattereri*); and the whiskered bat (*M. mystacinus*).

4.8 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 recorded to Roland RO-5 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 not audible with other types of detector.

4.9 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.

4.10 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 two Nightfox XB5 torches, emitting infra-red light at a wavelength of 850nm was

coupled with a Skye SBR2100 heterodyne bat detector, and set up to observe the rear (east) elevation of Cory's Building during one session and the rear (north) elevation of Merchants House during three dusk sessions.

4.11 The potential suitability of the site for nesting birds was also considered, with the ecologists seeking active nests as well as signs of historic bird activity, nest remains, evidence of collections of bird droppings, feathers or any other signs of use by birds.

4.12 Invasive non-native species (INNS) were recorded, where present.

5 Site Description

5.1 The survey site contains two substantial structures, Cory's Building and Merchants House. They are located at the southern end of Bute Street, on the east side, and to the north of Bute Place (see Figure 5). The two buildings form an L-shaped unit around two sides of a rear courtyard, with Cory's Building to the west, Merchant House along the south side, and the Custom House – which is not included in the scope of this survey – to the north. The eastern edge of the site is formed by a high brick wall, and beyond this is the pedestrian walkway of Dock Lane. A grass verge between Dock Lane and Lloyd George Avenue is planted with a line of mature trees and an electricity sub-station is near the south-east corner of the site (see Appendix I).

5.2 The ornate front façade of Cory's Building faces west, overlooking Bute Street. It stands on a north/south axis, with the rear elevation facing east into the courtyard: the northern end overlooks the entrance yard of the Custom House. This structure is taller than its neighbours, with accommodation on the ground floor and four upper levels and includes a basement area. Internally the former office areas are empty; windows are mostly un-boarded, and rooms are naturally lit. The flat roof structure has no roof void. The rear façade reveals plain brick walls and some sections of stone, containing crevices. A recessed area contains wire mesh across upper parts.

5.3 Merchants House is a grand structure built essentially in red brick with a front façade facing south onto Bute Place. At the western end it abuts the southern end of Cory's Building. It stands on an east/west axis and provides ground floor accommodation with two upper floor levels, which are accessed by stairs at the eastern end and also at the north-west corner. The ground floor front façade features columns and a portico styled entrance. Rooms are currently empty and the windows are boarded with plywood panels to prevent unlawful entry, resulting in a dark environment in most of the internal spaces.

5.4 To the rear (north side) of Merchants House, two sections project into the courtyard. A complex roof structure of mainly timber framed pitched and flat sections is covered with slate and lined with timber sarking. At the western end of the building the pitched roof has a metal frame, and features a lantern section with glazed panels along both sides of the apex. The room below has no ceiling, so this makes the upper level room a naturally light environment. In other parts of the second floor level the ceilings have been removed, and the internal space is open to the roof void above. It has a basement, accessed at the eastern end.

5.5 At the rear of the two buildings is an enclosed courtyard which is now largely empty with a surface of rubble, and some fast colonising plant vegetation; buddleja (*Buddleja davidii*), bramble (*Rubus fruticosus*), and great willowherb (*Epilobium hirsutum*), being the dominant species present. A tall brick wall forms the eastern boundary of the courtyard and an opening in the wall providing access into the courtyard is currently obstructed by herras fencing.

6 Survey Constraints

6.1 Full access was provided, but due to issues of damage and decay, certain parts of the interior of Merchants House could not be inspected closely. Rotten floorboards beneath damaged sections of the roof results in some parts being cordoned off.

6.2 All habitats on site could be identified with confidence.

7 Desktop Study

7.1 No part of the site contains, or is within, any statutory sites of nature conservation interest, such as Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SAC), National Nature Reserves (NNRs), Special Protected Areas (SPA) or Local Nature Reserves (LNRs) etc. Within a

2km radius of the site there is one site designated for ecological significance: Severn Estuary (Wales) SSSI, SAC, SPA and Ramsar site is some 1.4km to the south-east at its closest point

7.2 SEWBReC's record search reported one Local Nature Reserve – Cardiff Bay Wetlands and Hamadryad Park – to the south-west of the site, as well as two Sites Important for Nature Conservation (SINCs), which include Afon Taff, and much the same area as the Cardiff Bay Wetlands Nature Reserve. This part of Cardiff Bay falls within the area of NRWs Coastal Saltmarsh Priority Habitat.

7.3 The record search (unique reference 0212-965) reported 2299 species records with 932 for protected and priority species within 1km. These are briefly summarised in the bullet list below.

- terrestrial mammals – excluding bats – accounted for only 11 records. The closest record to the site was that of an otter *(*Lutra lutra*) recorded in Roath Basin, a small number of records are for west European hedgehog, with the closest 780m to the west of the site, a badger (*Meles meles*), from Roath Dock Road in 2013, and a weasel (*Mustela nivalis*) record from the Cardiff Bay Nature Reserve;
- bats – accounted for 117 records with the dataset dominated by pipistrelle records, and a low number of *Myotis* and *Nyctalus* species. Pipistrelle* bats were recorded in the Coal Exchange building, a short distance west of Merchants House, and County Hall, a short distance to the east. No unusual bat records are within the dataset but many of the records are Section 7 species;
- reptiles – there were no reptile records are in the data set;
- amphibians – accounted for 22 records. Common frog (*Rana temporaria*) and common toad (*Bufo bufo*) records are from Cardiff Bay water bodies, with the closest at 780m distant but there are no records for any newt species;
- bird – dominate the dataset with 707 records. Recorded close to Plot 5 is red kite (*Milvus milvus*). Also close by in the Roath Basin of Cardiff Bay are herring gull (*Larus argentatus*), a single record for Mediterranean gull (*Ichthyaetus melancephalus*), starling* (*Sturnus vulgaris*), kingfisher (*Alcedo atthis*), house sparrow* (*Passer domesticus*) and Eurasian skylark (*Alauda arvensis*). Several other birds of prey are recorded including kestrel (*Falco tinnunculus*), merlin (*Falco columbarius*) and peregrine (*Falco peregrinus*).
- plants – accounted for just 25 records but those close to the survey site are all distinctly historic. Numerous records (127) for invasive non-native plants include buddleja (*Buddleja davidii*), Japanese knotweed (*Fallopia japonica*), Himalayan balsam (*Impatiens glandulifera*), and several cotoneaster species.
- invertebrates – accounted for 46 records with cinnabar moth*(*Tyria jacobaeae*), small heath butterfly (*Coenonympha pamphilus*) and latticed heath moth (*Chiasmia clathrata*) within 500m of the site.
- fish – were represented by just two records, including eel *(*Anguilla anguilla*), and smelt (*Osmerus eperlanus*) recorded in Cardiff Bay.

***denotes Section 7 priority species from the Environment (Wales) Act 2016**

8 Survey Results

8.1 A Phase 1 survey and PRA, followed by a targeted bat observations were completed by an experienced ecologist and a small team of ecologists and survey assistants. Details of the conditions under which the surveys were conducted are given in Table 2 below. Wind speeds shown employ the Beaufort scale.

Table 2: Summary of Survey Activity and Weather Conditions

Date	Survey Type	Timing	Weather Conditions
28/04/2022	PEA with daytime visual inspection, botanical survey and habitat assessment, including protected species assessment and PRA of two buildings (DM/DW)	10.30 – 13.00 hours British Summer Time (BST)	Air temperature: 12°C Cloud cover: 8/8 oktas Wind speed: F2, light breeze Conditions: Dry
09/05/2022	Dusk bat emergence/activity observation of Cory's Building (DM, PM, BG, DW); Video camera on rear of Cory's Building	20.10 – 22.00 hours BST (Sunset 20.41 hours)	Air temperature: 15.5°C Cloud cover: 8/8 oktas Wind speed: F3, gentle breeze Conditions: Dry
23/05/2022	Dusk bat emergence/activity observation of Merchants House (DM, PM, NI, DW, PW); Video camera on rear of Merchants House	20.20 – 22.30 hours BST (Sunset 21.10 hours)	Air temperature: 12°C Cloud cover: 8/8 oktas Wind speed: F3, gentle breeze Conditions: Dry, after rain

08/06/2022	Dusk bat emergence/activity observation of Cory's Building (DM, PW, BG, MD); Video camera on rear of Merchants House	20.50 – 22.45 hours BST (Sunset 21.28 hours)	Air temperature: 15°C Cloud cover: 1/8 oktas Wind speed: F5, fresh breeze Conditions: Dry
20/06/2022	Dusk bat emergence/activity observation of Merchants House (DM, PM, NI, DW, PW); Video camera on rear of Merchants House	21.00 – 22.40 hours BST (Sunset 21.34 hours)	Air temperature: 16°C Cloud cover: 0/8 oktas Wind speed: F0, calm Conditions: Dry
Surveyors	Diane Morgan (DM), Phil Morgan (PM), Daniel White (DW), Grace Dooley (GD), Thalia Godwin (TG), Ben Gibson (BG), Mark Davis (MD), Nigel Isaksson (NI), Phoebe Williams (PW)		

8.2 For recording purposes, the site was divided into three different habitat types and mapped following the codes and conventions described in the Phase 1 Habitat Survey Handbook (JNCC 2010). Table 3 below describes the on-site habitats in order of surface area, with the most extensive habitats listed first. The most dominant plant species are also listed: a complete list can be found in Table 11 (see Appendix V).

Table 3: Summary of Phase 1 Habitat Notes for Cory's Building and Merchants House

Habitat	Phase 1 Classification	Description of Area and Typical Species
Type 1	J3.6 Buildings	Two landmark buildings formerly providing office accommodation which stand adjacent at the southern end of Bute Street in the Cardiff Bay area of the City
Type 2	J4 Bare ground	A courtyard to the rear of the buildings which is enclosed within the two wings of the buildings, and a third building (Custom House not within the scope of this assessment) is covered with rubble. Fast colonising plants which withstand waste ground conditions are present including: buddleja (*Buddleja davidii*), great willowherb (*Epilobium hirsutum*), dandelion (*Taraxacum officinale*), bramble (*Rubus fruticosus*)
Type 3	J2.5 Wall	A brick wall forms the eastern boundary line of the site. An entrance gateway is currently obstructed by temporary Heras fencing

8.3 The two landmark buildings dominate the survey site. A courtyard area to the rear contains plant species tolerant of disturbed ground and harsh substrate conditions. Fast colonising weedy species are recorded growing on a base of brick and concrete rubble. No invasive non-native species were recorded as listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) but buddleja bushes are present. These shrubs will establish themselves on hostile substrates and can dominate waste ground in an invasive manner. In corners of the courtyard, scrub vegetation is dense and capable of supporting nesting birds. One old bird nest was found at the south-east corner of the courtyard. Few features of the courtyard environment are suitable to support wildlife. A Phase 1 habitat map is provided in Figure 4 (Appendix II).

8.4 Nesting birds were considered during the PEA/PRA and three active herring gull nests, with eggs, were noted on the roof of Cory's Building. A view from this elevated location was used to examine the roof of Merchants House and no active bird nests were observed in late April 2022. Several ledges and features of high potential for nesting gulls were noted and there is a high likelihood that additional nests were established after the date of the PEA/PRA visit. Gull species will exploit the roofs of building if shelter and any features create a secure platform for their nests.

8.5 When considering the site in relation to protected mammals, there is no evidence of badger, with no linking habitat likely to encourage them to explore or make use of the survey site. No signs for protected or priority terrestrial mammal species were found. The site offers some suitability for hedgehog as there is shelter but restricted forage habitat. The busy network of roads makes the survey site a very hazardous environment for this species. A juvenile fox (*Vulpes vulpes*) was seen to exit from the vegetation at the south-west corner of the courtyard at 21.42 hours on the 8th June 2022, and left the site via the gateway on the east boundary during the dusk observation.

8.6 Reptiles favour tussocky, rank grassland with areas of bare ground, along with varied vegetative architecture. No reptiles were seen during the survey and the courtyard area is considered too small to provide food and shelter for a viable population, with no linking connections to suitable habitat in the wider area. There are no historic records for reptiles in the SEWBReC search.

8.7 No ponds are present on the survey site, but water bodies of Cardiff Bay and remaining from the former Cardiff Docks are within 500m of the site. There are historic records for amphibians in the wider area of Cardiff Bay but there are no records for great crested newts. Amphibians also require a mosaic of habitats for the terrestrial phase of their cycle, but a key element of their ecology is a still water body in which to breed. The former dockland water bodies do not look to contain aquatic vegetation that is required for a healthy breeding population of amphibians. The habitat is considered too hostile an environment to support amphibians through their full life cycle with sufficient food sources and shelter.

8.8 An internal inspection of Cory's Building found no evidence for the presence of bats, but nesting feral pigeons were found in at least four places, along with numerous (7) dead examples. No obvious cause of death was apparent, but some may have become trapped inside the building. Access for the pigeons is possible on several levels via gaps around boarded windows.

8.9 The internal parts of Merchants House noted a light scattering of bat droppings in the first floor rooms. Small concentrations of fresh and old droppings are located on the window sills and around the edges of the plywood boards that obscure the four first floor windows at the north-west corner of the building. At the western-most window, no droppings were found, the next window to the east 10 fresh pipistrelle droppings were noted on the sill with an additional *circa* 30 droppings on the floor by the window. At the next window moving westwards, only old droppings were noted with *circa* 15 on the sill and 10 on the floor. At the fourth and easternmost window, *c.*100 old pipistrelle droppings were present on the sill and 50 on the floor. In the first floor rooms on the eastern side of Merchants House, a small number of old bat droppings (*c.*20) were found around boarded window casements. Additional droppings were noted in cobwebs and on walls. No bat droppings were found in the roof void of Merchants House.

8.10 Internal spaces of Merchants House are also used by nesting pigeons. The top floor room near the south-east corner was used by a breeding pair and other locations likely to be pigeon nest locations were noted.

8.11 A series of dusk observations were conducted by a team of ecologists and survey assistants. Observations were supported by a video camera night visual aid which was beneficial for the gloomy locations with low light levels. No bat roost was identified on Cory's Building. Bat roosting activity was confirmed at the north-west corner area of Merchants House, with the entry and emergence of a low number of common pipistrelle bats (*Pipistrellus pipistrellus*) during two of the dusk sessions noted by the observers and also captured by video camera. Details are shown in the summary table below the full details of the data gathered shown in Appendix II. The roosting behaviour detected during the dusk observations in May and June 2022 was consistent with the evidence of old and fresh bat droppings noted during the internal inspection in April 2022. These results also matched the findings of the survey of the site conducted in summer 2017 by Just Mammals but with a slightly reduced level of roosting activity.

Table 4: Summary of Bat Observation Survey Results summer 2022

Date	Roost	Comment
09/05/2022	None identified	
23/05/2022	None identified	
08/06/2022	Common pipistrelle bat (2) entered Common pipistrelle bat (1) emerged	Bats entered at top of board on third window to the east, first floor at north-west corner of Merchants House; Bat emerged at top of board on second window to the east, first floor at north-west corner of Merchants House
20/06/2022	Common pipistrelle bat (1) entered Common pipistrelle bat (1) emerged	Bat entered at top of board on third window to the east, first floor at north-west corner of Merchants House; Bat emerged at top of board on second window to the east, first floor at north-west corner of Merchants House

8.12 The rear courtyard provides a dark environment with scrub vegetation and high walls on three sides where insects are present. A high level of foraging activity occurs over the courtyard with bats feeding at high and low levels. Bats arrive before sunset via the connective habitat of the tree line to the east of the survey site indicating they emerge from a roost(s) location close by. Constant foraging by numerous bats was a distinctive feature of the dusk survey visits.

9 Discussion and Conclusions

9.1 The survey of Cory's Building and Merchants House found that the rear first floor windows at the north-west corner of Merchants House are used by roosting common pipistrelle bats. A low number of animals were seen to enter and exit at the top of the plywood panels fitted into the window recesses. The observation data is consistent with the droppings noted during the daytime internal inspection in April 2022 and also with historic roosting activity by bats at the site recorded in summer 2017. Only a low number of individuals was detected so it is concluded to be used for summer day roosting and occasional night roosting. A greater quantity of droppings and a higher level of exit activity would be expected if the site were to be a breeding site so no maternity colony is present.

9.2 A consistent high level of bat foraging occurs over the courtyard and rear elevations of the two buildings. This activity commences early, at a time prior to sunset indicating that the bats are

arriving from a roost(s) close by. They fly to the survey site via the mature trees line on Lloyd George Avenue, to the east of the site. Only one other species of bat was noted during the survey effort, and this was the presence of soprano pipistrelle (*Pipistrellus pygmaeus*), also foraging in the courtyard.

9.3 Presence of bats at other times of year apart from the summer was considered and the buildings are assessed to have negligible potential to be used by hibernating bats. Both buildings have basements but no evidence for bats was noted here and no access for bats to these places was detected to be possible.

9.4 When considering the nature conservation significance of the site recognised criteria (Bat Mitigation Guidelines 2004 and Good Practice Guide: NRW Approach to Bats and Planning October 2015), the nature conservation status of the site is assessed to be low due to the likely presence of a single common species – namely common pipistrelle. All bat species are legally protected from the impacts of disturbance, as well as loss and damage to roost locations; and loss of access or obstructed bat access under the provisions of the Wildlife and Countryside Act 1981 (as amended), and the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019.

9.5 When the impacts of the proposed development are examined, the project will result in the loss of the low status bat roosts in Merchants House and the loss of forage habitat over the courtyard. A new structure is planned for the courtyard to link to the rear of Cory's Building and Merchants House. This will include modifications to the rear elevations of the existing buildings. Renovations for its new educational purpose will destroy the roosts in the window recesses of Merchants House. A very small courtyard will remain in this location, but this feature is too small to contemplate using this space within the design for mitigation features for bats as it will be too restrictive for bat access.

9.6 No additional survey effort is required but it will be necessary to provide a scheme of mitigation which is suitable and appropriate for the common pipistrelle bats at the site. Mitigation features must be clearly shown on the design drawings submitted to support the planning application for the development activity. An EPS licence will be required from NRW, before any work is done which affects roosts and obstructs the bat exit/entry points. Information concerning a scheme of mitigation, and the EPS licence process and other recommendations are made below.

9.7 For the development proposals to proceed, a robust scheme of mitigation is required to ensure that the favourable conservation status of the bat species is not adversely affected. The following broad principles must be followed within any scheme of mitigation of compensation at the site and will need to be delivered under the auspices of an EPS licence:

- bats must not be left without a place to roost;
- major works must be timed to avoid periods of the year when bats are likely to be present;
- any new roost structures provided as part of mitigation and compensation proposals must be suitable for the species of bat and type of roost affected by the development;
- any scheme must ensure that the 'action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range', and;
- post-development monitoring will be necessary to comply with the EPS licence. It is also recommended to form part of the scheme of mitigation for the LPA procedures.

9.8 When considering the context of the site within the urban landscape of the Cardiff Bay area, the naturally dark areas and the locations of green spaces such as the tree line of Lloyd George Avenue will be attractive to foraging bats as their insect prey will be present. The neglected state of the courtyard at the survey site is currently exploited by pipistrelle bats which are likely to occupy roosts close by. Pipistrelle species are relatively tolerant of artificial lighting so are more frequently encountered in an urban environment than other species such as lesser horseshoe which are distinctly light averse. A sensitive lighting scheme for the site must be designed to ensure that artificial lighting does not have a detrimental impact on the proposed mitigation measures and that unnecessary lighting is created affecting a variety of nocturnal animals including the bat species foraging around the tree line to the east of the site.

9.9 Herring gull is now on the British Trust for Ornithology: Birds of Conservation Concern 5 red list, which is the highest conservation priority with species needing urgent action. It is also a Section 7 species on the Environment (Wales) Act 2016. Herring gulls were noted nesting on the roof of the buildings during the survey. Pigeons are also nesting inside the two buildings. No other nesting

bird activity was detected but the scrub vegetation and the brick wall in the courtyard are also suitable as a breeding site for other small bird species.

9.10 The presence of other protected species was considered and the site is considered unlikely to support additional protected species such as reptiles. Hedgehog may stray onto the site at times but this seems unlikely due to the hazards of the busy road network in the immediate vicinity.

9.11 Invasive plant species were considered during the assessment and only invasive buddleja was noted.

9.12 The site supports two Section 7 priority species as listed under the Environment (Wales) Act 2016 – namely common pipistrelle and herring gull. Survey identified a high level of bat foraging activity over the courtyard area. Overall the site is assessed to be a medium level of ecological value. To comply with current Welsh planning policy, it will be necessary for the new development to make a positive contribution to local biodiversity. A scheme is proposed below which takes account of the context of the site in the wider landscape.

10 Recommendations

10.1 All bat species are legally protected from the impacts of disturbance, as well as loss and damage to roost locations; and loss of access or obstructed bat access. As indicated in the previous section, it is considered that the proposed development will result in impacts on bats. Therefore, an application to NRW for an EPS licence is required. No work which has the potential to affect bat roost locations can commence until such time as a licence has been issued. No further targeted ecological surveys are recommended at this time.

10.2 An application for an EPS licence can only be made when planning consent (and listed building consent) is granted for development work, and can take several weeks to put together the EPS application material. Supporting documentation is needed including the licence application forms; a detailed Ecological Method Statement (EMS) (providing information on the survey effort with recent survey data not older than 18 – 24 months), and details of the local status of the species concerned; the duties of an independent experienced Ecological Clerk of Works (ECW); as well as the duties and responsibilities of the various contractors (e.g. builders, carpenters, electricians, plumbers etc), and the owner/developer of the site. A local planning authority consultation document must also be completed/signed, and any pre-commencement conditions concerning ecology must be formally approved and signed off by the planning authority. NRW do not currently make a charge for issuing a licence but this circumstance is likely to change in the future.

10.3 A timetable of major phases of development work will need to be provided, and new bat mitigation roosts must be available to bats before impacts on the existing roost locations occur as a temporary short term measure. Long-term mitigation features must also be provided.

10.4 For crevice roosting pipistrelle bats, an appropriate scheme of mitigation is put forward with two enclosed bat boxes incorporated into the upper level walls of Cory's Building on the east facing elevation at the southern end. Regular foraging activity was noted in this area. Also, bat mitigation features will be provided on Merchants House which aim to replicate the slots currently used in window casement locations. Two enclosed bat boxes are to be installed at high level on the east facing elevation close to the connective tree line of Lloyd George Avenue. Also, a feature to mimic an enclosed bat box will be created within the roof covering on the east facing roof area to provide bat access to the narrow space between the slate roof covering and the timber sarking lining. This is the sort of slot feature that crevice roosting pipistrelle bats make use of. Access to the internal space is provided by creating a small opening from the lower edge of the lead ridge capping and forming an upward angled tunnel effect of dimensions 18mm x 25mm. Artificial lighting issues in this part of the site must be designed to avoid light spill from elevated parts of the proposed new building. This location for the bat mitigation is also close to the connectivity of the tree line on Lloyd George Avenue, to the east of Merchants House. Bat friendly materials must be used where mitigation features are present. New timbers and any remedial timber treatment products must be checked to ensure that chemicals toxic to bats are not used. These locations will be subject to the approval of the local planning authority due to the listed status of the buildings. They must be annotated to the design plans so as to be fully integrated into the project plan.

10.5 When the plywood boarding or the timber frames are removed from the window casements of Merchants House, it will be necessary for the ecologist to be present on site to check for the presence of bats in all the windows where emergence activity has occurred. However, the ECW

will also have to be engaged on an 'on-call' basis with respect to the removal of other casement windows, as there is a low level risk of bats roosting in other window recesses of the two buildings. The building contractors must be briefed with a tool box talk on how to approach and check the remaining windows where there is a low risk of encountering torpid bats. The brief will also explain what to do in the event that a bat is found, so that the bat can re-locate itself or so that the ecologist can be called to the site to remove the bat safely from the working zone.

10.6 A Bat Conservation Trust study of the impacts of lighting on bats has considered the increased risk of the 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. When this site is brought back into economic use, the naturally dark environment of the courtyard will no longer be available to bats. A lighting plan must consider how essential light can be directed for safe access for vehicles and pedestrians on the redeveloped site, but avoiding light spill and unnecessary lighting.

10.7 Building developments often result in the installation of other fitments and fittings, some of which can be harmful to bats. The buildings already contain numerous elements of external fitments such as pipework, vents and extraction fans. It is essential that no satellite dishes, guttering, vents, lights or air conditioning units are located within close proximity of the bat mitigation arrangements where they might cause an obstruction. A wind turbine, even a micro turbine unit, would not be suitable at this location given the presence of bat roosts and a high level of foraging activity.

10.8 Post-development monitoring is not proposed for this site as the roosting activity is low status and only a low number of a common species are recorded to be present.

10.9 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 a bat ecologist who holds a licence to disturb bats. To proceed without taking advice would be an offence under the provisions of the Wildlife and Countryside Act 1981 (as amended).

10.10 All nesting birds, their nests, chicks and eggs are protected by Part 1 of the Wildlife and Countryside Act 1981 (as amended). Clearance of the shrub vegetation in the courtyard must consider the potential presence of active nests. Vegetation removal work is recommended to take place during the autumn/winter months of late August to February inclusive in order to avoid the bird nesting season of the species noted at the site. If this is not possible, then the vegetation must be carefully checked by an appropriately qualified ecologist immediately ahead of any removal.

10.11 As birds will seek to establish nest sites on the roofs of the two buildings, the same recommendations for the modifications to the two buildings are made in relation to breeding birds. A small section on the north elevation of Merchants House will be removed to facilitate the link to the proposed new structure. If nests are present or become established, then they must be retained and protected. A cordon must be established for a safe working zone a suitable distance from the nest, and not until the chicks have fledged can the nest be destroyed. Where active nests are identified, precautions as described above must be followed so that the birds can breed successfully and eggs and chicks are not lost. Only when a nest is no longer active can it be removed. A suitably qualified and experienced ecologist must be retained on a watching brief during the period of vegetation clearance and building modifications to make a site visit and provide appropriate advice if any wildlife species are encountered.

10.12 During construction works, any trenches must not be left in such a state as to present a pitfall trap, where animals such as hedgehogs can fall in and not be able to climb out. An escape builders' plank must be secured so that any animal falling into pits and trenches can make use of the plank, set at an angle of 45°, in order to escape.

10.13 Development of an area gives the opportunity to carry out enhancements to benefit wildlife, especially during the landscaping process. Table 5 below includes a list of suitable native tree and hedgerow species, which can be planted as part of the landscaping design proposals. It is best that such plants are sourced locally in order to reduce likelihood of importing diseases.

Table 5: Recommended Native Tree and Shrub Species

Common Name	Scientific Name
Alder	*Alnus glutinosa*
Crab apple	*Malus sylvestris*
Dogwood	*Cornus sanguinea*
Elder	*Sambucus nigra*
Field maple	*Acer campestre*
Hawthorn	*Crataegus monogyna*
Hazel	*Corylus avellana*
Holly	*Ilex aquifolium*
Rowan	*Sorbus aucuparia*

10.14 A minimum of 50% of the flowering plant and shrub species shown below in Table 6 must be included within the site landscape layout. Although not exclusively native species, they will bring benefits for wildlife. Again, only plants from local stockists must be used.

Table 6: Recommended Flowering Plants and Shrubs

Common Name	Scientific Name
Barberry	*Berberis vulgaris*
Clematis	*Clematis montana* or *Clematis vitalba*
Common broom	*Cytisus scoparius*
Guelder rose	*Viburnum opulus*
Hebe	*Hebe albicans*
Honeysuckle	*Lonicera periclymenum*
Lavender	*Lavandula spp.*
Oregon grape	*Mahonia aquifolium*
Tree cotoneaster	*Cotoneaster 'Coral Beauty'*
Vibernum	*Viburnum davidii*

11 References

Aebischer, N.J., Balmer, D., Brown, A.F., Douse, A., Eaton, M.A., Lindley, P., McCulloch, N., Noble, D.G., Stanbury, A.J., and Win, I. (2021). '*Birds of Conservation Concern 5: The Population Status of Birds in the United Kingdom, Channel Islands and the Isle of Man*'. British Trust for Ornithology, Thetford

Anon (2017). '*Guidelines for Preliminary Ecological Appraisal – 2nd Edition'*. Chartered Institute of Ecology and Environmental Management, Winchester

Collins, J. (Ed.) (2016). '*Bat Surveys for Professional Ecologists – Good Practice Guidelines – 3rd Edition.*' Bat Conservation Trust, London

Joint Nature Conservation Committee (1993). *'Handbook for Phase 1 Habitat Survey – A Technique for Environmental Audit*'. JNCC, Peterborough

Mitchell-Jones A.J. and McLeish A.P. (2004). '*The Bat Workers Manual – 3rd Edition*', English Nature, Peterborough

Ninnes, R. (2015). '*NRW Approach to Bats and Planning*', Natural Resources Wales, Bangor

Rose, F. (1981). '*The Wild Flower Key*'. Frederick Warne, London

Russ, J. (2012). '*British Bat Calls: A Guide to Species Identification*'. Pelagic Publishing, Exeter

Appendix I: Site Plan

Figure 1: Site location plan (red outline)

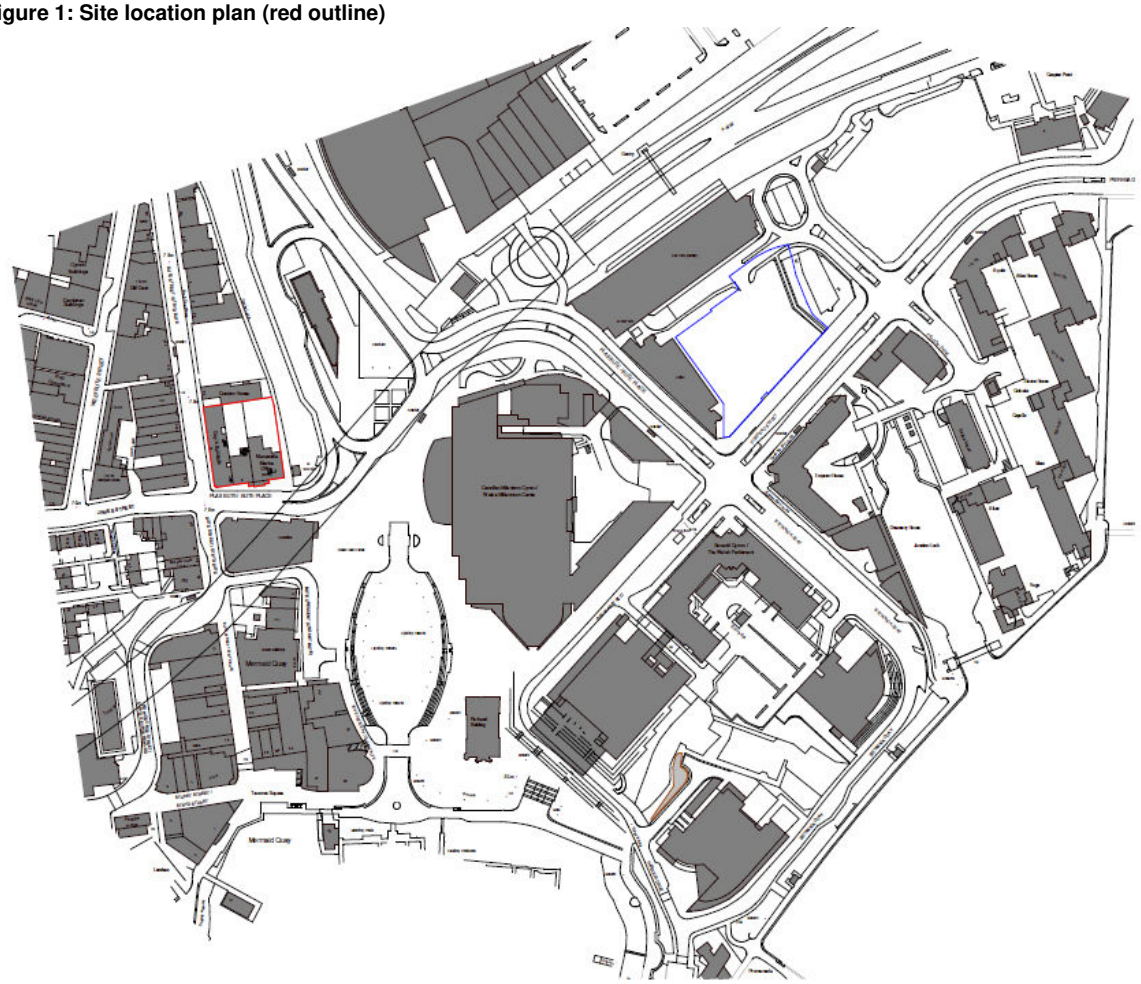


Figure 2: Aerial view

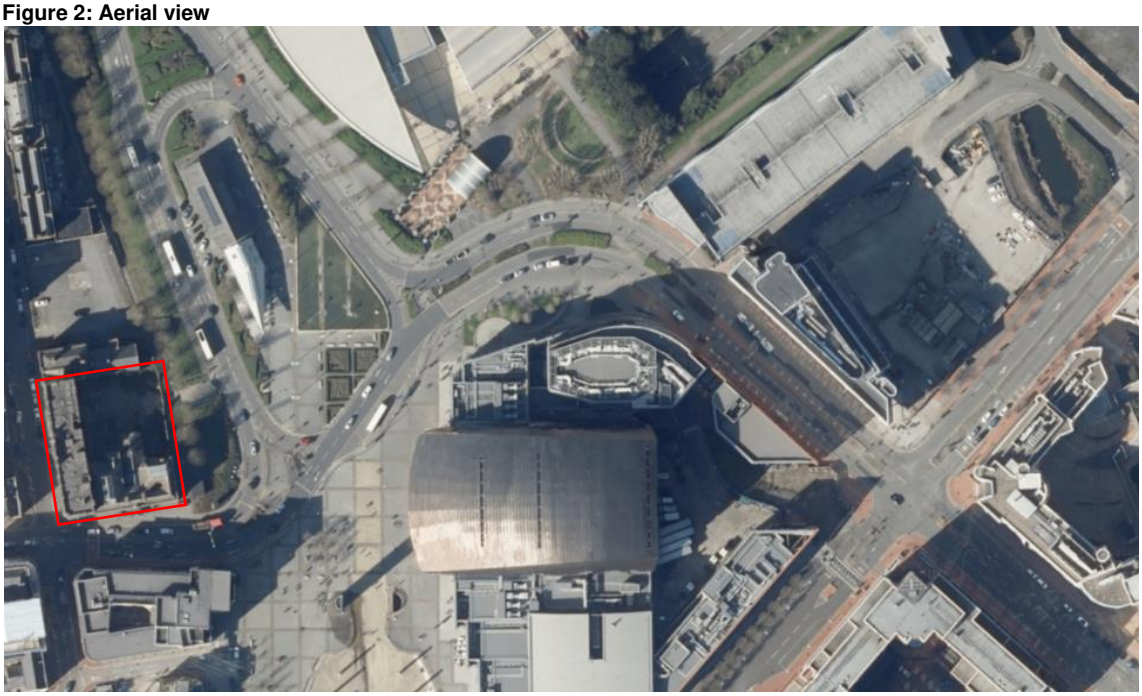
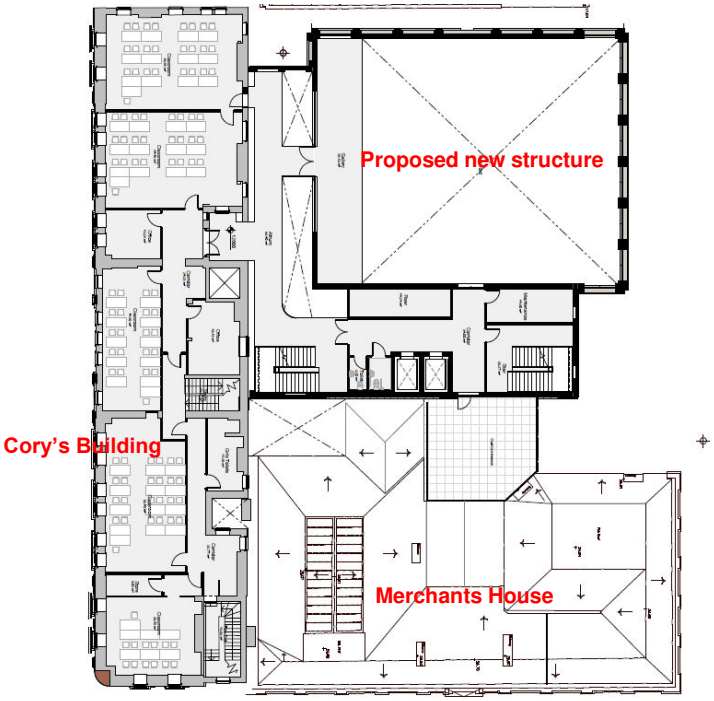


Figure 3: Proposed footprint of new development showing existing and proposed structures



Appendix II: Survey Results

Figure 4: Phase 1 habitat map

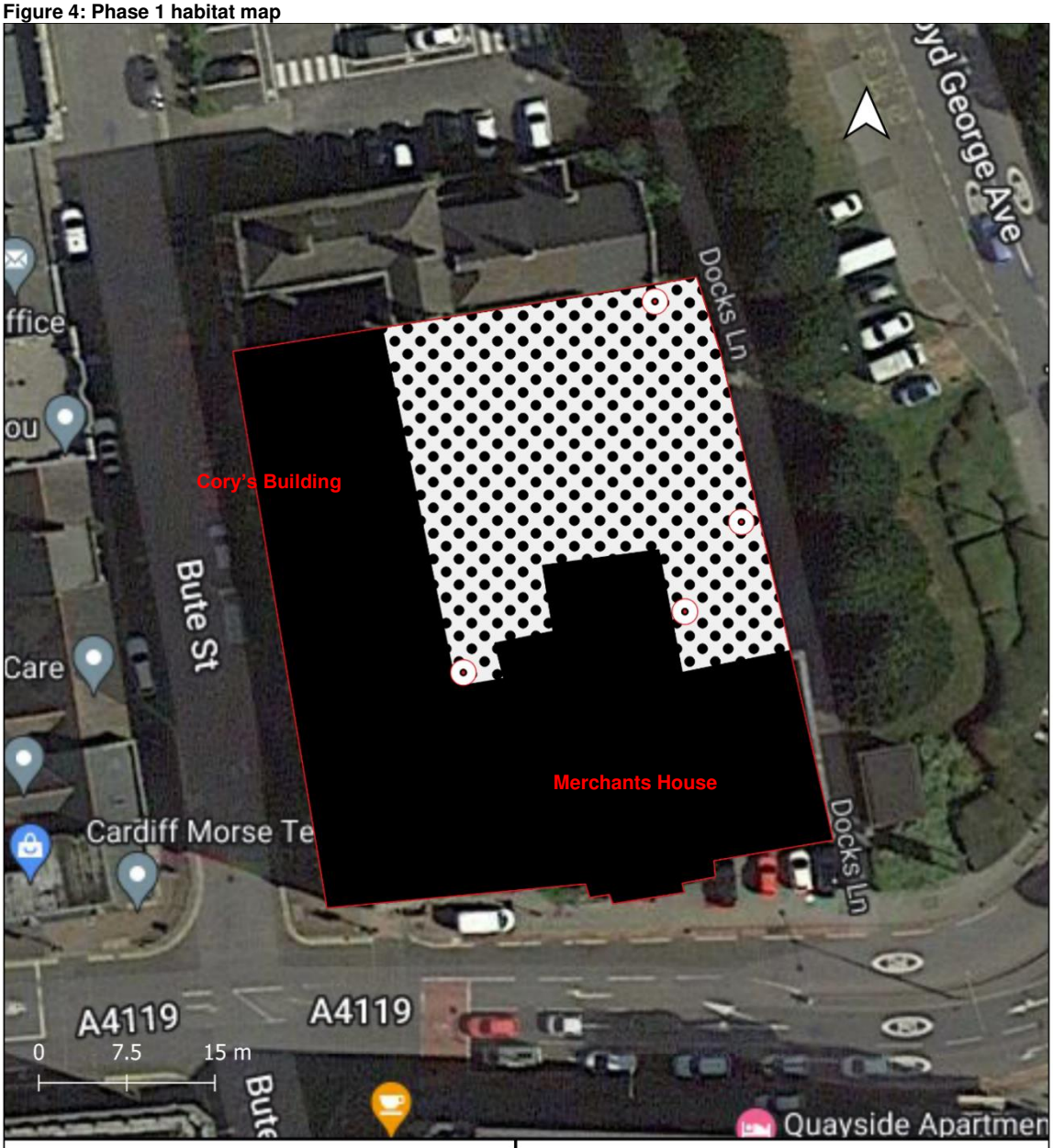


Table 7: Cory's Building, Cardiff – Dusk Observation 9th May 2022

Time (24 Hour Clock)	Species (Common Name)	Recording No.	Observed Activity
20:57 hours	Common pipistrelle and soprano pipistrelle	1 PM, 1 DM	Flew into courtyard from tree line on east edge of site and foraged over courtyard at rear of Cory's Building
20:58 hours	Soprano pipistrelle	1 BG	Foraging in small yard at northern end of Cory's Building
21:01 hours	Common pipistrelle	2 PM	Flew into courtyard from east and foraging over courtyard at rear of Cory's Building
21:02 hours	Common pipistrelle and soprano pipistrelle	3 PM, 2 DM	Multiple bats foraging over courtyard at rear (east side) of Cory's Building
21:03 hours	Common pipistrelle and soprano pipistrelle	3 DM	Multiple bats foraging over courtyard at rear (east side) of Cory's Building
21:04 hours	Common pipistrelle and soprano pipistrelle	2 BG, 4 PM	Foraging in courtyard to rear of Cory's Building and flying through gap at north end to forage in small yard between north end and Custom House
21:05 hours	Common pipistrelle and soprano pipistrelle	4 DM	Foraging over courtyard at rear of Cory's Building
21:08 hours	Soprano pipistrelle	5 PM	Foraging in south-west corner of yard to rear of Cory's Building
21:09 hours	Common pipistrelle (x2)	3 BG	Foraging in small yard at northern end of Cory's Building
21:09 hours	Common pipistrelle (x2)	6 PM	Foraging in south-west corner of courtyard to rear of Cory's Building
21:11 hours	Common pipistrelle and soprano pipistrelle	7 PM	Foraging in south-west corner of courtyard to rear of Cory's Building
21:12 hours	Common pipistrelle (x2) and soprano pipistrelle	4 BG	Foraging in small yard at northern end of Cory's Building
21:12 hours	Common pipistrelle and soprano pipistrelle	5 DM	Foraging over courtyard at rear (east side) of Cory's Building
21:14 hours	Common pipistrelle and soprano pipistrelle	8 PM	Foraging in south-west corner of courtyard to rear of Cory's Building
21:15 hours	Common pipistrelle	5 BG	Foraging in small yard at northern end of Cory's Building
21:17 hours	Common pipistrelle	6 BG	Foraging in small yard at northern end of Cory's Building
21:20 hours	Common pipistrelle (x2)	6 DM	Foraging along tree line to east of courtyard
21:21 hours	Soprano pipistrelle (x2) and common pipistrelle	7 DM	Chasing over courtyard
21:23 hours	Common pipistrelle (x2)	8 DM, 9 DM	Foraging over courtyard at rear (east side) of Cory's Building
21:25 hours	Common pipistrelle (x2)	10 DM	Foraging high over roof of Merchants House at rear (east side) of Cory's Building
21:26 hours	Common pipistrelle (x2) and soprano pipistrelle	11 DM	Foraging high over roof of Merchants House at rear (east side) of Cory's Building
21:27 hours	Soprano pipistrelle	1 DW, 7 BG	Foraging in small yard at northern end of Cory's Building
21:31 hours	Common pipistrelle	2 DW	Heard on west side of Cory's Building
21:36 hours	Common pipistrelle and soprano pipistrelle	9 PM	Foraging in south-west corner of courtyard to rear (east side) of Cory's Building
21:38 hours	Common pipistrelle (x2)	12 DM	Foraging to rear (east side) of Cory's Building
21:40 hours	Common pipistrelle (x2)	13 DM	Foraging to rear (east side) of Cory's Building

Note: Highlighted records indicate emergence or re-entry activity

Table 8: Merchants House, Cardiff – Dusk Observation 23rd May 2022

Time (24 Hour Clock)	Species (Common Name)	Recording No.	Observed Activity
21:16 hours	Common pipistrelle (x2)	1 PM	Flew into courtyard from tree line at east edge of site and foraged over courtyard at rear of Merchants House
21:17 hours	Common pipistrelle	1 DM	Foraging over courtyard to rear (north side) of Merchants House
21:18 hours	Common pipistrelle	1 NI	Foraging around canopy of trees on east side of building
21:18 hours	Common pipistrelle (x3)	2 DM	Foraging over roof and at eaves level along rear (north side) of Merchants House
21:21 hours	Common pipistrelle	2 NI	Foraging around canopy of trees on east side of building
21:22 hours	Common pipistrelle and soprano pipistrelle	3 DM	Foraging over roof and at eaves level along rear (north side) of Merchants House
21:23 hours	Common pipistrelle	3 NI	Flew from tree line and away to east
21:23 hours	Common pipistrelle (x3) and soprano pipistrelle	2 PM: 4 DM	Multiple bats foraging over courtyard to rear (north side) of Merchants House
21:25 hours	Common pipistrelle	4 NI	Foraging around canopy of trees on east side of building
21:25 hours	Common pipistrelle and soprano pipistrelle	5 DM	Foraging over courtyard to rear (north side) of Merchants House
21:26 hours	Common pipistrelle (x2)	1 PW	Foraging over courtyard to rear of Merchants House
21:31 hours	Common pipistrelle	5 NI	Foraging around canopy of trees on east side of building
21:42 hours	Common pipistrelle (x2)	6 DM	Foraging over courtyard to rear (north side) of Merchants House: some at low level and others high at roof top level
21:43 hours	Common pipistrelle	1 DW	Heard but not seen on south side of Merchants House
21:45 hours	Common pipistrelle (x2)	7 DM	Foraging at high level to rear (north side) of Merchants House close to NW wall

21:46 hours	Common pipistrelle (x2)	8 DM	Foraging at low level to rear (north side) of Merchants House close to north-western wall
21:46 hours	Common pipistrelle (x2) and soprano pipistrelle	3 PM	Foraging over courtyard to rear (north side) of Merchants House
21:48 hours	Common pipistrelle (x2)	2 PW	Foraging at low level to rear (north side) of Merchants House close to north-western wall
21:49 hours	Common pipistrelle (x3)	9 DM	Chasing over courtyard to rear (north side) of Merchants House
21:53 hours	Common pipistrelle (x2)	10 DM	Foraging over courtyard to rear (north side) of Merchants House; some at low level and others high at roof top level
21:54 hours	Common pipistrelle (x2)	11 DM	Foraging over courtyard to rear (north side) of Merchants House; some at low level and others high at roof top level
21:57 hours	Common pipistrelle (x2) and soprano pipistrelle	12 DM	Foraging over courtyard to rear (north side) of Merchants House: some at low level and others high at roof top level; frequent social calls
22:03 hours	Common pipistrelle (x3)	13 DM	Foraging over courtyard to rear (north side) of Merchants House; some at low level and others high at roof top level

Note: Highlighted records indicate emergence or re-entry activity

Table 9: Cory's Building, Cardiff – Dusk Observation 8th June 2022

Time (24 Hour Clock)	Species (Common Name)	Recording No.	Observed Activity
21.23 hours	Common pipistrelle	1 PW: 1 DM	Flew into courtyard at rear (east side) of Cory's Building from adjacent tree line and foraged over yard
21.27 hours	Common pipistrelle (x2) and soprano pipistrelle	2 DM	Foraging over courtyard at rear (east side) of Cory's Building
21.27 hours	Common pipistrelle	1 BG	Commuting west to east past north end of Cory's Building
21.27 hours	Common pipistrelle and soprano pipistrelle	2 PW	Flew into courtyard at rear (east side) of Cory's Building from adjacent tree line and joined others foraging over yard
21.29	**Common pipistrelle**	- **DM**	**Emerged from upper edge of boarded window casement, central of 3 first floor windows on rear (north side) of Merchants House at north-west corner**
21.30 hours	**Common pipistrelle**	- **DM; 3 PW**	**Flew up and then away from boarded window casement, eastern of 3 first floor windows on rear (north side) of Merchants House several times and then landed and went in at upper edge.**
21.31 hours	Soprano pipistrelle	2 BG	Flying west to east past north end of Cory's Building
21.36 hours	Common pipistrelle and soprano pipistrelle	3 DM	Foraging over yard at rear (east side) of Cory's Building
21.37 hours	Common pipistrelle (x2)	3 BG	Flying within small yard at north end of Cory's Building
21.38 hours	Common pipistrelle	4 PW	Foraging over yard at rear (east side) of Cory's Building
21.42 hours	Common pipistrelle (x2)	4 BG	Flying within small yard at north end of Cory's Building
21.46 hours	Common pipistrelle; soprano pipistrelle and noctule	4 DM	Multiple bats foraging over courtyard at rear (east side) of Cory's Building: noctule heard but not seen
21.47 hours	Common pipistrelle and soprano pipistrelle	5 DM	Foraging over courtyard at rear (east side) of Cory's Building
21.49 hours	**Common pipistrelle**	- **DM**	**Flew up and then away from boarded window casement, eastern of 3 first floor windows on rear (north side) of Merchants House then landed and went in at upper edge**
21.51 hours	Common pipistrelle	6 DM	Multiple bats foraging over courtyard at rear (east side) of Cory's Building
21.52 hours	Soprano pipistrelle	5 BG	Flying within small yard at north end of Cory's Building
21.53 hours	Common pipistrelle	5 PW	Multiple bats foraging over courtyard at rear (east side) of Cory's Building
21.53 hours	Common pipistrelle and soprano pipistrelle	7 DM	Multiple bats foraging over courtyard at rear (east side) of Cory's Building
21.54 hours	Common pipistrelle	1 MD	Heard faintly at south-western corner area of Cory's Building
21.54 hours	Common pipistrelle	8 DM	Multiple bats foraging over courtyard at rear (east side) of Cory's Building
21.56 hours	Common pipistrelle	9 DM	Multiple bats foraging over courtyard at rear (east side) of Cory's Building; high and low level
21.56 hours	Common pipistrelle	2 MD	Heard faintly at south-western corner area of Cory's Building
21.59 hours	Common pipistrelle	3 MD	Commuting east to west over Bute Street at south end of Cory's Building
22.06 hours	Common pipistrelle	6 PW	Multiple bats foraging over courtyard at rear (east side) of Cory's Building; high and low level
22.07 hours	Common pipistrelle	4 MD	Heard faintly at south-west corner area of Cory's Building
22.07 hours	Common pipistrelle	6 BG	Flying within small yard at north end of Cory's Building
22.22 hours	Common pipistrelle	10 DM	Multiple bats foraging over courtyard at rear (east side) of Cory's Building; high and low level

Note: Highlighted records indicate emergence or re-entry activity

Table 10: Merchants House, Cardiff – Dusk Observation 20th June 2022

Time (24 Hour Clock)	Species (Common Name)	Recording No.	Observed Activity
21.22 hours	Common pipistrelle	1 GD	Foraging over yard on north side of Merchants House
21.34 hours	Common pipistrelle	1 DM	Foraging over yard on north side of Merchants House
21.45 hours	Common pipistrelle and noctule	2 GD	Foraging over yard on north side of Merchants House; noctule heard in background
21.45 hours	Common pipistrelle	1 NI	Foraging between mature trees and Merchants House
21.47 hours	Common pipistrelle	2 NI	Flew north on east side of Merchants House between building and mature tree line
21.48 hours	Common pipistrelle	2 DM	Flying up to boarded window of Merchants House on north elevation at NW corner: eastern window casement of 3 boarded windows on first floor
21.50 hours	**Common pipistrelle**	**3 DM**	**Entered at top of eastern window casement of 3 boarded windows on the first floor at rear NW corner of Merchants House**
21.50 hours	Common pipistrelle	3 NI	On east side of Merchants House foraging between building and mature tree line
21.56 hours	**Common pipistrelle**	**Not recorded**	**Emerged at top of central window casement of the 3 boarded windows on first floor at rear NW corner of Merchants House**
21.58 hours	Soprano pipistrelle	4 NI	On east side of Merchants House foraging between building and mature tree line
22.01 hours	Soprano pipistrelle	5 NI	Flew over roof of Merchants House from west to east
22.03 hours	Common pipistrelle	1 DW	Commuting east to west on south side of Merchants House
22.09 hours	Common pipistrelle	4 DM	Repeatedly flying up to boarded window of Merchants House on north side at north-west corner as if to land and enter; central window casement of 3 boarded windows on first floor
22.11 hours	Soprano pipistrelle	2 DW	Commuting east to west along south side of Merchants House
22.12 hours	Common pipistrelle	3 DW	Commuting north to south over Merchants House
22.16 hours	Common pipistrelle (x2)	1 TG	Foraging over courtyard on north side of Merchants House
22.17 hours	Common pipistrelle	4 DW	Heard briefly on south side of Merchants House
22.19 hours	Common pipistrelle (x3) and soprano pipistrelle	2 TG	Foraging over courtyard on north side of Merchants House

Note: Highlighted records indicate emergence or re-entry activity

Appendix III: Evidence of Bat Roosts

Roost location: Cory's Building and Merchants House, Bute Street, Cardiff CF10 5BP

Survey date(s):

Day survey: 28th April 2022; Diane Morgan, Daniel White (Just Mammals Limited)

Dusk observations:
9th May 2022; Diane Morgan, Phil Morgan, Ben Gibson, Daniel White
23rd May 2022: Diane Morgan, Phil Morgan, Nigel Isaksson, Daniel White, Phoebe Williams
8th June 2022; Diane Morgan, Phoebe Williams Ben Gibson, Mark Davis
20th June 2022: Diane Morgan, Grace Dooley, Nigel Isaksson, Daniel White, Thalia Godwin: (Just Mammals Limited)

Description: Cory's Building and Merchant House are attached to form an L-shaped unit at the southern end of Bute Street. A courtyard to the rear is enclosed along the eastern side of the site by a tall brick wall.
Cory's Building stands along the west side of the complex. It is also built in brick with some sections of stone wall showing. The grand west facing façade is decorated in dressed stone. It contains a ground floor, four upper levels and a basement. The flat roof has no roof voids.
Merchant House stands along the southern side of the unit. It is built mainly in red brick with ground floor, and two upper levels and basement. A complex roof arrangement is mainly slated with a sarking lining.

Actual and potential bat access points: Gaps around the edge of the roof, damaged and missing roof tiles, damaged timber features on the roof, gaps around window casements and around the edge of boarded windows, gaps between window frames and the casement, gaps in stone and brickwork, gaps at grills into the basements

Actual and potential bat roosting sites: Gaps between window frames and the window casement, gaps with the roof coverings and the sarking lining, in cracks in walls and around the edge of the roof structure

Species and number recorded:

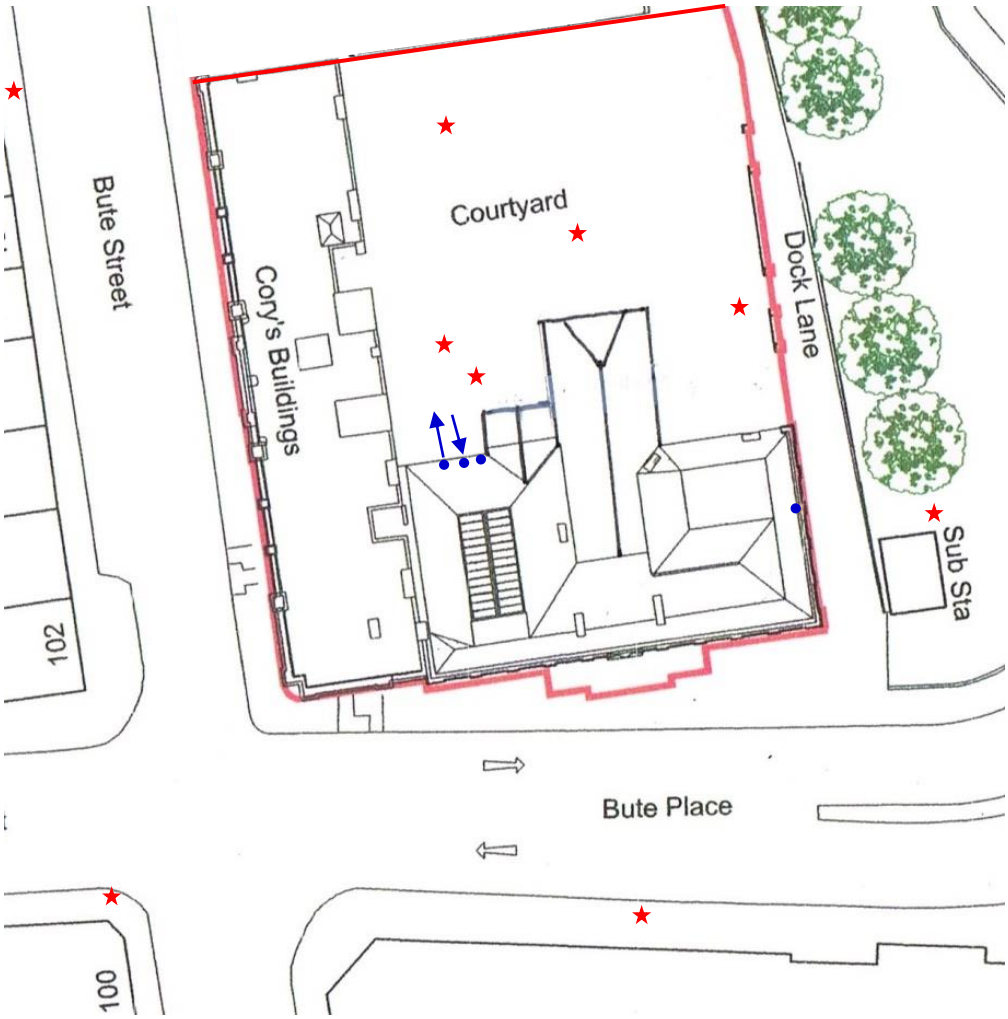
8th June 2022
Common pipistrelle (2) entered at NW area first floor boarded window of Merchants House
Common pipistrelle (1) emerged at NW area first floor boarded window of Merchants House

20th June 2022
Common pipistrelle (1) entered at NW area first floor boarded window of Merchants House
Common pipistrelle (1) emerged at NW area first floor boarded window of Merchants House

Droppings recorded:

Merchants House:
First floor – rear and east casement window sills – small quantity of fresh and old pipistrelle droppings
First floor – light scattering on floor of old pipistrelle droppings

Figure 5: Site Layout showing evidence of bat activity and position of observers



Key

- = location of bat droppings
- = bat entry / exit flight lines
- = position of observers

Appendix IV: Site Photographs

Plate 1: Cory's Building viewed from south-west

Plate 2: Rear (east) elevation of Cory's Building

Plate 3: Herring gull nests on roof of Cory's Building

Plate 4: Eggs in one of the nests

Plate 5: Merchant House viewed from south-east

Plate 6: Roof features of Merchants House

Plate 7: Rear elevation of Merchants House

Plate 8: Rear elevation of Merchants House

Plate 9: Courtyard and entrance gateway

Plate 10: Courtyard vegetation

Plate 11: Interior of Cory's Building

Plate 12: Interior of Cory's Building

Plate 13: Bat droppings at windows in Merchants House

Plate 14: Bat droppings on floor in front of windows

Plate 15: Roof void in Merchants House

Plate 16: Roof void in Merchants House

Appendix V: List of Recorded Species

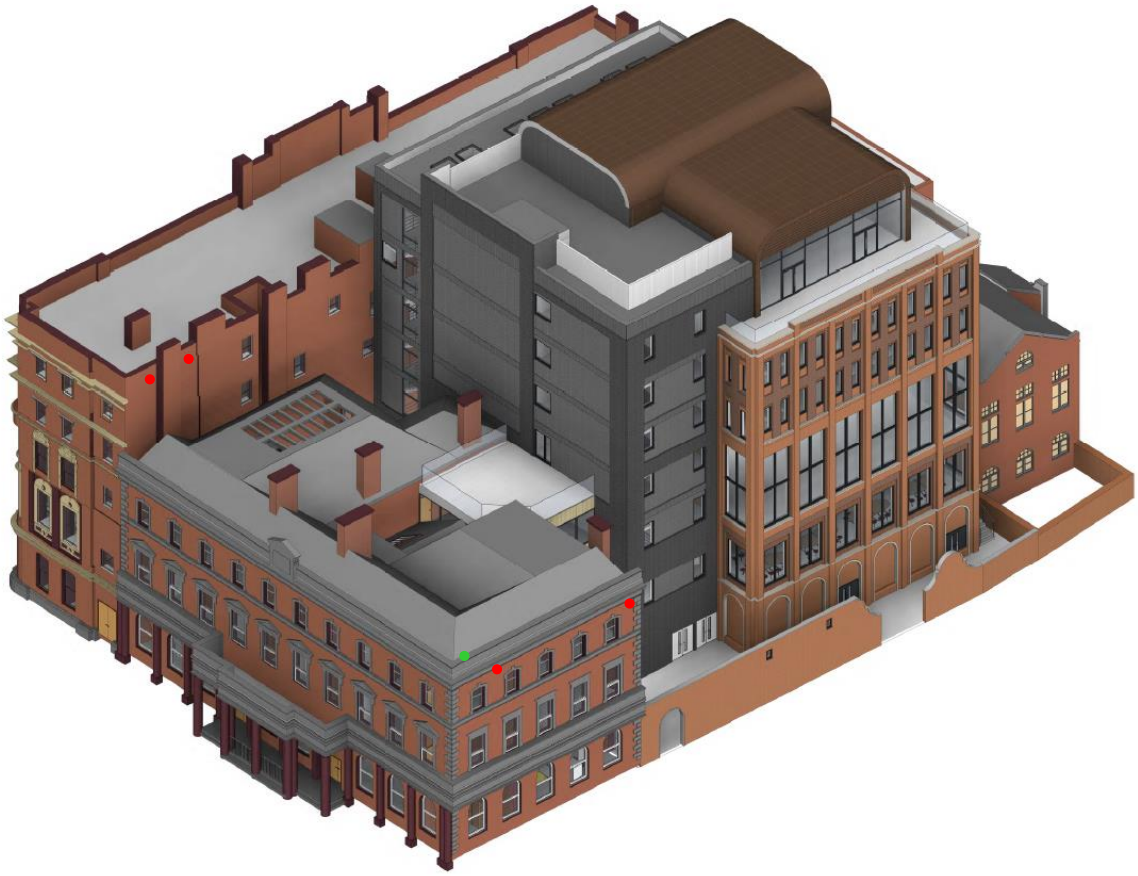
Table 11: List of Recorded Species

Plant Species		JNCC Classification	
Common Name	**Scientific Name**	**1**	**2**
Birch, downy	*Betula pubescens*	x	
Buttercup, creeping	*Ranunculus repens*	x	
Butterfly bush	*Buddleja sp.*	x	x
Clover A	*Trifolium sp.*	x	
Colt's foot	*Tussilago farfara*	x	
Cranesbill, shinning	*Geranium lucidum*	x	
Dandelion	*Taraxacum sp.*	x	
Dock, broad leaf	*Rumex obtusifolius*	x	
Elder	*Sambucus nigra*	x	
Herb-robert	*Geranium robertianum*	x	
Ivy	*Hedera helix*		x
Plantain, greater	*Plantago major*	x	
Polypody, common	*Polypodium vulgare*		x
Sow thistle	*Sonchus sp.*	x	
Stonecrop	*Sedum sp.*		x
Teasel	*Dipsacus fullonum*	x	
Thistle	*Cirsium sp.*	x	
Toadflax, yellow	*Linaria vulgaris*		
Vetch, common	*Vicia sativa*	x	
Willow A	*Salix sp.*	x	
Willowherb great	*Epilobium hirsutum*	x	
Yellow corydalis	*Pseudofumaria lutea*	x	
Fauna			
Feral pigeon	*Columba livia*		
Herring gull	*Larus argentatus*		
Red fox	*Vulpes vulpes*		

1: J4 Bare Ground
2: J3.6 Buildings

Appendix VI: Mitigation Features

Figure 6: Proposed design viewed from a south-east perspective showing bat mitigation features



Key

- = location of bat mitigation enclosed bat boxes
- = location of bat mitigation crevice feature

Figure 7: Integrated bat box

Figure 8: Two examples of enclosed bat box types: Schwegler bat tube and Ibstock box type c

BAT TUBE 1FR

The Bat Tube 1FR requires no maintenance or cleaning, the sloping entrance area allows droppings to simply fall out of the chamber. The 1FR mimics the cavities that species such as the pipistrelles favour and the wooden back panel helps maintain the optimum climatic conditions and also provides surface on which the bats can cling. The depth of this box (125mm) makes it ideal for use in 9" solid walls or where the outer skin of a property is of stone. The box can also be recessed into the wall and rendered over, just leaving the access section clear.

Size: 470x200x125mm
Weight: 9.5kg

Appendix VII: 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 bat and the common pipistrelle. 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 myotid 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 VIII: 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). Lesser horseshoe bats 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 above mentioned 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 Natural Resources Wales issues licences for specific purposes, so that legitimate work may be undertaken without breaking the law.

Appendix IX: European Protected Species Licences

Under the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019 a licence can only be issued if Natural Resources Wales are satisfied that:

- there are imperative reasons of overriding public interest including those of a social or economic nature;
- there is no satisfactory alternative, and;
- the action authorised will not be detrimental to the maintenance of the population of the species at a favourable conservation status in their natural range.

Natural Resources Wales will require a copy of the full planning consent, as well as an explanation of why there is a need to carry out the proposed work and what alternative solutions have been considered (e.g. other sites) and why they have been discounted. The alternative of retaining the roost within the development must be considered. The last point will depend on the possibility of implementing appropriate mitigation and on assurances that it can be and will be carried out and maintained and the results monitored. Natural Resources Wales aim to process applications within 40 working days, but in practice licences often take longer depending on the number of applications being processed at any one time. NRW do not currently make a charge for issuing a licence but this circumstance is likely to change in the future.

We confirm that in preparing this document we have exercised reasonable skill and care, taking into account the project objectives, the agreed scope of the work, prevailing site conditions, the degree of manpower and resources allocated to the project, and in compliance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct.

This document is valid for a period of two years from the front cover date.

Just Mammals Limited is an ecological consultancy based in Mid-Wales. Specialising in legally protected mammal, reptile and amphibian species, but providing a wide range of ecological services, it provides appropriate expertise on behalf of a range of clients.

Clients include government departments, local and regional authorities, development agencies, commercial and industrial enterprises as well as statutory nature conservation organisations, wildlife trusts and other charitable bodies.

Please visit our web site www.justmammals.co.uk to see the full range of services we offer and some of the projects we have undertaken in the past.