

Bat Survey Report



Amethyst Lane, Reading

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Project Code/ADAS Ref:

1051939/ MPT69105-824(01)

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Date: September 2023

Version: 02

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The information which ADAS has prepared and provided is true and has been prepared and provided in accordance with the CIEEM's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

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Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

This work has been undertaken in accordance with the quality management system of RSK ADAS Ltd.

Revision History

Revision	Date	Amendment
1	03/08/2023	First Issue
2	11/09/2023	Updated following PRA on 17/08/2023

Summary

ADAS was commissioned by Gleeds Cost Management Ltd on behalf of Reading Borough Council to undertake an additional preliminary roost assessment (PRA) and bat emergence surveys of three buildings at Amethyst Lane, Reading RG30 2EZ (central OS grid reference: SU 69488 72676), ahead of proposed works. The proposed works include the demolition of the structures on site, and the construction of housing and community facilities within the site.

These surveys were commissioned following the recommendations of a preliminary ecological appraisal (PEA) and preliminary roost assessment (PRA) report produced by ADAS in 2022. The PRA survey identified a confirmed roost in Building 3 of the site due to the presence of bat droppings (likely Pipistrelle) in three locations. Building 1 was assessed as having high potential to support roosting bats while Building 2 was assessed as having moderate. The survey of Building 1 was limited due to lack of access to the entirety of its interior, with access to the first floor not possible due to health and safety concerns.

In line with Bat Conservation Trust Guidelines, three emergence surveys were carried out on Buildings 1 and 3 and two emergence surveys on Building 2 throughout May and June 2023. Over the course of the surveys, five species of bat (Common Pipistrelle, Soprano Pipistrelle, Noctule, Serotine and Brown Long-eared Bat) were noted foraging and commuting over the site but no emergences were recorded from any of the buildings. However, bat droppings present in Building 3 confirm that this building is used as a bat roost by Soprano Pipistrelles and due to lack of emergence and low number of droppings it is likely a day/transitional roost used by low numbers of bats. Proposed works would result in the loss of this roost therefore in order for works to proceed on site a European Protected Species (EPS) licence will be required from Natural England.

Although no bats were recorded emerging from Building 1, and no evidence of bats was observed during the second PRA visit in August 2023, due to its high suitability and lack of internal access to the first floor it is recommended that works should take place under a Non-Licensed Method Statement (NLMS).

As the site is utilised by roosting, commuting and foraging bats, it is recommended that measures are taken to enhance the suitability of the site for bats. This includes a sensitive lighting scheme to reduce lighting on commuting boundary corridors and the installation of bat boxes and tree planting to improve roosting opportunities in the future and planting nectar rich plants to increase insect diversity and foraging resource for bats.

Summary of Further Surveys/ Actions

Survey/Action	Rationale	When
EPS Licence application for Building 3	As droppings confirm the presence of a bat roost in Building 3, an EPS licence will be required prior to its demolition. Without a licence works have potential to result in temporary loss of roosting habitat, disturbance, injury or killing of roosting bats.	Before works commence
EPS method statement	A method statement for the works will be produced which will detail the process of conducting works in line with legislation, the timing and order of the works in relation to the roof strip on site. This method statement will be submitted with the licence application.	Before works commence
Non-Licensed Method Statement (NLMS) for Building 1	A NLMS will be required for Building 1 to lay out a methodology to negate the risk of committing an offence to bat species during its demolition. This will include the presence of an Ecological Clerk of Works (ECoW), undertaking works at the least sensitive time of year and the demolition to use soft stripping.	Before works commence
Toolbox talk	A toolbox talk will inform the site personnel about the potential risks to bats and how to avoid harming them.	Before works commence
Ecological Clerk of Works (ECoW)	A licenced ecologist or an accredited agent will be present during the roof strip of Buildings 1 and 3 to ensure the works are conducted in line with the licence and non-licensed method statements.	During works
Installation of bat boxes	It is recommended that bat boxes should be installed on site initially temporarily on trees around or adjacent to the site and then permanently on structures built as part of the works.	Before and during works
Sensitive lighting scheme	Construction lighting will be designed to follow the protocols outlined in the Institute for Lighting Professionals Guidance note 08/18 "Bats and Artificial Lighting in the UK" (2018) (or most recent guidance available) to minimise disturbance across the site.	Before works commence

1 Introduction

1.1 Background and Survey Objectives

ADAS was commissioned by Gleeds Cost Management Ltd on behalf of Reading Borough Council to undertake a preliminary ecological appraisal (PEA) and preliminary roost assessment (PRA) of land and three buildings located near Amethyst Lane, Reading RG30 2EZ (central OS grid reference: SU 69488 72676) on 8 October 2022.

The survey found that buildings on site offered opportunities for roosting bats, with missing tiles, holes in wooden soffits and fascias and gaps in the mortar, which provided potential access points into the interior of the building. Bats were confirmed within Building 3 with bat droppings found on the exterior and within the interior of the building. No evidence of bats was found within the other buildings on site, however, Building 1 was deemed to have high suitability for bats and Building 2 as moderate suitability for bats.

ADAS was subsequently commissioned by Gleeds Cost Management to undertake further dusk emergence surveys of the buildings on site. In addition to these surveys, an updated PRA was carried out.

The objectives of the surveys and this report are:

- *To provide details of the emergence surveys undertaken;*
- *To identify what bat species, if any, are using the site;*
- *To identify what features are being used by roosting bats;*
- *To make an ecological assessment of the value of the site for bats and the potential impact upon bats from development; and,*
- *To recommend further mitigation, compensation and enhancement where appropriate.*

The report has been prepared in accordance with guidance produced by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2017), the British Standard 42020:2013 and the Bat Conservation Trust (Collins, 2016).

1.2 Site Description

The site was located within West Reading, Berkshire and was approximately 0.48 ha. The site consisted of one red brick, two-storey building in poor condition (Building 1) and two larger brick and mortar, one-storey buildings in good condition (Buildings 2 and 3) with accompanying car parking. Around the borders of the site were areas of amenity grassland and scrub. The wider landscape was surrounded by residential development on all sides and a large area of parkland to the west.



Figure 1. Site location (indicated by red line boundary) and surrounding landscape

Imagery taken from ADAS Mapping Tool. October 2022.

1.3 Proposed Development

The proposed development includes the demolition of all three buildings currently on site to facilitate construction and associated hard and soft landscaping and infrastructure of 21 new residential dwellings within the northern, eastern and western sides of the site, as per the plans provided by the client in March 2023 (RBC-ALR_HTA-A_DR_0101_Proposed Site Plan-REV H (1).pdf; Appendix 1). Of the new houses, 30% will be affordable housing, and a respite centre will also be constructed on site.

Hard landscaping includes the creation of an access road into the site from the east end of Amethyst Lane and through the centre of site to connect to Jenkins Close adjacent to the northwest of the site. Twenty-two hardstanding parking spaces will be also provided on site along the internal access road and at the south of the site, including two electric charging spaces and a minibus drop-off point at the south end of the site.

Soft landscaping includes private amenity grass lawns associated with the residential housing, with community green spaces in the centre and southwest of the site – which will be managed as a ‘sensory garden’. There will be 43 small and medium native trees planted throughout the site – primarily within grass verges and green spaces – and the existing trees along the north of the side of the site will be retained and managed as hedgerows. The proposals can be seen in Appendix 1.

2 Planning Policy and Legislation

2.1 Legislation

Bats are protected by UK and European legislation, making it an offence to kill or injure bats, cause disturbance at their resting places or to block access to, damage or destroy their roost sites. Please see Table 1 below with regards to the relevant legislation.

Table 1: Summary of Pertinent Legislation Relevant to the Protection of Bats in the UK

Statutory Nature Conservation Authority (SNCO)	Transposing EC Habitats Directive	Other Relevant Legislation	Planning Policy
Natural England	Conservation of Habitats and Species Regulations 2017 (as amended).	Wildlife and Countryside Act 1981 (as amended). Countrywide and Rights of Way Act 2000. Natural Environment and Rural Communities Act 2006.	National Planning Policy Framework (NPPF) 2021

2.2 National Planning Policy Framework

The National Planning Policy Framework (NPPF) July 2021, is an update to the previous version issued in February 2019, and is a policy framework document which provide a range of important principles. Paragraph 174 of the NPPF states that decisions should contribute to and enhance the natural local environment by:

‘Minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.’

Paragraph 175 goes on to state:

‘... take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.’

When determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the following principles (paragraph 180):

‘opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.’

2.3 Local Planning Policy

Table 2 details the relevant policies within the Reading Borough Local Plan which are relevant to the ecological features on site.

Table 2: Summary of relevant local planning policy- Reading Borough Local Plan

Policy	Description
EN12: Biodiversity and the Green Network	a) The identified Green Network, the key elements of which are shown on the Proposals Map, shall be maintained, protected, consolidated, extended and enhanced. Permission will not be granted for development that negatively affects the sites with identified interest or fragments the overall network. The Green Network comprises: ▪ Sites with identified biodiversity interest - Local Wildlife Sites, Local Nature Reserves, Biodiversity Opportunity Areas, protected and priority species and their habitats, Priority and Biodiversity Action Plan habitats, and the River Thames and all its tributaries (including the River Kennet and the Kennet & Avon Canal); and ▪ Areas with potential for biodiversity value and which stitch the Green Network together – designated Local Green Space and open green spaces, and existing and potential Green Links. New development shall demonstrate how the location and type of green space, landscaping and water features provided within a scheme have been arranged such that they maintain or link into the existing Green Network and contribute to its consolidation. Such features should be designed to maximise the opportunities for enhancing this network. All new development should maximise opportunities to create new assets and links into areas where opportunities are as yet unidentified on the Proposals Map. b) On all sites, development should not result in a net loss of biodiversity and geodiversity and should provide a net gain for biodiversity wherever possible. Development should: ▪ Protect and wherever possible enhance features of biodiversity interest on and adjacent to the application site, incorporating and integrating them into development proposals wherever practicable; and ▪ Provide new tree planting, wildlife friendly landscaping and ecological enhancements (such as wildlife ponds, bird and bat boxes) wherever practicable.

3 Methodology

3.1 Desk Study

A Biological Records request was carried out as part of the PEA report written by ADAS in October 2022. This data search was provided by Thames Valley Environmental Records Centre (TVERC) and returned records of a number of bat species within 2 km of the site. There were no Special Areas of Conservation (SAC) designated for bats within 10 km of the site.

Table 3: Records of bat species within 2 km of the site

Species	Designation	Date	Distance from site	Approx. location
Brown Long-eared Bat (<i>Plecotus auritus</i>)	EPS, WCA5, NercS41	12/02/2020	1.92	8 Riley Road, Tilehurst: roof void, beneath ridge beam S facing wall
Common Pipistrelle (<i>Pipistrellus pipistrellus</i>)	EPS, WCA5	05/08/2020	0.17	Dellwood Hospital, Liebenrood Rd, Tilehurst: Roof tile, western elevation, north aspect
Daubenton's Bat (<i>Myotis daubentonii</i>)	EPS, WCA5	12/07/2018	1.65	Lousehill Copse
Leisler's Bat (<i>Nyctalus leisleri</i>)	EPS, WCA5	03/09/2020	0.08	Dellwood Hospital, Liebenrood Rd, Tilehurst
Noctule (<i>Nyctalus noctula</i>)	EPS, WCA5, NercS41	23/07/2020	1.93	45 Caversham Rd, Reading: Over Building 2
Soprano Pipistrelle (<i>Pipistrellus pygmaeus</i>)	EPS, WCA5, NercS41	26/08/2019	0.49	114 Southcote Lane, Reading

EPS=European Protected Species (Habitats Directive/Birds Directive)

WCA5 = Wildlife and Countryside Act 1981 Schedule 5

NercS41 = Natural Environment and Rural Communities Act Section 41 species

3.2 Preliminary Roost Assessment

A PRA was conducted by ADAS Assistant Ecological Consultant Rachel Richards BSc (Hons) on 08 October 2022 to assess all buildings on site considered to be directly or indirectly impacted by the development for the potential for bats.

A further PRA was carried out on 17 August 2023 by ADAS Principal Ecologist Joseph Dyson BSc (Hons) MCIEEM (Bat licence 2020-45289-CLS-CLS-CL18) and Assistant Ecological Consultant Rhodri Gruffydd BSc (Hons) MSc.

These surveys involved systematically checking the exterior and interior of all buildings, where access was possible, identifying and classifying any features or structures suitable for bat roosts, entry/exit points, including evidence of bats such as droppings or feeding remains.

Each building was assessed for suitability to support roosting bats and categorised as negligible, low, moderate or high, based on the Bat Conservation Trust (BCT) guidelines (Collins, 2016, see Table 4 below).

Equipment used during the building inspection in October 2022 included binoculars and a handheld LED torch. Additional equipment used during the updated PRA in August 2023 included an endoscope, telescopic ladder, sterile gloves and Eppendorf tubes for collection of bat droppings.

Table 4: BCT guidelines for assessing the potential suitability of structures for roosting bats, based on features present and using professional judgement.

Suitability	Description of Roosting Habitats
Negligible	While presence cannot be absolutely discounted there are no suitable features likely to be used by roosting bats.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, they do not provide enough space, shelter, protection, appropriate conditions and / or suitable surrounding habitat to be used on a regular basis by a large number of bats (i.e. unlikely to be suitable for maternity or hibernation).
Moderate	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).
High	A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

3.3 DNA Analysis of Bat Droppings

Droppings were collected from both outside and inside the Building 3 during the PRA on 17 August 2023 using sterile gloves and Eppendorf tubes, and were sent to ADAS' Biotechnology Team for genotyping (molecular analysis of DNA). In order to identify the species, the DNA was first extracted and cleaned. Polymerase Chain Reaction (PCR) amplification and sequencing of a segment of the mitochondrial gene cytochrome c oxidase I (COI) was then carried out. The data was then compared with a reference database containing DNA sequence information of known bat species to confirm if the dropping was from a bat, and, if so, to determine the bat species.

3.4 Emergence Surveys

The surveys focused on the external features identified as having potential for roosting bats, with experienced surveyors positioned at strategic locations to provide adequate coverage of each building. The location of potential roosting features on each building, as described during the initial PRA in October 2022, are shown in Appendix 2 with photographs in Appendix 3. The surveyor locations can be seen in Appendix 4.

All surveyors were equipped with suitable professional bat detectors (Wildlife Acoustics EM Touch Pro). Five infrared cameras (Canon XA11, supported by Nightfox XC5 85 nm torches and 96 LED 850 nm array lamp and a Nightfox Whisker supported by 96 LED 850 nm array lamp) were used to capture locations of potential emergences and re-entries.

Bat sightings and behaviours were recorded, along with time of observation, species and whether they emerged from the buildings. The dusk surveys began 15 minutes before sunset and ended 1.5 hours after sunset. Buildings 1 and 3 were assessed as having high suitability for bats, three surveys were carried out in May and June using three surveyors on Building 1 and two surveyors for Building 3. As Building 2 was classed as having “moderate” potential it was included in only the first two surveys, two surveyors were used to survey the building, and only two surveyors were required for Building 1 on the last visit as it was decided they could sufficiently survey all roost features. The table below provides details of all the surveys undertaken.

Table 5: Emergence survey details

Survey	Surveyors	Building	Start / End Temperature	Weather Conditions	Sunset / Sunrise (hrs)	Start / End Time (hrs)
Dusk (17.05.2023)	Andy Selman, Rachel Richards, Sam Lloyd	1	16°C / 14°C	Cloud cover 20%, Beaufort = 1, no rain	20:51 sunset	20:36 / 22:24
	Sarah Thornton Mills, Nicola Ford	2				
	Verity Brant, Georgia Vincent	3				

Survey	Surveyors	Building	Start / End Temperature	Weather Conditions	Sunset / Sunrise (hrs)	Start / End Time (hrs)
Dusk (06.06.2023)	Andy Selman, Rachel Richards, Sam Lloyd	1	17°C / 15°C	Cloud cover 80%, Beaufort = 2-3, no rain	21:16 sunset	21:01 / 22:46
	Georgia Vincent, Amelia McCormack	2				
	Rhodri Gruffydd, Verity Brant	3				
Dusk (26.06.2023)	Rachel Richards, Amelia McCormack,	1	18°C / 16°C	Cloud cover 0%, Beaufort = 2, no rain	20:51 sunset	21:09 / 22:58
	Sam Lloyd, Genevieve Barrett	3				

3.5 Limitations

The southern and western aspects of Building 1 were partially obscured by Common Ivy (*Hedera helix*) which reduced visibility during both the PRA and emergence surveys. The interior of Building 1 could not be surveyed during the PRA in October 2022. Access was granted to this building for the survey on 17 August 2023, however for safety reasons only the ground floor could be surveyed so evidence of bats on the first floor may have been missed, a precautionary approach has been taken as a result of this limitation.

Access was granted to the interior of Buildings 2 and 3 during the PRA in October 2022, however access to the roof void in Building 3 was not possible however this was surveyed during the August 2023 survey. The emergence surveys were undertaken in line with best practice guidance and within the optimal period for bat surveys (May - September inclusive) and in suitable weather conditions.

4 Results

4.1 Preliminary Roost Assessments

The results of each of the PRAs have been described in sections 4.1.1 and 4.1.2 below with photographs in Appendix 3, Building 1 photographs 1 – 7, Building 2 photographs 8 – 10 and Building 3 photographs 11 – 20.

4.1.1 08 October 2022

All buildings on site were unused. A summary of the results from the PRA carried out in October 2022 is provided below, however the full results can be found, along with photographs, in the PEA and PRA report (ADAS 2022).

Building 1

All soffits, fascia and vents showed signs of damage. The southern and western aspects were partially obscured by Common Ivy. Building 1 had many features suitable to support roosting bats, most notably numerous missing or slipped roof tiles, gaps within the soffit boxes, and gaps within the wooden fascia. A total of 46 potential roost features (PRFs) were observed on Building 1. Access was not granted to the interior of the building so a further PRA was recommended. Building 1 was assessed as having high potential to support roosting bats.

Building 2

Some sections of the small space between the ceiling and the roof could be viewed through damaged ceiling tiles. Building 2 had some external features suitable for bats, including small gaps in the brickwork and within the flashing around the windows. A total of four PRFs were observed on Building 2 with features only found on the northern and southern aspects. Building 2 was assessed as having moderate potential to support roosting bats.

Building 3

A single bat dropping was found at one location of the exterior of the building, on the southeastern aspect, on a window ledge beneath gaps in external wall felt tiles.

Bat droppings were also found within a corridor inside the building (as shown in Appendix 2). These were located beneath gaps between the wooden ceiling boards and the wall and scattered along the corridor. A loft void was present within the southern part of the building however this could not be accessed due to safety reasons.

The presence of droppings confirmed that a bat roost was present within Building 3, however species could not be determined as droppings were not sent for DNA analysis following the initial survey, it

was recommended that droppings be collected during the interior PRA of Building 1. The droppings were suspected to be from *Pipistrelle* species based on their shape and size.

Outbuildings 1, 2, and 3

There were no suitable features for bats in any of the outbuildings so these are not considered further within this report.

4.1.2 17 August 2023

Building 1

The exterior of the building was resurveyed to ascertain whether the condition had worsened or changed since the previous PRA in October 2022 and whether new features were present. All previous features were noted. There was a small crevice in the mortar approximately 1.5 m high on the eastern side of the building, which was checked using an endoscope and found to extend 4 inches into the brickwork. One bat could potentially fit in this gap, however it was considered unsuitable for hibernation. No evidence of bats was found on the exterior of the building.

Access was granted to the interior of the building, however only the ground floor could be accessed for safety reasons. There were no features present that would be suitable for crevice hibernating bats within the accessible areas of the building. There was no evidence of bats (such as droppings or feeding remains) but abundant evidence of nesting birds, including a bird nest in the western end of the store room. The chimney appeared to be blocked, potentially by a Pigeon (*Columba* sp.) nest as droppings were present in the fireplace. Part of the roof of the southern part of the building was visible through gaps in the ceiling, through which daylight and Common Ivy could be seen, the roof appeared to be unlined with bare tiles visible. The eastern corner (dormer section) was partially missing leaving the interior of the building exposed and subject to temperature fluctuations. Where the roof was present it appeared to be lined with timber cladding.

Building 3

The exterior of the building was surveyed again to ascertain whether the condition had worsened since the previous PRA in October 2022 and whether new features were present. All previous features were noted. It was noted that the air vents were covered in mesh on the inside and therefore would not provide a means for access for bats. A potential bat dropping (location A, shown in Appendix 2) was found on a window ledge in the eastern aspect of the building, DNA analysis confirmed that this was Wood Mouse (*Apodemus sylvaticus*); DNA results can be seen in section 4.2 and in Appendix 5.

A further 24 droppings were found inside the building (see Appendix 2 for locations), mostly within the corridor in the southern half of the building where droppings were also found during the survey in 2022. One dropping (location B) was found on a radiator shelf and was crushed, confirming it as a

bat dropping. Two droppings were found at location C, collected further along the corridor. Fifteen droppings were found at location D, some on the ground and some caught in cobwebs on the wall above and were located below a gap between the wooden ceiling boards and the brick wall. Three droppings at location E, were found below a similar gap between the wall and the timber ceiling. A dropping was found in the southeastern corner of the entertainment room (location F) but there was no apparent means of access found other than holes in ceilings in cupboards. Two further droppings (location G) were found in the roof void floor (water tank room) of the attic, again there were no apparent access features within the room and the room was not linked to the gap above which droppings at location D was found.

4.1.3 Summary of Building Features and Roosting Potential

A description of each building surveyed, details of the potential features observed during both PRAs, and overall suitability for roosting bats has been provided in Table 6.

Table 6: Description of each building's features and suitability for roosting bats following both PRAs

Building	Description	External Features	Internal Features	Suitability
1	A two-storey red brick building with tiled pitched roof that was in poor condition. The building had wooden soffit boxes on all aspects and wooden vents on the northern aspect of the building. The southern and western aspects were partially obscured by Common Ivy. The upper storey extension was clad with hanging tiles. Where the roof was present in the southern part of the building there was no liner present but the northern section the roof was lined with timber cladding.	Multiple lifted/missing/hanging roof tiles on all aspects/apexes, damage to wooden soffit and fascia, mortar missing around ridge tiles. Gaps under roof where timber meets tiles. Holes in stonework could provide roosting opportunities. Dormers on the western elevation provided the opportunity for entry. Small crevice in mortar at 1.5 m high on east side of building – extending 4 inches into brickwork. Could fit one bat, unsuitable for hibernation. No evidence of bats.	First floor of building was unsafe so was not accessed. There were multiple holes in the ground floor ceiling at the southern end, allowing view of the roof space above the first floor. There was no apparent roof lining (bare tiles visible) and daylight could be seen. Eastern corner (dormer section) of roof partially missing but was lined with timber cladding. The chimney appeared to be blocked, potentially by a Pigeon nest as droppings were present in the fireplace. No evidence of bats (droppings or feeding remains) observed but abundant evidence of bird nesting/roosting. Bird nest present in western end of store room. Building was exposed to elements (wind, sun, rain) due to holes/missing parts of roof. Temperature would fluctuate and no crevice or features present that would be suitable for crevice hibernating bats in accessible areas of building.	High

Building	Description	External Features	Internal Features	Suitability
2	A single-storey brick-and-mortar building which was in good condition. The building had metal flashing around all windows and roof edges. The main section of the roof was slightly pitched corrugated material with the abutments each having a flat bitumen roof.	Some gaps in mortar on the southern and northern aspects. Small gaps are also present on the southern aspect around flashing.	No features were observed within the internal section of the building. Holes in ceiling tiles allowed view to roof, gap was small with no lining present.	Moderate
3	A single-storey red brick building with a sloped timber and felt roof, in good condition. The building had a tall central section with a slightly pitched roof and a partially pitched abutment to the south. The building had wooden soffits and fascia, with a bitumen roof. The windows and vents on all aspects were covered by metal grates.	Contained building with limited potential for entry. Gaps were found within the brickwork on the southwest aspect. On the southeast aspect gaps were found under external wall felt tiles. Wooden fascia boards all the way around with gaps below. Air vents covered by mesh on inside preventing access by bats. The roofs were gently sloping, and there was a small, raised roof in the centre of the building with a roof void. Potential bat dropping (sample A) found on window ledge at east of building (not crushed as only one dropping present here).	The roof void/water tank room was a breezeblock and brick construction with timber struts and insulation present and contained water tanks. Two potential bat droppings were found here. The room in the far southeast corner next to entrance had a hole in the wooden ceiling, it was not possible to fully view through hole into the space above. 24 bat droppings were collected from inside the building, mostly from within the corridor in the southern half of the building. Gaps between wooden ceiling and walls were noticed within the corridor, one of these was associated with a collection of droppings (location D).	Confirmed presence of bats
Outbuilding 1	A corrugated metal shed used for storage located within the northeast corner of the site.	No features.	The interior was well-lit with no suitable features.	Negligible

Building	Description	External Features	Internal Features	Suitability
Outbuilding 2	A wooden shed used for storage located within the northeast corner of the site.	Damage to roof and wall on southern aspect. All aspects heavily covered with Common Ivy. No suitable features.	The interior was well-lit with no suitable features.	Negligible
Outbuilding 3	A large metal shipping container.	No features.	Not surveyed as could not access.	Negligible

4.2 DNA Analysis of Bat Droppings

The results of the DNA analysis of the bat droppings collected during the PRA on 17 August 2023 are detailed within Table 7 below.

Table 7: Results from DNA Analysis of Bat Droppings Collected on 17 August 2023

Sample/Location	Result (closest match)	Percentage Match
A	Wood Mouse	98%
B	Sample not analysed, confirmed as a Pipistrelle dropping on site.	N/A
C	Soprano Pipistrelle	97%
D	Soprano Pipistrelle	97%
E	Common Pipistrelle	100%
F	Common Pipistrelle	100%
G	Wood Mouse	98%

4.3 Emergence Surveys

Emergence surveys were conducted on three buildings at Amethyst Lane. Foraging and commuting activity was recorded during all three surveys. Foraging and commuting activity was recorded by a number of bat species including Common Pipistrelle, Soprano Pipistrelle, Noctule, Serotine (*Eptesicus serotinus*) and Brown Long-eared Bat. No emergences were recorded during any of the surveys. The key observations from the surveys are summarised in Table 8 below.

Table 8: Key observations from surveys

Survey date	Bat species	Summary of activity	Conclusion
17.05.2023	Common Pipistrelle, Soprano Pipistrelle, Noctule	Multiple and frequent Common and Soprano Pipistrelle calls with frequent activity around Building 1. Occasional Noctule commuting through the site.	No roost activity recorded.
06.06.2023	Common Pipistrelle, Soprano Pipistrelle, Noctule	Multiple and frequent Common and Soprano Pipistrelle calls. Occasional Noctule commuting through the site.	No roost activity recorded.

Survey date	Bat species	Summary of activity	Conclusion
26.06.2023	Common Pipistrelle, Soprano Pipistrelle, Noctule, Brown Long-eared Bat, Serotine	Multiple and frequent Common and Soprano Pipistrelle calls with frequent activity around Building 1. Occasional Noctule commuting through the site. Several Serotine passes and one Brown Long-eared Bat pass north of Building 1.	No roost activity recorded.

4.4 Dusk Emergence Survey (17 May 2023)

Bat species recorded during the survey included Common Pipistrelle, Soprano Pipistrelle and Noctule. The earliest recording of a bat was a Common Pipistrelle at 21:00 and the latest recording was a Noctule at 21:56. Common Pipistrelles were observed circling and foraging around the southern side of Building 1, although there was a suspected emergence, review of IR camera footage showed no emergences from the building. Soprano Pipistrelles were also noted foraging over the north of the site. Noctule calls were detected on the EM Touch but were not observed visually.

4.5 Dusk Emergence Survey (06 June 2023)

Bat species recorded during the survey included Common Pipistrelle, Soprano Pipistrelle and Noctule. The earliest recording of a bat was a Common Pipistrelle at 21:26 and the latest recording was 22:40. Multiple Common Pipistrelles and Soprano Pipistrelles were observed flying over the site, with foraging Common Pipistrelles noted to the south of Building 1. Noctule calls were detected but were not observed visually. No roost emergences were observed.

4.6 Dusk Emergence Survey (26 June 2023)

Bat species recorded during this survey included Common Pipistrelle Soprano Pipistrelle, Noctule, Serotine and Brown Long-eared Bat. The earliest recording of a bat was a Common Pipistrelle at 21:38 and the latest recording was a Noctule at 22:49. Multiple Common Pipistrelles were observed circling and foraging throughout the site. A Brown Long-eared Bat passed by the surveyor stationed between Building 1 and 3 at 22:02 and several Serotine passes were recorded in the same area throughout the survey. No roosting activity or emergences were observed.

5 Discussion

During the dusk emergence surveys, a total of five bat species were recorded: Common Pipistrelle, Soprano Pipistrelle, Brown Long-eared Bat, Serotine and Noctule. Multiple Common and Soprano Pipistrelles were observed circling and foraging around the site, in particular to the south of Building 1. Common and Soprano Pipistrelles were observed commuting over all three buildings, with Noctules recorded flying over the site. No bats were observed emerging from any of the buildings during any of the surveys despite frequent activity around them.

Building 1 had no recorded emergences however it was classed as having high suitability for roosting bats. Whilst the interior of the ground floor was accessed for survey the first floor could not be surveyed and only viewed through small holes in the ceiling therefore there is a possibility that evidence of bats could have been missed. The updated PRA determined that Building 1 is highly unlikely to be suitable for hibernation for free hanging or crevice roosting bats due to the lack of suitable features and as sections of the roof are missing the building does not provide a sheltered and stable environment associated with hibernation.

The majority of the bat activity recorded within the site was of Pipistrelles and droppings have confirmed that Soprano Pipistrelle roost nearby in Building 3. Pipistrelles are known to roost swap throughout the season (Bartonička, Bielík and Řehák (2008); Feyerabend, Frank & Simon, Matthias. (2000)) and whilst no evidence of bats was found internally and surveys showed no roosts, the high suitability of the building and the quantity of suitable roost features on the exterior of the building provide a variety of roosting options and suggest it is possible that the roost features are used occasionally throughout the year. Transitional day roosts such as this, of small numbers or individual bats are difficult to detect during activity surveys, therefore on balance of evidence and our professional judgement it is considered that bats may roost in Building 1 and therefore a precautionary approach should be taken when demolishing this building to avoid committing an offence under current legislation (Bat Mitigation Guidelines (2023)).

No bats were recorded emerging from Building 2, furthermore there was no evidence of roosting bat species during the PRA survey. Therefore, no further consideration for bats is required.

The droppings recorded in Building 3 were found to be Common and Soprano Pipistrelle. Given the low number and scattered nature of the Common Pipistrelle droppings (locations E (three droppings) and F (one dropping, Appendix 2) it is assessed that these are not associated with a roost but exploratory flight behaviour of low numbers or an individual bat. The collection of 15 Soprano Pipistrelle droppings (location D Appendix 2) were directly below a small gap between a brick wall and wooden ceiling, suggesting a roost. No bats emerged from Building 3 during the three emergence

surveys, which were in May and June, it is considered unlikely that a maternity roost is present and is likely a transitional or day roost used by low numbers of bats on an occasional basis. Whilst no external access point to the approximate roost location was identified during the surveys, upon reviewing site photographs and PRA results, using our professional judgement the most likely access point to the roost has been determined. On the western elevation of the building at the top of the wall is a fascia board that provides access into the space between the internal wooden ceiling and external bitumen roof, the internal gap between the wooden ceiling and wall allows access to the interior of the building (see roost location plan in Appendix 6). To proceed with the works a Natural England licence is required.

6 Mitigation and Recommendations

6.1 Building 1

No bats were recorded emerging from Building 1 and no evidence of bats was recorded during the PRA however the PRA was limited due to the lack of internal access to the first floor of the building. Given the type and number of roost features present on the exterior of the building and that Pipistrelles are known to roost swap it is considered highly likely that the building contains transitional and/or day roosts used occasionally by low numbers of or individual bats despite surveys not confirming a roost. The PRA did confirm that the building is unlikely to be suitable for hibernation. It is recommended that the works should be carried out under a Non-Licensed Method Statement to negate any risk of committing an offence if bats are using the building. This will include the building being soft stripped under the supervision of an Ecological Clerk of Works (ECoW) during the winter between November and April (inclusive) when it is dry/calm and temperatures are no lower than 8°C for at least an hour or two from dusk on 3 – 4 consecutive nights. If a bat roost is discovered during this process, then the demolition would need to stop until a licence is obtained.

6.2 Building 2

No further consideration towards bats are required for this building and its demolition can proceed without issue provided the demolition process is carried out in such a way as to not damage or create disturbance to bats within the other buildings on site.

6.3 Building 3

6.3.1 European Protected Species Licence

Whilst no emergences were recorded due to the of droppings under a potential roost feature the building is considered to contain a confirmed Soprano Pipistrelle roost. As only a small number of droppings (15) were present and no emergences were recorded it is likely that this is a transitional or occasional day roost used by small numbers of Soprano Pipistrelle bats. A European Protected Species (EPS) licence is required from Natural England to allow the demolition of the building to proceed.

The licence application must pass the following three tests:

- *The activity must be for a certain purpose*
- *The must be no satisfactory alternative that will cause less harm to the species*
- *The activity must not harm the long-term conservation status of the species-new habitats may be needed to offset any damage*

The works taking place on site pass these tests, providing that suitable enhancement and mitigation measures are put in place before, during and after the works.

A licence such as this would be suitable for the site as the works are likely to result in a breach of existing legislation such as:

- *Capturing, killing, disturbing or injuring bats*
- *Damaging or destroying their breeding or resting places*
- *Obstructing access to their resting or sheltering places*

All of these would be considered breaches of legislation whether done purposefully or accidentally.

The licence would include a method statement to lay out a suitable working methodology to reduce the risk of an offence being committed during the works, as well as a work schedule describing the specific order and timing of the activities. The licence will also outline recommended mitigation such as a replacement roost in similar location to the existing roost, usually in the form of bat boxes either affixed to retained trees or integrated into buildings with green connections to the wider landscape.

As the roost is unlikely to be a maternity roost or hibernation roost, it is recommended that this building is soft stripped and demolished between November and April (inclusive). Depending on the timing, bat exclusion may be required.

As part of the terms of the licence the works will require the presence of an Ecological Clerk of Works (ECoW) to supervise any works which risks committing an offence and ensuring the conditions of the licence are adhered to. Furthermore, they will carry out a Toolbox Talk to personnel on site prior to them taking part in the works. This will outline the constraints on site regarding bats and the measures in place to mitigate them.

6.4 Sensitive Lighting

It is recommended that any lighting installed during or post-construction follow the protocols outlined in the Institute for Lighting Professional's Guidance note GN08/23 "Bats and Artificial Lighting at Night" (2023) to minimise disturbance and avoid illuminating key habitat features for bats and roost entrances. Lighting level and directionality should be controlled to ensure that lighting remains appropriate and sensitive, in line with local policy and national legislation.

6.5 Increasing Roosting Opportunities

Plans from March 2023 for the development included the installation of bat boxes across the site integrated into the new buildings. During works temporary bat boxes should be installed on retained trees within the site. Suitable boxes would include Greenwood's Ecohabitats Two and Greenwood's Ecohabitats Small Hollow Bat Box which can be seen in Appendix 7. These boxes should be installed away from artificial light sources, at least 4 m high, sheltered from strong winds and exposed to the

sun for part of the day (usually southernly facing). Tree planting will also be undertaken throughout the site, which may provide roosting opportunities for bat species in the future as the trees mature.

7 Conclusion

A PEA and PRA were conducted by ADAS in October 2022 ahead of the proposed demolition of three buildings on site to allow for the development of additional housing and community facilities. These surveys found droppings that confirmed the presence of a Soprano Pipistrelle roost in Building 3 and identified a number of potential bat roost features on all three buildings. Building 1 was assessed as having high potential to support roosting bats but could not be fully assessed due to lack of internal access to the first floor due to health and safety concerns; Building 2 was assessed as having moderate potential. As such, three emergence surveys of potential roost features were carried out on Buildings 1 and 3 with two surveys carried out on Building 2.

Five species of bat were observed foraging or commuting across the site. No bats were observed emerging from any buildings on site, as such Building 2 was ruled out as supporting bat roosts. However, despite the results of this survey, Building 1 is still considered to have some risk regarding roosting bats as it has the potential to be used occasionally as a transitional roost for individual bats and as such its demolition should be carried out under a NLMS during the winter (November and April inclusive) with suitable features soft striped under ecological supervision.

Furthermore, Building 3 will require either a EPS licence from Natural England due to the roost confirmed by the presence of Soprano Pipistrelle droppings in the building. The small number of droppings and fact that no emergences were recorded suggest this is likely also a transitional roost used by small numbers of bats. Once the licence is in place Building 3 should be soft stripped under ecological supervision between November and April (inclusive). A replacement roost will be required under the licence in the form of bat boxes integrated into buildings.

There is potential for several enhancement opportunities to be incorporated into the proposed plans which would support local bat populations. This includes the installation of bat boxes on new buildings and retained trees (in addition to those required by the licence), planting of trees across the site to support roosting bats, planting native nectar rich plants across the site to increase insect diversity as a food source for bats and a sensitive lighting strategy during construction and once the development is complete.

8 References

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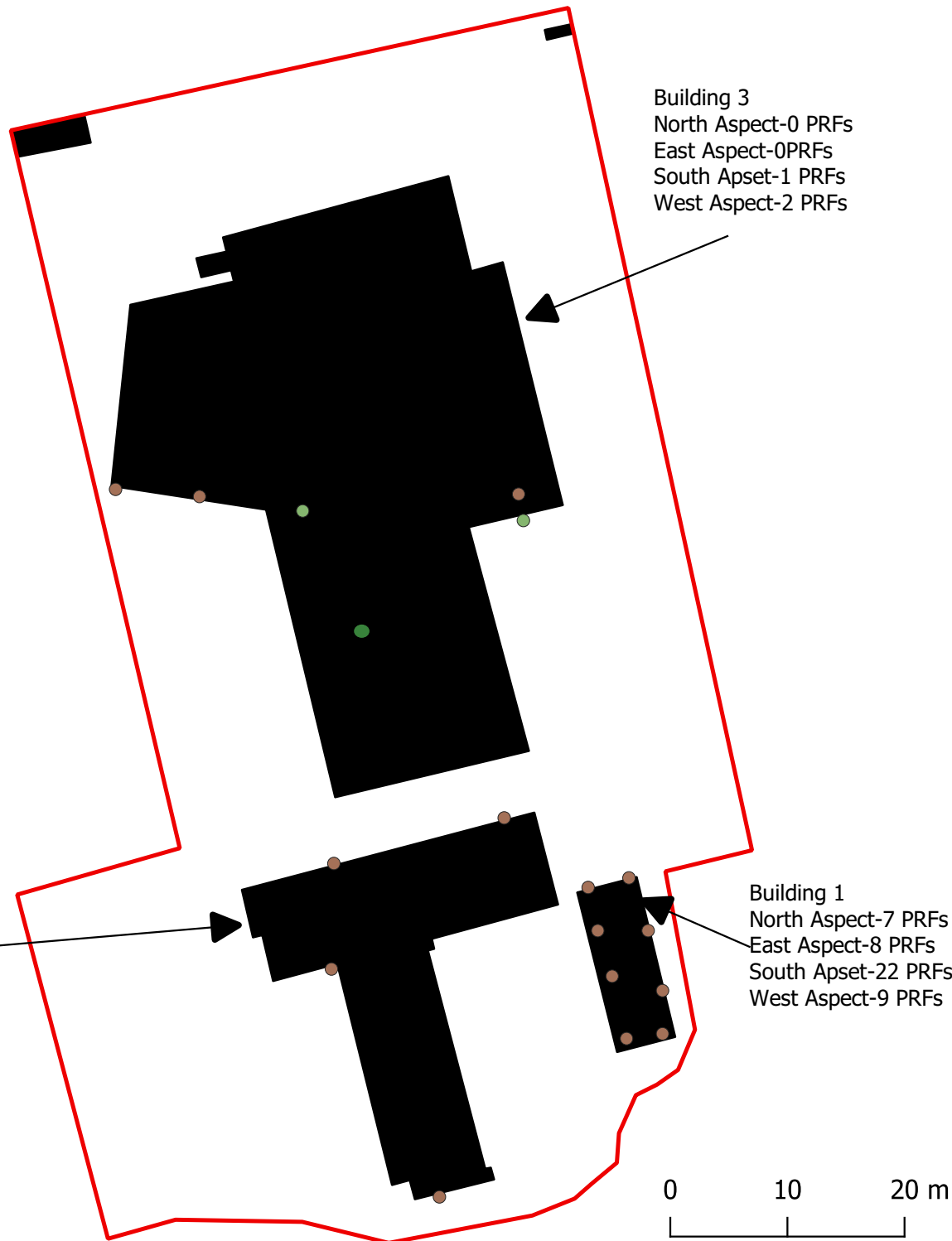
Appendix 1: Proposals Plan

See following page.



Appendix 2: Potential bat roost features and droppings locations

See following pages.



Reading Borough Council

Gleeds Cost Management Ltd
Vanbrugh House, Hampshire
SO30 2AF

Phase 1 Survey

-  Site Boundary
-  Potential Roost Features
-  Bat droppings
-  Buildings

Drawn by Rachel Richards 24.10.2022.
Checked by Joesph Dyson 24.10.2022

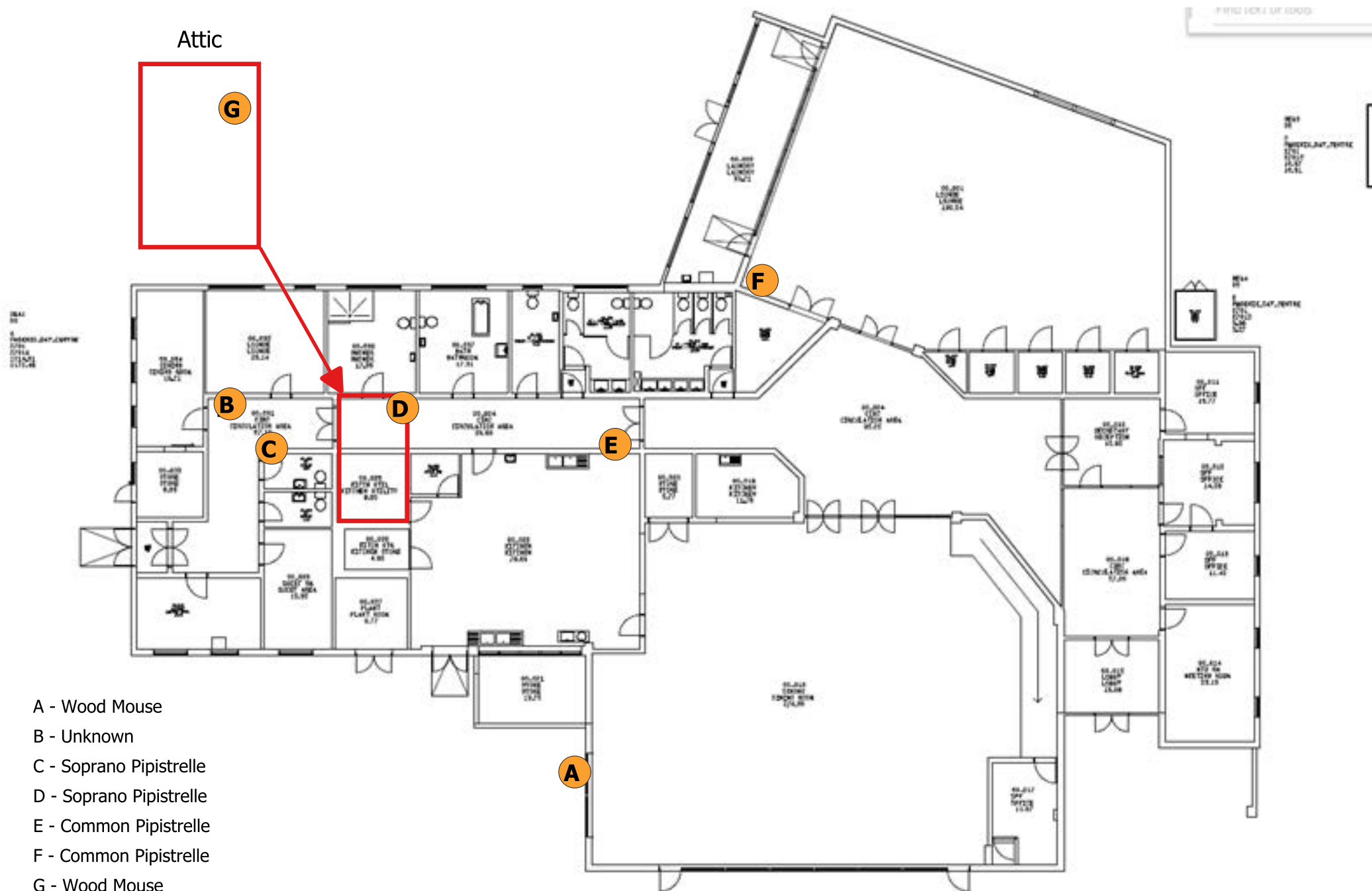


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Amethyst Lane - Building 3 Dropping Samples 17.08.2023



This map has been adapted from the 'Existing Plans' document submitted to the Reading Borough Council planning portal on 20.06.2023 (ref: 230613)

Appendix 3: Site photographs

Building 1



Photograph 1: eastern elevation of Building 1 viewed from the east.



Photograph 2: eastern elevation of Building 1 viewed from the north east.



Photograph 3: western elevation of Building 1 viewed from the south west



Photograph 4: Southern elevation of Building 1 viewed from the south



Photograph 5: View of timber cladding lining the roof of the northern section of Building 1



Photograph 6: View of bare tiles of the roof of the southern section of Building 1.



Photograph 7: Example of interior of Building 1



Photograph 6: View of bare tiles of the roof of the southern section of Building 1.



Photograph 7: Example of interior of Building 1

Building 2



Photograph 8: Southern elevation of Building 2 from the south



Photograph 9: Northern elevation of Building 2 from the north east.



Photograph 10: Eastern elevation of Building 2 from the south east

Building 3



Photograph 11: Southern and eastern elevations of Building 3 from south east.



Photograph 12: Southern elevation of Building 3 from the south.



Photograph 13: Western elevation of the southern end of Building 2 from the south west.



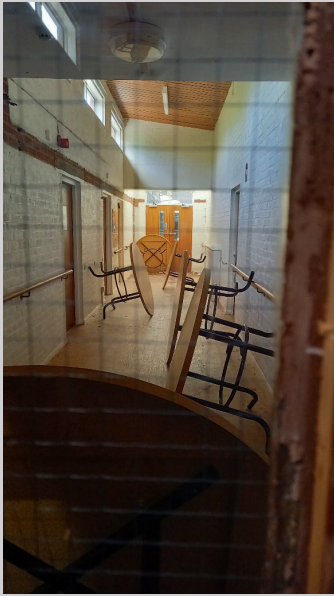
Photograph 14: Northern elevation of Building 3 from the north east.



Photograph 15: Gap between wall and wooden ceiling, droppings at location D were found below this feature.



Photograph 16: Droppings at location D.



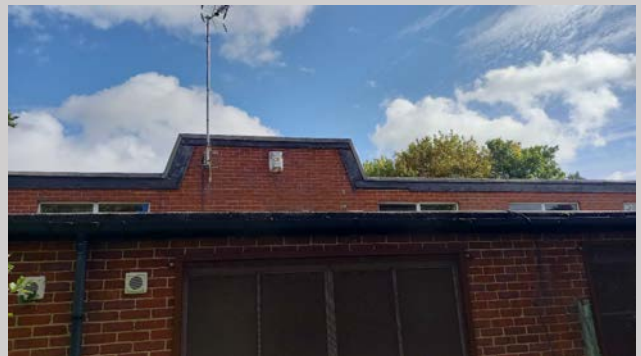
Photograph 17: Corridor where droppings at location D and E were found.



Photograph 18: Example of interior or northern end on Building 3.



Photograph 19: Inside of roof void/water tank room in Building 3.



Photograph 20: Western elevation of Building 3 showing likley roost acces sunder fascia board.

Appendix 4: Surveyor Locations

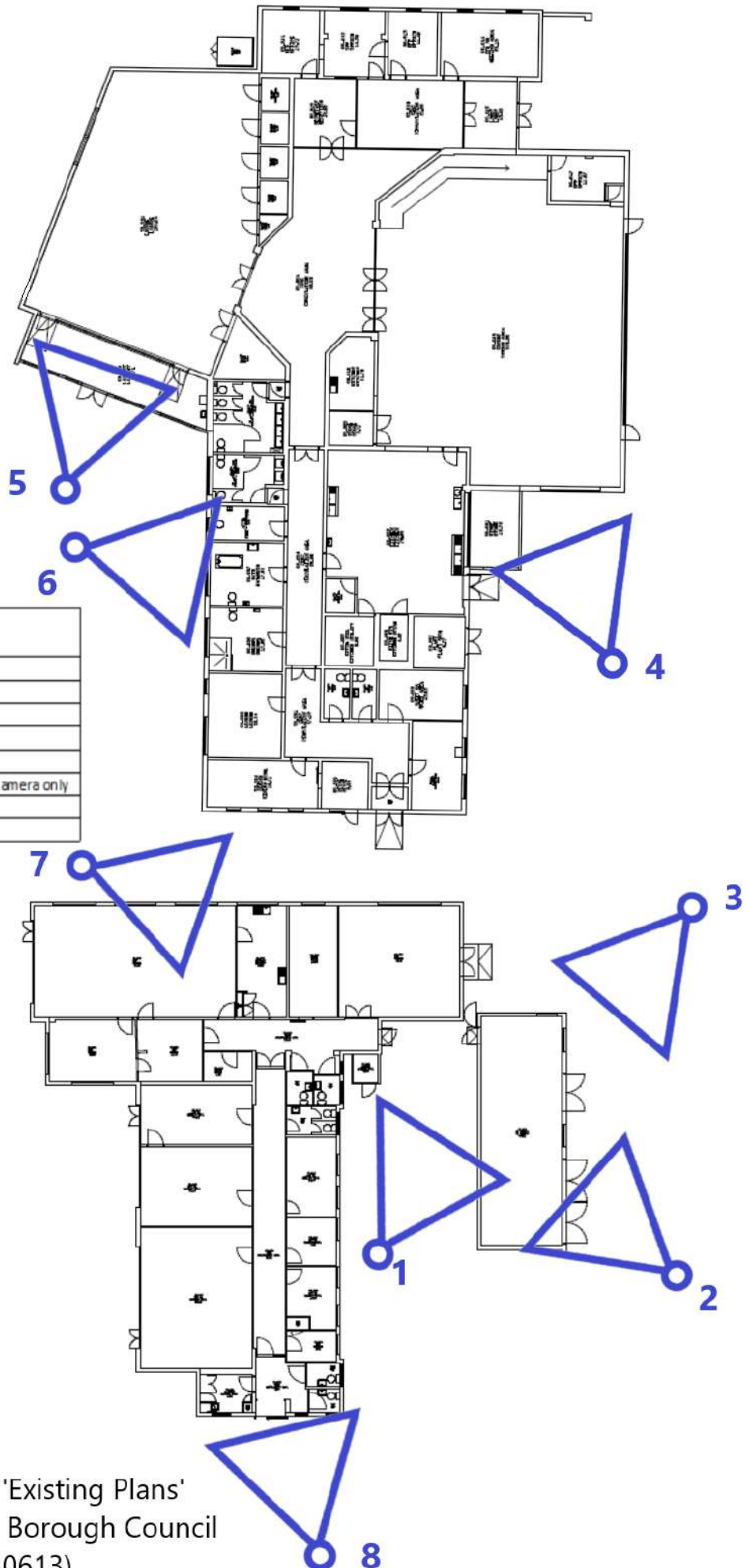
Amethyst Lane - Emergence Surveys Surveyor Locations

Surveyor Location	Coverage summary
1	All surveys, IR camera & surveyor
2	All surveys, IR camera & surveyor
3	All surveys, IR camera & surveyor
4	17.05.23 & 06.06.23 IR camera & surveyor
5	06.06.23 & 26.06.23 surveyor only
6	17.05.23 IR camera & surveyor, 06.06.23 & 26.06.23 IR camera only
7	17.05.23 & 06.06.23 IR camera & surveyor
8	17.05.23 & 06.06.23 IR camera & surveyor



N

0 m 10 m 20 m



This map has been adapted from the 'Existing Plans' documents submitted to the Reading Borough Council planning portal on 20.06.2023 (ref. 230613)

Appendix 5: Results from DNA Analysis

See following pages.



Client: Rhodri Gruffydd
ADAS

ADAS
Spring Lodge
172 Chester Road
Helsby
WA6 0AR

Tel: 01159 516747
Email: Helen.Rees@adas.co.uk

www.adas.uk

Sample ID: 603588901_104

Client Identifier: Samples A and G

Sample Description: Container of intact droppings

Date of Receipt: 24/08/2023

Material Tested: 1 dropping

Determinant	Result (closest match)	Method	Date of DNA Sequence Analysis
Cytochrome oxidase subunit 1 (COI) DNA sequence	<i>Apodemus sylvaticus</i>	DNA extraction from multiple droppings followed by PCR amplification of a short fragment of the COI gene, DNA sequencing and comparison to a database of known DNA sequences for species identification	30/08/2023

Sequence Alignment*		Sequence Identity	176/179 (98%)
Query	1	TGG - AACTGACTAGTTCCCTAATAATCGGAGCTCCTGATATGGCATTCCCACGAATGAA	59
Sbjct	5558	TGGAAACTGACTAGTTCCCTAATAATCGGAGCTCCTGATATGGCATTCCCACGAATGAA	5617
Query	60	CAATATAAGCTTCTGACTTCTTCCCCATCATTTCTTCTCCTTCTAGCATCATCTATAGT	119
Sbjct	5618	CAATATAAGCTTCTGACTTCTTCCCCATCATTTCTTCTCCTTCTAGCATCATCTATAGT	5677
Query	120	TGAAGCAGGAGCAGGAACGGATGAACCGTATATCCACCTTTAGCCGGAACCTAGCCC	178
Sbjct	5678	TGAAGCAGGAGCAGGAACGGATGAACCGTATATCCACCTTTAGCCGGAATTTAGCCC	5736

Report Prepared by: Dr Steve Kane

Report Issued by: Dr Helen Rees

Signed:

Signed:

Position: Research Scientist

Position: Director: Biotechnology

Date of preparation: 31/08/2023

Date of issue: 31/08/2023

*DNA sequence alignment for the test sample (Query) matched to a known sequence (Sbjct).

§The identity or percentage match of the two sequences (ideally 100%).

Client: Rhodri Gruffydd
ADAS

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Sample ID: 603588901_105

Client Identifier: Samples C and D

Sample Description: Container of intact droppings

Date of Receipt: 24/08/2023

Material Tested: 2 droppings

Determinant	Result (closest match)	Method	Date of DNA Sequence Analysis
Cytochrome oxidase subunit 1 (COI) DNA sequence	<i>Pipistrellus pygmaeus</i>	DNA extraction from multiple droppings followed by PCR amplification of a short fragment of the COI gene, DNA sequencing and comparison to a database of known DNA sequences for species identification	30/08/2023
Sequence Alignment*		Sequence Identity	166/171 (97%)
Query 1	ACTGACTGG-TCCACCTTATAGATCGGAG-CCCCGACATGGCCTTTCCTCGTATAAATAA 58		
Sbjct 5585	ACTGACTGGTTCCA-CTTAT-GATCGGAGCCCCGACATGGCCTTTCCTCGTATAAATAA 5642		
Query 59	TATGAGTTTCTGACTTCTGCCCCCTTCTTTTCTACTACTACTAGCCTCATCTATAGTGGA 118		
Sbjct 5643	TATGAGTTTCTGACTTCTGCCCCCTTCTTTTCTACTACTACTAGCCTCATCTATAGTGGA 5702		
Query 119	AGCGGGAGCGGGTACGGGCTGAACAGTCTATCCCCCTCTAGCAGGAAACCT 169		
Sbjct 5703	AGCGGGAGCGGGTACGGGCTGAACAGTCTATCCCCCTCTAGCAGGAAACCT 5753		

Report Prepared by: Dr Steve Kane

Report Issued by: Dr Helen Rees

Signed:



Signed:



Position: Research Scientist

Position: Director: Biotechnology

Date of preparation: 31/08/2023

Date of issue: 31/08/2023

*DNA sequence alignment for the test sample (Query) matched to a known sequence (Sbjct).

§The identity or percentage match of the two sequences (ideally 100%).

Client: Rhodri Gruffydd
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Sample ID: 603588901_105

Client Identifier: Samples E and F

Sample Description: Container of intact droppings

Date of Receipt: 24/08/2023

Material Tested: 1 dropping

Determinant	Result (closest match)	Method	Date of DNA Sequence Analysis
Cytochrome oxidase subunit 1 (COI) DNA sequence	<i>Pipistrellus pipistrellus</i>	DNA extraction from multiple droppings followed by PCR amplification of a short fragment of the COI gene, DNA sequencing and comparison to a database of known DNA sequences for species identification	30/08/2023
Sequence Alignment*		Sequence Identity	168/168 (100%)
Query 1	ACTAGTTCCACTAATAATTGGAGCCCCTGACATGGCATTTCCTCGTATAAATAATATAAG		60
Sbjct 243	ACTAGTTCCACTAATAATTGGAGCCCCTGACATGGCATTTCCTCGTATAAATAATATAAG		302
Query 61	TTTCTGACTCCTACCTCCTTTCTTTCTACTACTACTAGCCTCGTCTATAGTAGAAGCGGG		120
Sbjct 303	TTTCTGACTCCTACCTCCTTTCTTTCTACTACTACTAGCCTCGTCTATAGTAGAAGCGGG		362
Query 121	AGCGGGTACAGGCTGAACAGTCTACCCCTCTAGCAGGAAACCTTGC		168
Sbjct 363	AGCGGGTACAGGCTGAACAGTCTACCCCTCTAGCAGGAAACCTTGC		410

Report Prepared by: Dr Steve Kane

Report Issued by: Dr Helen Rees

Signed:



Signed:



Position: Research Scientist

Position: Director: Biotechnology

Date of preparation: 31/08/2023

Date of issue: 31/08/2023

*DNA sequence alignment for the test sample (Query) matched to a known sequence (Sbjct).

‡The identity or percentage match of the two sequences (ideally 100%).

Appendix 6: Roost Location Plan – Building 3

See following pages.

Amethyst Lane - Building 3 Roost Location Plan



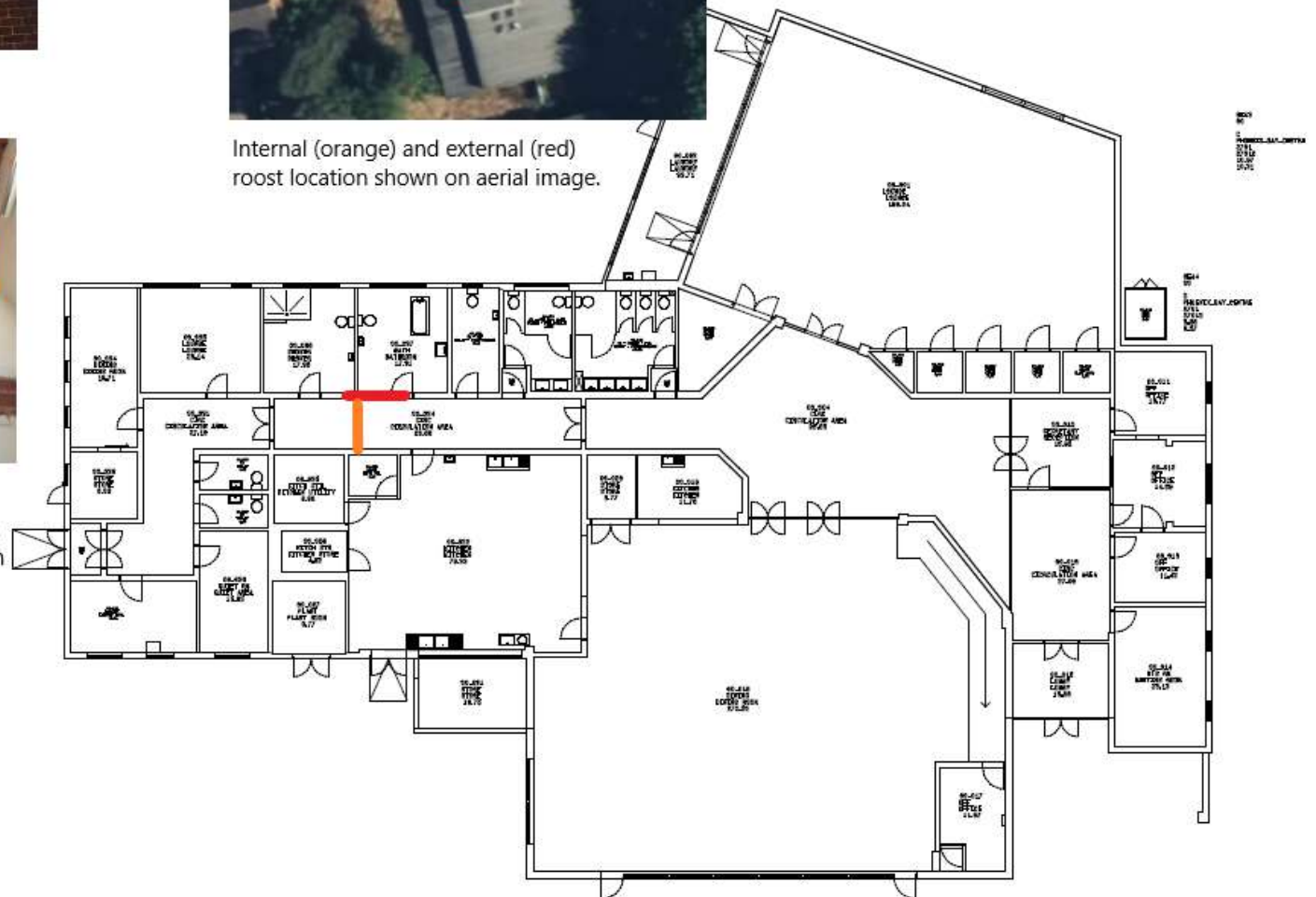
Potential external access point under fascia board, location shown in red.



Internal roost feature, gap between wall and wooden ceiling leading to potential space between internal ceiling and external roof. Location shown in orange.



Internal (orange) and external (red) roost location shown on aerial image.



Appendix 7: Example Bat Box Specifications

Example Specifications	
	Greenwood's Ecohabitats Two Crevice Bat Box Designed for small groups of crevice dwelling bat species, such as Common Pipistrelle and Soprano Pipistrelle. https://www.greenwoodsecohabitats.co.uk/shop
	Greenwood's Ecohabitats Small Hollow Bat Box Designed for small groups of bats who prefer a wider cavity- described as hollow, such as Brown Long-eared, Noctule and Myotis sp. https://www.greenwoodsecohabitats.co.uk/shop