

# Hertfordshire Constabulary Headquarters Redevelopment

Bat Emergence Report

Hertfordshire Constabulary

September 2021

## Quality information

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## Executive Summary

AECOM Ltd. (hereafter 'AECOM') was commissioned by Hertfordshire Constabulary (the Client) to carry out bat roost presence / absence and activity surveys at the Hertfordshire Constabulary headquarters, Stanborough Road, AL8 6XF, as per the recommendations of a Preliminary Ecological Appraisal (PEA) within the site of the proposed works for the re-development of the headquarters and grounds (hereafter referred to as the Site).

The Site is approximately 8 ha in area, and the approximate central grid reference is TL 23150 11300. It consists of police buildings, roads, footpaths, amenity grassland, scattered trees, introduced shrub and fields of semi-improved grassland.

A ground-level preliminary roost assessment of buildings and trees was carried out on the 14<sup>th</sup> December 2020. This was followed by dusk emergence and dawn re-entry surveys carried in out May-June 2021 to investigate the presence/absence of bat roosts on nine buildings and one tree which will be affected by the redevelopment. All nine buildings were low suitability for roosting bats and the tree was moderate suitability. One dusk or dawn survey were carried out on low suitability buildings and two dusk or dawn surveys on moderate suitability trees.

As a result of the bat surveys undertaken during the active season for bats in 2021, there was no evidence that bats were roosting in any of the buildings nor the tree. There were incidental occurrences of four common and widespread bat species recorded commuting and foraging on the Site.

No further survey or mitigation has been recommended; however, the demolition contractors should be made aware that the buildings have a low risk of supporting roosting bats via an ecological briefing prior to demolition commencing.

If at any time during works a bat or signs of bats are found during works, works should cease immediately, and a suitably qualified ecologist contacted for advice. If obstruction, damage or loss of a roost cannot be avoided, it is likely that a Natural England European Protected Species Mitigation Licence would be required to allow works to continue.

No further surveys are recommended, however if demolition works are not undertaken within two years, i.e. by September 2023, it is recommended that updated surveys are undertaken in the bat survey season to confirm the absence of roosting bats.

The Site can be enhanced for bats through the creation and implementation of a sensitive lighting strategy, establishment of soft planting planted with species of benefit to biodiversity and the erection of bat boxes.

# 1. Introduction

## 1.1 Background

AECOM Ltd. (hereafter 'AECOM') was commissioned by Hertfordshire Constabulary (the Client) to carry out bat roost presence / likely absence at the Hertfordshire Constabulary headquarters, Stanborough Road, AL8 6XF, as per the recommendations of the Preliminary Ecological Appraisal (PEA)<sup>1</sup> within the site of the proposed works for the re-development of the headquarters and grounds (hereafter referred to as 'the Site').

A ground-level preliminary roost assessment of buildings and trees was carried out on the 14<sup>th</sup> December 2020, to inform the scope and extent required for the roost surveys. Details of the methodology of the preliminary bat roost assessment can be found in the Bat Roost Assessment report<sup>2</sup>.

## 1.2 Site location and context

The Site is approximately 8 ha in area, with an approximate central grid reference of TL 23150 11300. It consists police buildings, roads, footpaths, amenity grassland, scattered trees, introduced shrub and fields of semi-improved grassland.

It is located off Stanborough Road on the south-west side of Welwyn Garden City and is predominantly surrounded by 'green-belt' land and open countryside. To the north of the site is the Gosling Sports Park, to the east open playing fields and to the south is Stanborough lakes. To the west are of mature trees that provides a visual break between Stanborough Road and further grounds associated with Stanborough Park. The site is located on the side of a naturally formed hill with the topography falling away towards Stanborough Lakes to the south.

## 1.3 Purpose of the report

There were trees and buildings on the Site identified within the Bat Roost Assessment Report as having features which are suitable for roosting bats. The bat roost assessment categorised the suitability of structures and trees for roosting bats within the Site boundary, through assessment of the presence of Potential Roost Features (PRFs).

Additional survey work for bats was recommended in order to determine roost presence/absence within the Site. This included dusk emergence and dawn re-entry surveys which were carried out in 2021 to investigate the presence/absence of bat roosts on nine buildings and one tree to be affected by the redevelopment. All nine buildings were low suitability for roosting bats and the tree was moderate suitability. One dusk or dawn survey was carried out on low suitability buildings and two dusk or dawn surveys on moderate suitability trees and buildings.

A discussion of the Site's nature conservation importance for bat species/populations is provided based on guidance from CIEEM.

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<sup>1</sup> AECOM (2021) Hertfordshire Constabulary Headquarters Preliminary Ecological Appraisal Report

<sup>2</sup> AECOM (2021) Hertfordshire Constabulary Headquarters Bat Roost Assessment Report

## 2. Relevant wildlife legislation

### 2.1 Bats

All bat species and their roosts are legally protected in the UK under The Conservation of Habitats & Species Regulations 2017 (as amended) (Habitats Regulations), which implements the EC Directive 92/43/EEC (the Habitats Directive). In addition, barbastelle (*Barbastella barbastellus*), lesser and greater horseshoe bats (*Rhinolophus hipposideros* and *R. ferrumequinum*) and Bechstein's bat (*Myotis bechsteinii*) are listed in Annex II of the Habitats Directive, which requires sites to be designated in member states for their protection. Bats and their roosts are also protected under the Wildlife and Countryside Act 1981 (WCA) (as amended).

Taken together, the Habitats Regulations and the WCA make it illegal to:

- deliberately capture or intentionally take a bat;
- deliberately or intentionally kill or injure a bat;
- be in possession or control of any live or dead bat or any part of, or anything derived from a bat;
- damage or destroy a breeding site or resting place of a bat;
- intentionally or recklessly obstruct access to any place that a bat uses for shelter or protection;
- intentionally or recklessly disturb a bat while it is occupying a structure or place that it uses for shelter or protection; and
- deliberately disturb bats, in particular any disturbance which is likely to (i) impair their ability to survive, breed, reproduce or to rear or nurture their young; or in the case of hibernating or migratory species, to hibernate or migrate; or (ii) to affect significantly the local distribution or abundance of the species to which they belong.

A bat roost is defined as any structure a bat uses for breeding, resting, shelter or protection. It is important to note that since bats tend to re-use the same roost sites, current legal opinion is that a bat roost is protected regardless of whether or not the bats are present at a specific point in time.

Section 40 of The NERC Act 2006 places a legal obligation on public bodies in England to have regard to particular living organisms and types of habitat which are of the greatest conservation importance whilst carrying out their functions, whilst also having a general regard for protecting all biodiversity. The NERC Act 2006 Section 41 includes seven bats as species of 'principal importance': barbastelle, Bechstein's bat, noctule (*Nyctalus noctula*), soprano pipistrelle (*Pipistrellus pygmaeus*), brown long-eared bat (*Plecotus auritus*), lesser and greater horseshoe bats.

Local Planning Authorities must be satisfied that favourable conservation status of bats (and other European Protected Species) can be maintained before granting planning permission. Demonstrating the maintenance of 'favourable conservation status' is one of three Habitats Directive "derogation tests" relating to European protected species that the Local Planning Authority must be satisfied are met in order to be able to grant planning permission.

The three "derogation tests" as set out in paragraph 53 of Conservation of Habitats and Species Regulations 2017 are that:

- the development must be either for 'public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment';
- 'that there is no satisfactory alternative' and
- '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.'

Favourable conservation status is defined in Article 1(i) of the Habitats Directive as when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and;

- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and;
- there is, and will probably continue to be, a sufficiently large habitat to maintain its population on a long term basis.

## 2.2 European protected species mitigation licences

Although the law provides strict protection for bats, it also allows this protection to be set aside (derogated) under Regulation 53 of the Conservation of Habitats and Species Regulations through the issuing of European Protected Species Mitigation Licences (EPSML) for the purpose of preserving public health; public safety; other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment. However, in accordance with the requirements of the Conservation of Habitats and Species Regulations a licence can only be issued where the following requirements are satisfied:

- there is no satisfactory alternative; and
- 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.

The process of obtaining an EPSML from Natural England will normally take two months (Natural England's standard determination period is 30 working days). In addition, Natural England would normally expect any bat EPSML application to be accompanied by the data collected from the bat emergence surveys, which are used to determine the status of the structure or tree with regard to bats; specifically, the location of roost sites, the bat species utilising the roost and the type of roost (such as maternity, or transitional).

The application for an EPSML would need to include the production of a detailed method statement for the proposed works. This document would include details of working practices and mitigation measures to ensure that the favourable conservation status of the bats using the structure or tree is not adversely affected.



## 3. Methods

### 3.1 Desk study

A desk study was carried out in September 2020 and reported in the PEA report<sup>3</sup>. A summary of existing bat records of potential relevance to the Proposed Development is provided in this report, for full details please refer to the PEA report. A search for any granted EPSML for bats within 2 km of the Site, using the MAGIC website, was undertaken on September 2020.

### 3.2 Bat emergence – trees and buildings

Between one and four suitably experienced ecologists (depending on the features present) undertook dusk emergence and dawn re-entry surveys of the buildings (and one tree) within the Site assessed to have low, moderate or higher suitability to support roosting bats (moderate to high for trees only). Where the presence of a bat roost was confirmed during the surveys, additional surveys were conducted as required such that buildings with confirmed roosts were subject to a total of three survey visits.

Note that while a licence was not required for surveys (licences are used for when disturbance, entrance to roosts or handling is necessary), all surveys were led by a Natural England Class licence registered surveyor.

The aim of the surveys was to identify bats leaving and/or returning to any roost that may be present. In accordance with the current Bat Surveys Good Practice Guidelines<sup>4</sup> the dusk emergence surveys covered the period from 15 minutes before sunset to 1.5 to 2 hours after sunset. The dawn re-entry surveys commenced 1.5 to 2 hours before sunrise and ended 15 minutes after sunrise.

During these time periods surveyors will observe potential access/egress points on the trees. Surveyors carried bat echolocation detectors (Elekon Batlogger M and M2, Anabat Scout and EchoMeter Touch) to help determine which species are present.

The time, location, number, species (where possible) and direction of flight was recorded for each bat pass (either echolocation heard or activity seen) encountered during the survey. The echolocation calls detected were recorded on to a digital recorder (i.e. iPhone, Anabat or Elekon Batlogger M) to allow the use of bat sound analysis software such as BatExplorer and Analook to verify bat calls.

The dates, times and weather conditions of the bat emergence/re-entry survey visits conducted to date are presented in Table 1 below. Buildings and trees subject to survey along with surveyor locations are shown in Appendix A.

**Table 1. Weather conditions during the bat emergence/re-entry survey**

Building / tree ID	Date & Type of Survey	Sunset / Rise	Time (24hr)		Air Temp (°C)		Wind (Beaufort)		Cloud (1-5)		Rain	Surveyor Initials
			Start	End	Start	End	Start	End	Start	End		
B1	Dusk 19-05-21	20:53	20:38	22:23	11	9	2	1	1	2	None	DP, PC
B2	Dusk 20-05-21	20:54	20:39	22:24	12	11	5	5	2	5	Rain in first 10 mins then stopped	DP, SS, RW
B2	Dawn 21-05-21	05:01	03:23	05:16	10	10	5	5	4	4	None	DP, SS
B7	Dusk 03-06-2021	21:12	20:40	22:40	18	17	3	2	1	1	None	DP, RW, SS
B1	Dusk 09/06/2021	21:17	21:08	22:47	23	20	1	0	5	0	None	SS, CF, PC, DP

<sup>3</sup> AECOM (2021) Hertfordshire Constabulary Headquarters Preliminary Ecological Appraisal.

<sup>4</sup> Collins, J. (ed.) (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn.). London: Bat Conservation Trust.

Tree 1, B7	Dawn 10/06/2021	04:45	03:09	05:00	17	15	1	2	0	0	Dry	SS, DP, CF
B6	Dusk 11-06- 2021	21:20	21:05	22:50	19	19	1	0	3	5	Dry	CF, RW
B2, B3	Dusk 24-06- 2021	21:23	21:10	22:55	18	17	0	0	4	4	Dry	CF, PC, RW
B8	Dusk 16/07/2021	20:58	21:12	22:42	21	18	1	2	0	0	Dry	CF, RW

### 3.2.1 Assessment method

The assessment method broadly followed the guidelines on deciding which ecological features are important and should be subject to detailed assessment<sup>5</sup>.

Bat species could be an important ecological feature on the Site and bat species are listed as species of principal importance under Section 41 of the Natural Environment and Rural Communities Act, 2006 and all bat species are protected under the Wildlife and Countryside Act 1981 (as amended).

The importance of ecological features was considered within a defined geographic context. The following frame of reference is appropriate for bat species:

- International and European
- National
- Regional
- Metropolitan, county, vice-county or other local authority-wide area
- Local.

As well as considering the importance of bats in their geographic context, various characteristics contribute to the assessment. This includes population size, range, habitat and changes over time. Recent information for the status of UK bat species can be found on the Bat Conservation Trust website and publications from Natural England.<sup>6</sup>

The importance of bat species on the Site was considered with respect to roosting, commuting and foraging behaviours.

### 3.2.2 Limitations

Acoustic survey techniques are biased towards some bat species rather than others. For example, noctule bats (*Nyctalus noctula*) have a loud call and can be heard using a detector over 50 metres away, while brown long-eared (*Plecotus auritus*) can only be detected within a few metres. This results in a higher likelihood of detecting noctules rather than brown long-eared bats even though brown long-eared bats are in fact more common.

The recording bias is further increased by the bats' habits and mobility. Some species of bat move between roosts and/or feeding grounds regularly and open foraging strategies are used.

Surveys only provide a snapshot of information temporally and spatially from which we extrapolate behaviour to make an ecological evaluation. Identification to species level is not always possible, particularly for the Myotis group, which is notoriously hard to split into species due to their similar call types. Where a bat could not be identified to species, it was recorded to genera (e.g. *Myotis* and *Pipistrellus*) or, if this could not be ascertained, it was recorded as 'unidentified'.

The first survey of Building 2 was unavoidably conducted in reasonably high winds (Beaufort 5) however bat activity was recorded and the building was subject to an additional survey to provide compensatory survey effort.

<sup>5</sup> CIEEM (2018) Guidelines for Ecological Impact Assessment in the United Kingdom: Terrestrial, Freshwater, Coastal and Marine.

<sup>6</sup> Kubasiewicz L. M., Gurnell J., Harrower C. A., McDonald R. A., Shore R. F. (2018) Natural England Joint Publication JP025: A Review of the Population and Conservation Status of British Mammals. A report by the Mammal Society under contract to Natural England, Natural Resources Wales and Scottish Natural Heritage.

Natural England<sup>7</sup> recognises that sufficient information may not be available to support its advice on plans, projects and statutory licencing as a result of Covid-19 restrictions in undertaking surveys and gathering data. Natural England will be as flexible as possible in accepting the best available information and will assess this on a case by case basis, as appropriate. Where there is insufficient information available to rule out significant risks to the natural environment, Natural England may advise that a precautionary approach is needed by developers or local authorities, and/or a decision deferred until sufficient evidence is available.

With regards to wildlife licencing, there may be occasions where Natural England will accept lower levels of survey effort than normal but only where this does not introduce uncertainty in whether a licence would meet the legal tests. It is acknowledged that in managing uncertainty, applicants may wish to put in place precautionary mitigation or compensation.

None of these limitations either singly or in combination is significant enough to affect the baseline, impact assessment and resulting mitigation or enhancement referenced in this report.

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<sup>7</sup> Natural England, Coronavirus – Guidance on implications for Natural England's development management advice and wildlife licencing. 16/4/20

## 4. Results

### 4.1 Desk study

The desk study returned records (bat detector / sightings) of 5 species of bat within a 2km x 2km area (tetrad) of the Site<sup>8</sup>. These comprised: common pipistrelle (*Pipistrellus pipistrellus*), brown long-eared bat (*Plecotus auritus*) soprano pipistrelle (*Pipistrellus pygmaeus*), noctule (*Nyctalus noctule*) and Daubenton's (*Myotis daubentonii*). There were no records of bats or roosts within the Site and no roost records were returned within 2km

There were two granted EPSMLs within 2 km of the Site from 2015 to 2017. The first (2017-31776-EPS-MIT-1) is located approximately 2 km to the south for destruction of a non-breeding common pipistrelle roost. The second, located approximately 1.8 km to the west (2015-17719-EPS-MIT-1) is for destruction of a non-breeding common pipistrelle roost.

### 4.2 Bat emergence surveys – trees and buildings

#### 4.2.1 Overall summary of emergence / re-entry survey results

No roosts were recorded during the emergence surveys.

A summary of the bat activity recorded during the emergence and re-entry surveys is provided within Table 2..

**Table 2. Summary of Recorded Bat Species and Activity During Emergence / Re-Entry Survey** (- = no passes recorded; Y = Yes)

Survey Date	Building	Species & Approximate Passes				Closest Pass to Sunset / Sunrise
		Common Pipistrelle	Soprano Pipistrelle	Noctule	Brown long-eared	
Dusk 19-05-21	B1	-	-	4 passes	-	+20 mins (noctule)
Dusk 20-05-21	B2	2 passes	-	1 pass	-	+30 mins (common pipistrelle)
	B3	-	-	1 pass	-	+45 mins (noctule)
Dawn 21-05-21	B2	-	-	-	-	-
	T1	-	1 pass	-	-	-60 mins (soprano pipistrelle)
Dusk 02/06/2021	B7	-	-	-	-	-
Dusk 03-06-2021	B7	-	-	1 pass	-	+15 mins (noctule)
Dusk 09/06/2021	B1	1 pass	-	8 passes	-	-
	B9	-	-	-	-	-
Dawn 10/06/2021	B7, B3	1 pass	3 passes	Continuous passes	-	-35 mins (noctule)
	T1	-	-	2 passes	-	-60 mins (noctule)
Dusk 11-06-2021	B6	-	3 passes	15 passes	-	+68 mins (soprano pipistrelle)
Dusk 24-06-2021	B2, B3	-	-	-	-	-

<sup>8</sup> <https://mammal-atlas.hnhs.org/2015/> [Accessed June 2021]

Survey Date	Building	Species & Approximate Passes				Closest Pass to Sunset / Sunrise
		Common Pipistrelle	Soprano Pipistrelle	Noctule	Brown long-eared	
	B4	1 pass	1 pass	16 passes	-	+25 mins (noctule)
	B5	1 pass	1 pass	1 pass	1 pass	+15 mins (common pipistrelle)
Dusk 16/07/2021	B8	42 passes	13 passes	-	-	+68 mins (soprano pipistrelle)

Approximate activity levels are shown above, which were generally low. On three surveys there was increased levels of activity by soprano and noctule which indicated that they may have been foraging nearby. Stanborough Lake is located directly south of the Site and may be used for foraging. Activity by species was broadly evenly split between common pipistrelle, soprano pipistrelle and noctule, with brown-long-eared limited to a single recorded pass on 24<sup>th</sup> June only.

The passes recorded closest to sunrise or sunset were often later or early than published emergence or re-entry times which may indicate that bats were commuting a distance before arriving at the Site, and therefore only a small number of bats may be roosting nearby.

Further detailed raw data are provided within Appendix B

## 5. Discussion

### 5.1 Roosting bats

There was no evidence that bats were roosting in the buildings (B1 to B9) or tree T1.

### 5.2 Bat activity (commuting and foraging)

No specific surveys were conducted to assess the bat activity on site. Based on bat calls recorded during the presence absence surveys, the site supports four bat species; common pipistrelle, soprano pipistrelle, noctule and brown long eared.

### 5.3 Site's nature conservation importance for bat species/populations

All bat species in the UK have been assessed and assigned a conservation status. Common pipistrelle, soprano pipistrelle, noctule and brown long eared are of "Least Concern" on the IUCN red list and described as common and widespread across England within Bat Conservation Trust reports<sup>9</sup>. CIEEM guidance<sup>10</sup> assesses both pipistrelle species and brown long-eared as common species and noctule as a 'rarer' species but note activity was recorded at very low levels for all species.

The commuting and foraging bat species assemblage recorded on Site is the same as the bat species assemblage records returned in the desk study within 1 km of the Site in the last 10 years and contains activity of species assessed as Least Concern in the UK.

Due to the limited species assemblage of four species and very few bat passes recorded across the Site, the assemblage of foraging and commuting bats present within the Site is of 'Local' Importance based on CIEEM guidance<sup>11</sup>.

Note as no roosting bats have been recorded, the Site is assessed as of no more than of 'Local' Importance for roosting bats.

### 5.4 Recommendations

#### 5.4.1 Demolition

No further survey work has been recommended; however, the demolition contractors should be made aware that the buildings have a low risk of supporting roosting bats via an ecological briefing prior to demolition commencing.

If at any time during works a bat or signs of bats are found during works, works should cease immediately, and a suitably qualified ecologist contacted for advice. If obstruction, damage or loss of a roost cannot be avoided, it is likely that a Natural England EPSML would be required to allow works to continue.

Tree 1 will be retained within the redevelopment and it is not expected to be subject to any works. It is recommended to avoid directly illuminating the tree at night.

If demolition works are not undertaken within two years, i.e. by September 2023, it is recommended that updated surveys are undertaken in the bat survey season to confirm the absence of roosting bats.

#### 5.4.2 Commuting and foraging habitat

The site contains suitable commuting and foraging habitat that supports common and widespread bat species. The surrounding habitat is likely of more value to bats, as it is a green belt area.

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<sup>9</sup> Bat Conservation Trust (undated). State of the UK's Bats. National Bat monitoring Programme Population Trends.

<sup>10</sup> Wray S, Wells D, Long E, & Mitchell-Jones T (2010) Valuing Bats in Ecological Impact Assessment, IEEM In-Practice issue 70, p 23-25.

<sup>11</sup> CIEEM (2018) Guidelines for Ecological Impact Assessment in the United Kingdom: Terrestrial, Freshwater, Coastal and Marine.

The redevelopment will be predominantly of the buildings. The majority of the habitats on site will be retained however some habitats will be lost (amenity grassland introduced shrub and trees) (0.04 ha) but will be replaced by biodiverse planting, rain gardens, new tree planting, orchards, a SUDS pond and hedges (0.06 ha).

As a result of the redevelopment, there will be an increase in suitable commuting and foraging habitat on site. The benefits and recommendations for bats are outlined below.

There are four common and widespread bat species using the Site for foraging and commuting and there is a risk that there will be an impact on foraging and commuting bats through loss of foraging habitat, as well as an impact as a result of lighting and severance of commuting routes. If avoidance of roosting, and/or foraging/commuting habitat is not possible then appropriate mitigation, habitat compensation and enhancement will be required.

- Maintaining habitat connectivity across the wider landscape in the Stanborough area, retained and created green corridors (vegetated habitat linkages e.g. hedgerows and trees lines) will assist commuting and foraging bats;
- Retaining hedgerows / tree lines / woodlands would maintain green corridors connectivity for bats. Retained and new habitats should not be subject to light spill and green corridor linkages such as minimise light spill wherever possible;
- The new SUDS network includes wet areas and native planting to enhance foraging habitat availability for bats;
- Enhance the wider landscape by tree-planting and shrub planting to support commuting and foraging habitats;
- Planting species that encourage nocturnal pollinating insects such as moths so as to benefit foraging bats, in aquatic, woodland and grassland habitats;
- Planting species that benefit bats include an array of wildflower meadow species;
- Keeping appropriate light levels in key bat habitats across Site for bats and producing a Lighting Strategy with the input of an ecologist and a lighting engineer at a detailed design stage to ensure that lighting causes minimal disturbance for bats and it is recommended that a maximum lux level of 0.5<sup>12</sup> is achieved in any landscape areas requiring lighting; and
- Incorporating suitable bat boxes in residential or other buildings for crevice dwelling species such as common pipistrelle and within the retained and new trees, suitable bat boxes should be erected for the species recorded on site.

The recommendations above should be taken forward for further discussion with the detailed design team.

## 6. Conclusion

As a result of the bat surveys undertaken during the active season for bats in 2021, it was found that the Site did not support roosting bats. There were, however, incidental occurrences of four common and widespread species recorded commuting through and foraging on the Site.

No eco-supervision or further surveys are recommended however if demolition works are not undertaken within two years, i.e. by September 2023, it is recommended that updated surveys are undertaken in the bat survey season to confirm the absence of roosting bats.

The Site can be enhanced for bats through the creation and implementation of a sensitive lighting strategy, establishment of soft planting planted with species of benefit to biodiversity and bat boxes.

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<sup>12</sup> Bat Conservation Trust (2018) Guidance Note 08/18 Bats and Artificial Lighting in the UK.

## Appendix A Bat roost assessment figures

### Figure 1: Survey Locations Figure



## Appendix B Full bat emergence survey results

### Building 1

#### Dusk – 19<sup>th</sup> May 2021

Date	Survey Number	Surveyor	Equipment	Start time	End time	Sunset/rise
19/05/2021	1	DP	Anabat Scout	20:38	20:23	20:58

Time	Species	No. of passes	Emerge (Y/N)	Description
21:18	Noctule	1	N	Flew high north west to south east
21:25	Noctule	1	N	Heard but not seen
22:00	Noctule	1	N	Heard but not seen
22:07	Noctule	1	N	Heard but not seen

Date	Survey Number	Surveyor	Equipment	Start time	End time	Sunset/rise
19/05/2021	1	PC	Pettersson + Anabat express	20:38	20:23	20:58

Time	Species	No. of passes	Emerge (Y/N)	Description
No bats seen or heard				

#### Dusk – 9<sup>th</sup> June 2021

Date	Location Number	Surveyor	Equipment	Start time	End time	Sunset/rise
09/06/2021	L4	CF	Batlogger M	21:00	22:47	21:17

Time	Species	No. of passes	Emerge (Y/N)	Description
21:15	Noctule	1	N	Not seen or heard, faint
21:31	Noctule	2	N	Heard not seen
21:49	Noctule	4	N	Heard not seen
22:46	Common pipistrelle	2	N	Heard not seen

Date	Location Number	Surveyor	Equipment	Start time	End time	Sunset/rise
09/06/2021	L6	SS	Batlogger M2	21:00	22:47	21:17

Time	Species	No. of passes	Emerge (Y/N)	Description
No bats seen or heard				

## Building 2

### Dusk – 20<sup>th</sup> May 2021

Date	Location Number	Surveyor	Equipment	Start time	End time	Sunset/rise
20/05/2021	L12	DP	Anabat Scout	20:39	22:24	20:54
Time	Species	No. of passes	Emerge (Y/N)	Description		
21:25	Common pipistrelle	1	N	Flew from south west to the north west		
21:40	Noctule	1	N	Flew high over buildings west to east		

Date	Location Number	Surveyor	Equipment	Start time	End time	Sunset/rise
20/05/2021	L6	RW	Batlogger M	20:39	22:24	20:54
Time	Species	No. of passes	Emerge (Y/N)	Description		
22:25	Common pipistrelle	1	N	Heard not seen, brief pass		

### Dawn 21<sup>st</sup> May 2021

Date	Location Number	Surveyor	Equipment	Start time	End time	Sunset/rise
21/05/2021	L10	DP	Anabat Scout	03:23	05:16	05:01
Time	Species	No. of passes	Emerge (Y/N)	Description		
				No bats seen or heard		

## Building 3

### Dusk – 20<sup>th</sup> May 2021

Date	Location Number	Surveyor	Equipment	Start time	End time	Sunset/rise
20/05/2021	L13	SS	Batlogger	20:39	22:24	20:54
Time	Species	No. of passes	Emerge (Y/N)	Description		
21:40	Noctule	1	N	Heard not seen		

### Dawn 10<sup>th</sup> June 2021

Date	Location Number	Surveyor	Equipment	Start time	End time	Sunset/rise
10/06/2021	L14	DP	Anabat Scout	03:00	05:00	04:45
Time	Species	No. of passes	Emerge (Y/N)	Description		
No bats heard or seen						

### Building 4

#### Dusk 24<sup>th</sup> June 2021

Date	Location Number	Surveyor	Equipment	Start time	End time	Sunset/rise
24/06/2021	L3	PC	Batlogger M	21:10	22:55	21:23
Time	Species	No. of passes	Emerge (Y/N)	Description		
21:51	Noctule	16	N	Foraging		
22:16	Soprano pipistrelle	10	N	Pass over head NE direction towards Location 2 and then flew around corner of building south of Location 3		
22:47	Common pipistrelle	1	N	Pass, brief		

### Building 5

#### Dusk 24th June 2021

Date	Location Number	Surveyor	Equipment	Start time	End time	Sunset/rise
24/06/2021	L2	CF	EMTouch	21:10	22:55	21:23
Time	Species	No. of passes	Emerge (Y/N)	Description		
21:36	Common pipistrelle	1	N	Heard not seen		
21:52	Noctule	1	N	Brief pass		
21:58	Brown long eared	1	N	Not heard or seen		

## Building 6

### Dusk – 11<sup>th</sup> June 2021

Date	Location Number	Surveyor	Equipment	Start time	End time	Sunset/rise
11/06/2021	L21	CF	Batlogger M	21:05	22:50	21:20
Time	Species	No. of passes	Emerge (Y/N)	Description		
No bats heard or seen						

Date	Location Number	Surveyor	Equipment	Start time	End time	Sunset/rise
11/06/2021	L19, L20	RW	Batlogger M	21:05	22:50	21:20
Time	Species	No. of passes	Emerge (Y/N)	Description		
22:28	Soprano pipistrelle	3	N	Heard not seen		
22:56	Noctule	15	N	Heard not seen, likely foraging		

## Building 7

### Dusk – 2<sup>nd</sup> June 2021

Date	Location Number	Surveyor	Equipment	Start time	End time	Sunset/rise
02/06/2021	L19	RW	Batlogger M	20:55	21:55	21:12
Time	Species	No. of passes	Emerge (Y/N)	Description		
No bats heard or seen						

### Dusk – 3<sup>rd</sup> June 2021

Date	Location Number	Surveyor	Equipment	Start time	End time	Sunset/rise
03/06/2021	L16	RW	Batlogger M	20:40	22:40	21:12
Time	Species	No. of passes	Emerge (Y/N)	Description		
No bats heard or seen						

Date	Location Number	Surveyor	Equipment	Start time	End time	Sunset/rise
03/06/2021	L18	SS	Batlogger M	20:40	22:40	21:12
Time	Species	No. of passes	Emerge (Y/N)	Description		
21:25	Noctule	1	N	Heard not seen		

#### Dawn – 10<sup>th</sup> June 2021

Date	Location Number	Surveyor	Equipment	Start time	End time	Sunset/rise
10/06/2021	L17	CF	Batlogger M	03:00	04:58	04:43
Time	Species	No. of passes	Emerge (Y/N)	Description		
03:11	Common pipistrelle	1	N	Heard not seen		
03:30	Soprano pip	3	N	Heard not seen, south of building		
03:32 - 04:06	Noctule	Continuous	N	Heard not seen, likely foraging nearby		

## Building 8

#### Dusk 16<sup>th</sup> July 2021

Date	Location Number	Surveyor	Equipment	Start time	End time	Sunset/rise
16/07/2021	L23	RW	Batlogger M	20:45	22:40	20:58
Time	Species	No. of passes	Emerge (Y/N)	Description		
22:06	Soprano pipistrelle	13	N	Flight at building roof height		
22:10	Common pipistrelle	19	N	Unseen, likely foraging		
22:27	Common pipistrelle	23	N	Unseen, likely foraging		

Date	Location Number	Surveyor	Equipment	Start time	End time	Sunset/rise
16/07/2021	L22	CF	Batlogger M	20:45	22:40	20:58
Time	Species	No. of passes	Emerge (Y/N)	Description		
21:22	Common pipistrelle	1	N	Heard not seen		

## Building 9

#### Dusk – 9<sup>th</sup> June 2021

Date	Location Number	Surveyor	Equipment	Start time	End time	Sunset/rise
09/06/2021	L7	PC	Pettersson & Anabat Express	21:02	22:47	21:23

Time	Species	No. of passes	Emerge (Y/N)	Description
No bats seen or heard				

## Tree 1

### Dawn – 21<sup>st</sup> May 2021

Date	Survey number	Location Number	Surveyor	Equipment	Start time	End time	Sunset/rise
21/05/2021	1	Tree 1	SS	Batlogger M2	03:24	05:16	05:20

Time	Species	No. of passes	Emerge (Y/N)	Description
04:22	Soprano pipistrelle	1	N	Heard not seen

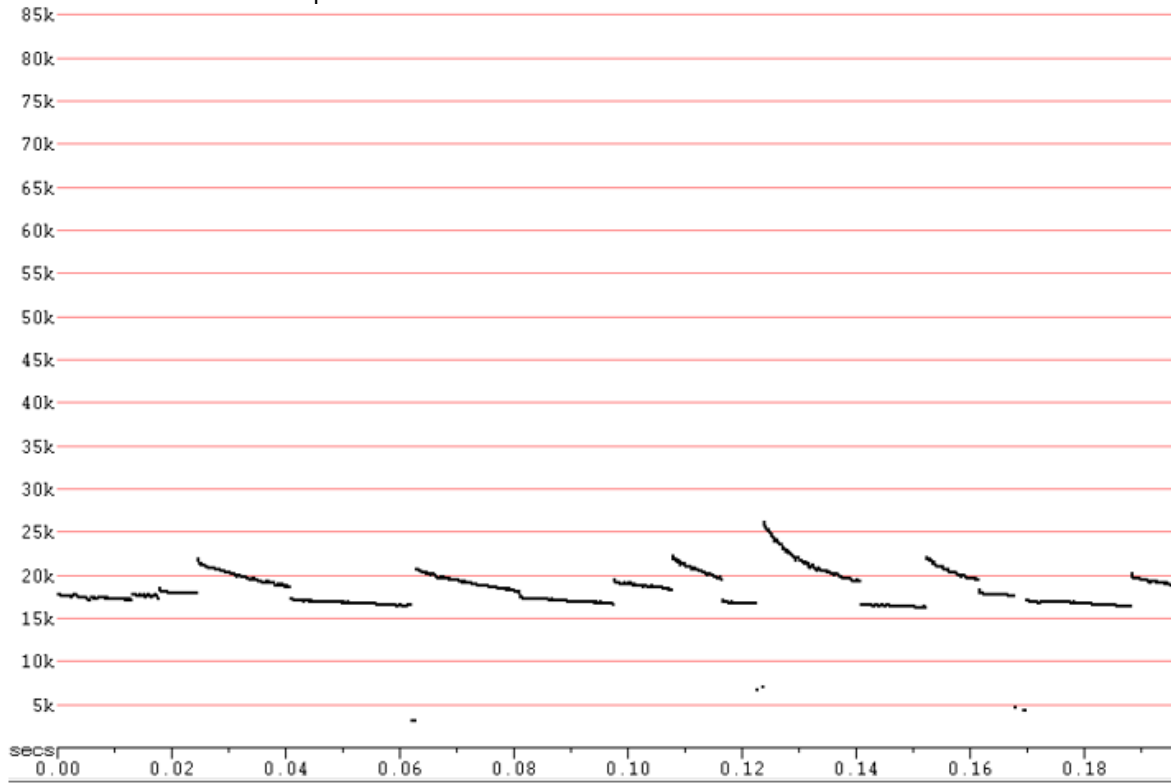
### Dawn – 10<sup>th</sup> June 2021

Date	Survey number	Location Number	Surveyor	Equipment	Start time	End time	Sunset/rise
10/06/2021	2	Tree 1	SS	Batlogger M2	03:09	05:00	04:35

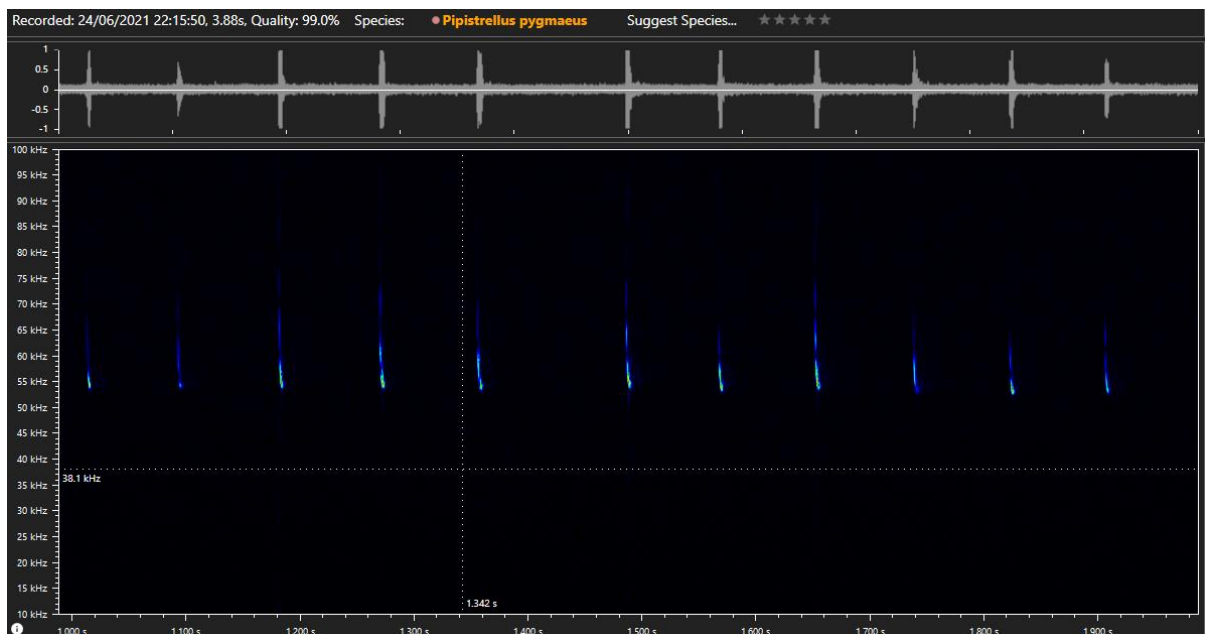
Time	Species	No. of passes	Emerge (Y/N)	Description
03:36	Noctule	1	N	Heard not seen, commuting overhead
03:54	Noctule	1	N	Heard not seen, commuting overhead

## Appendix C Example bat echolocation sonograms

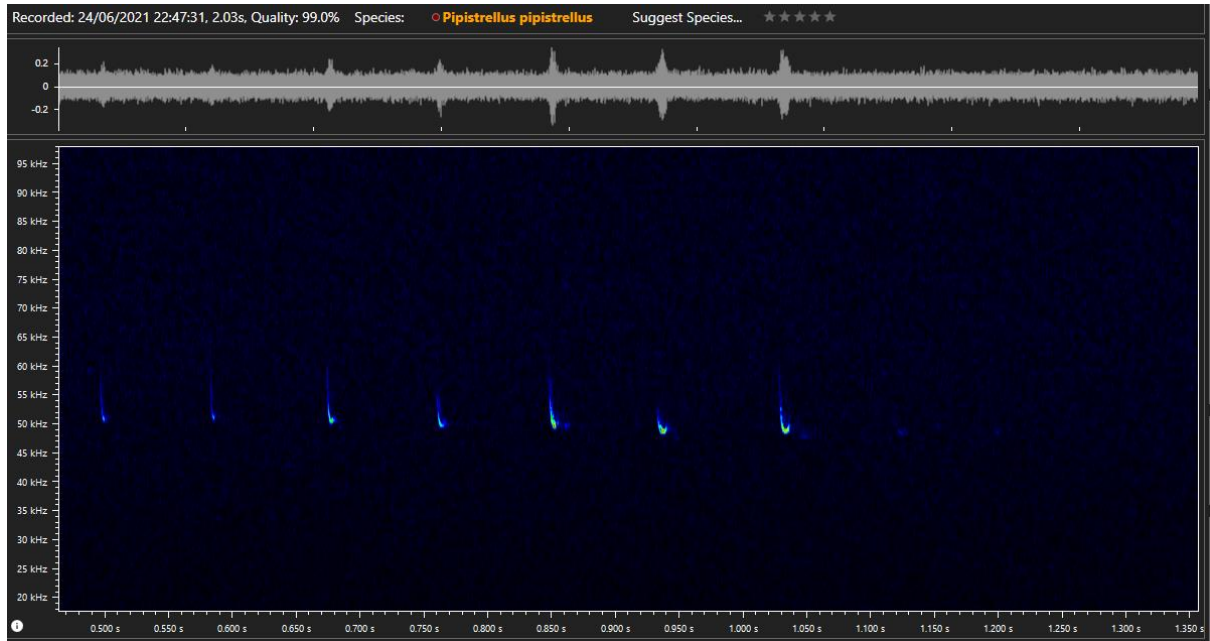
Noctule bat recorded at 21.52pm on 24<sup>th</sup> June 2021



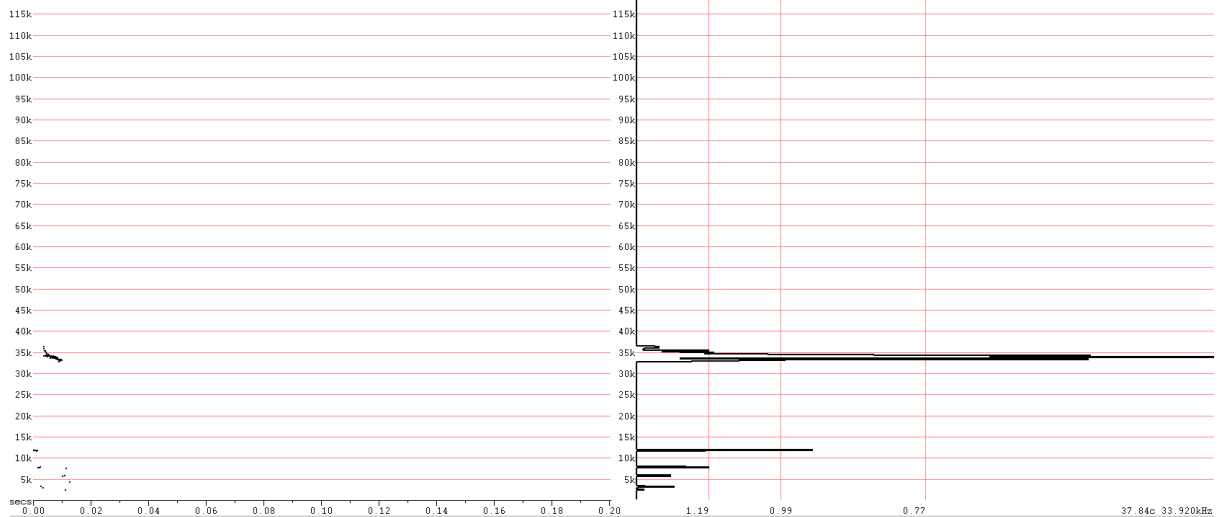
Soprano pipistrelle recorded at 22:15pm on 24<sup>th</sup> June 2021



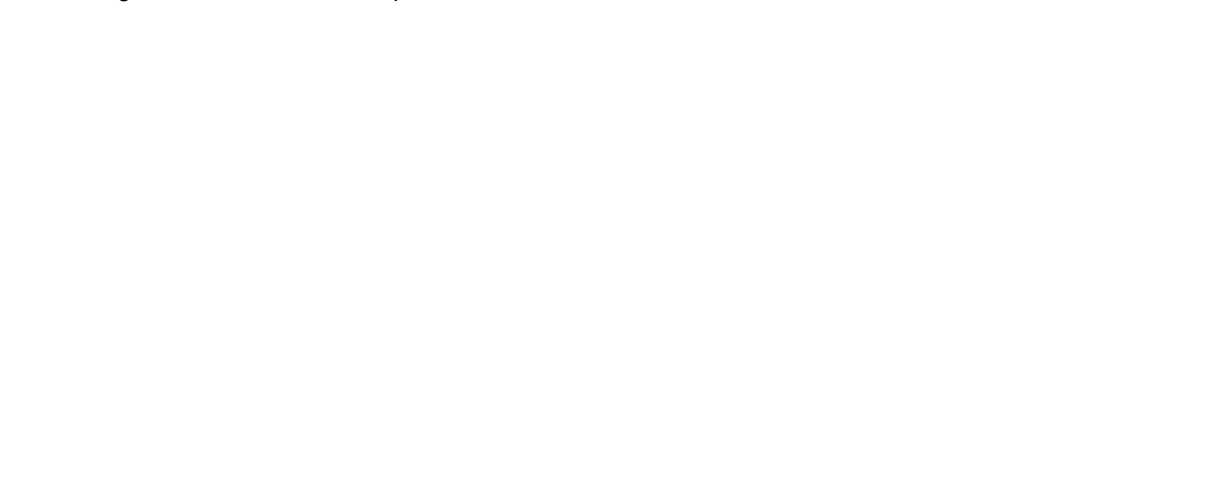
Common pipistrelle recorded at 22:47pm on 24<sup>th</sup> June 2021



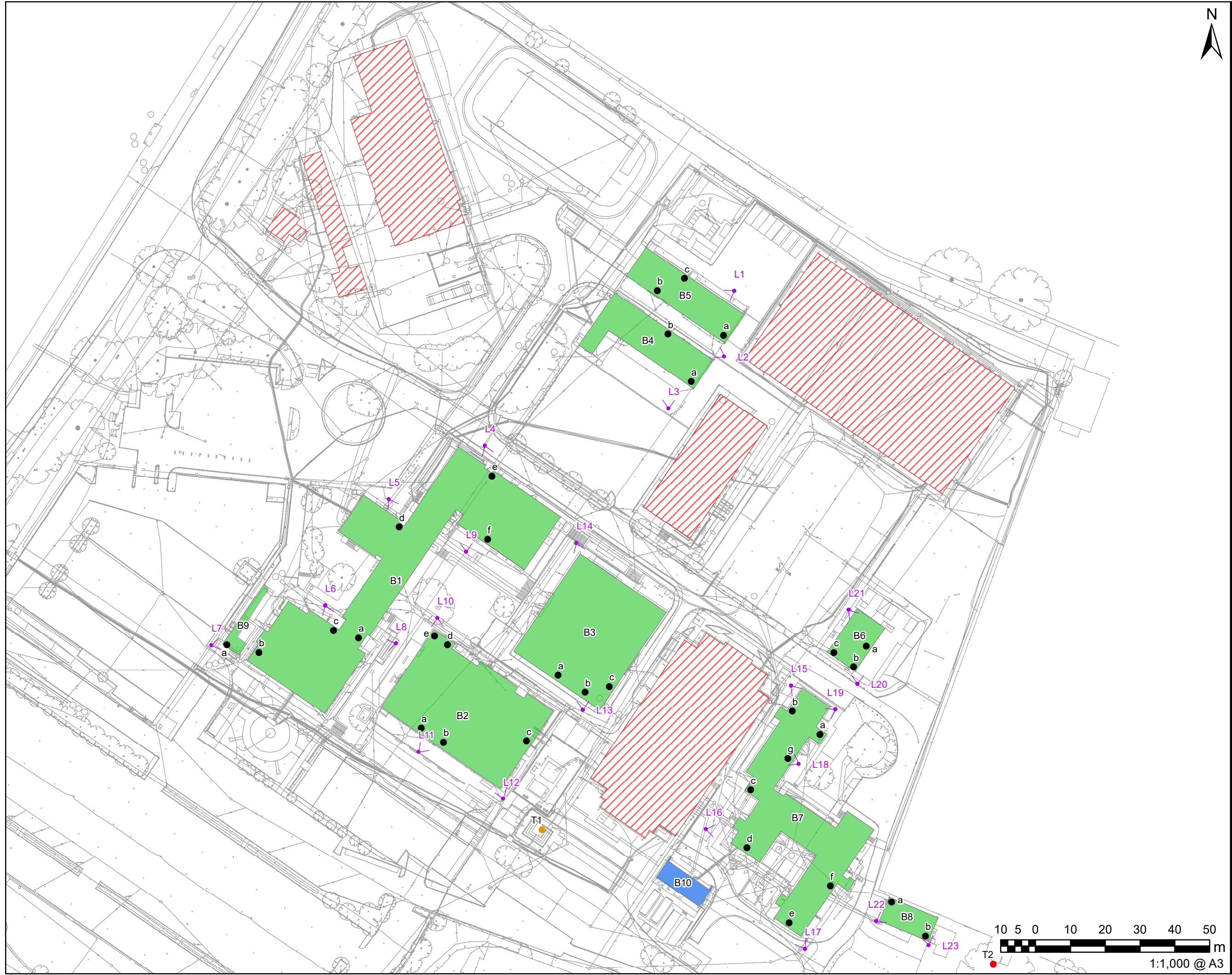
Brown long eared recorded at 21:58pm on 24<sup>th</sup> June 2021



Brown long eared recorded at 21:58pm on 24<sup>th</sup> June 2021







**LEGEND**

- Surveyor Locations
- Potential Bat Roosting Feature on Building

**Potential Bat Roosting Tree**

- High Suitability
- Moderate Suitability

**Building Bat Roost**

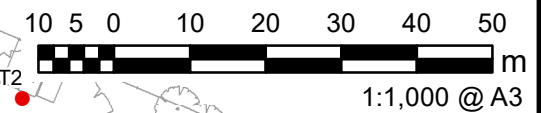
- Low
- Negligible
- Not Surveyed

**NOTES**  
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Topographical Survey. Rev. F0, 2020.

**ISSUE PURPOSE**  
FOR INFORMATION  
**PROJECT NUMBER**  
60600329  
**SHEET TITLE**  
Bat Roost Suitability  
Assessment

**SHEET NUMBER**  
Figure 01

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