



Bat Survey Report 2020 Update



35 Upper Redlands

On behalf of the University of Reading

June 2020

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1 Executive Summary

Ecology by Design Ltd were commissioned by Reading University to undertake a bat survey of 35 Upper Redlands, Reading, Berkshire, RG1 5JE (SU 72872 72317).

A preliminary roost assessment was conducted by a third party in early 2018 which identified the need for a full bat survey. The building was assessed as having high bat roost potential and therefore bat roost surveys were conducted on 12th June, 25th July and 6th August 2018 and the preliminary roost assessment was part repeated by Ecology by Design during 12th June and completed on 21st September 2018.

No emerging bats were recorded coming from the building and at no point during the survey did any bats show any interest in the building. Two bat droppings were identified inside the building, however these appeared old and may have been transported in on materials or from an exploratory bat but there was no signs of roosting or more recent evidence.

In June 2020 Ecology by Design were commissioned to update the survey results. A preliminary roost assessment was undertaken on the 10th June 2020 which concluded that the building still had potential to support roosting bats therefore a dawn re-entry bat survey was completed on the 17th June 2020. During the survey no bats were recorded roosting within the building. A static detector was also deployed within the loft space from 16th June to 24th June 2020 during which time no bat activity was recorded.

All surveys were conducted based on standard guidance for bat surveys (Collins, J. 2016).

Bats do not pose a constraint to development, however under planning policy a net enhancement to the site is sought. Six bat tiles should be installed onto the roof of the building.

Details on enhancement for bats are outlined in Section 6 of this report.

2 Introduction

2.1 Background and Survey Objectives

Ecology by Design Ltd were commissioned by Reading University to undertake a bat survey of 35 Upper Redlands, Reading, Berkshire, RG1 5JE (central grid reference SU 72872 72317).

The objectives of this report are:

- Identify any potentially significant ecological constraints that may affect the proposed work;
- Identify the species of bat using the surveyed area;
- Assess the levels of activity of bats utilising the site; and
- Identify mitigation measures required ensuring any proposed works maintain the favourable conservation status of bat populations and deliver a net gain for biodiversity.

2.2 Site Description

The site contains a large residential university building with associated parking and soft landscaping. The site is bounded by similar buildings to the east, south and west and Upper Redlands Road to the north.

2.3 Proposed Works

The proposed works include roof repairs and subdivision of the loft space with fire barriers.

2.4 Limitations/ Constraints

The wildlife and wider ecological interest of a site can change. The report presented here is a statement of the findings of surveys carried out between June 2018 and June 2020.

The building has a complex roof structure therefore it was not possible to view all aspects during the surveys however, as the majority of the structure was visible and sufficient survey effort was implemented this is not considered to be a significant constraint.

Any appreciable delay in making reference to this report may necessitate a re-survey.

3 Methods

3.1 Preliminary Roost Assessment

Ecology by Design ecologist and licensed bat worker Emily Power (Natural England licence 2017-23544-CLS-CLS) and assistant ecologist Joe Chidzey conducted a preliminary roost assessment of the building on the 21st September 2018. A preliminary roost assessment update survey was completed by ecologists Emily Power and Emily Bartlett (Natural England licence 2019-43526-CLS-CLS) on 10th June 2020.

An external and internal Preliminary Roost Assessment was conducted of the building by Ecology by Design. The assessment was based on the guidance in Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016) and government guidance (Gov.uk., 2015).

Conditions during the survey were mild and dry (13°C, cloud 7/8 oktas¹, wind Beaufort 1² and no rain) and preceding weather was optimal for bats.

The surveyors used a high-power torch, binoculars, an endoscope and ladder to inspect features of interest. Where bat droppings were found a sample was collected to enable DNA analysis to identify the species at a future date, if required. All external areas of the buildings were inspected as well as internal areas. Equipment used included:

- LEDLenser Lamp
- 10x42mm close focusing binoculars
- 3.8m telescopic ladder

Evidence searched for included the presence of free hanging bats and bats within gaps and crevices, bat droppings, urine stains, rub marks, scratch marks and feeding remains.

3.2 Dusk Emergence and Pre-Dawn Re-entry Surveys

Dusk emergence and pre-dawn re-entry surveys were conducted of the building which had suitability for roosting bats to confirm presence or likely absence of roosting bats, and where present, enable characterisation of the roost(s). The surveys undertaken within the site are detailed in Table 1.

Table 1: Details of bat roost surveys completed in 2018 and 2020

Date	Surveyors	Type
12/06/2018, 25/07/2018 & 06/08/2018	Ben Gardner (NE personal licence no. 2015-17038-CLS-CLS), Dr Amanda Lloyd, Dr Dani Linton, Dr Stacey Waring, Tony Wells, Raven Herald, Emily Power, and Andrew Harrington	Dusk, Dawn & Dusk
17/06/2020	Emily Bartlett (NE personal licence no. 2019-43526-CLS-CLS), Dr Stacey Waring, Tony Wells, Karl Lofthouse, Jan-Piet Stuursma and Chloe Dalglish	Dawn

¹ Cloud cover is measured using the system called oktas. The visible sky is divided into eight and cloud presence is determined within each section. A value of one to eight is then assigned (1 okta being cloudless to 8 oktas being total cloud cover).

² The Beaufort scale is an empirical measure from 0-12 which relates wind speed to observed conditions. 0- Calm, 1- Light air, 2- Light breeze, 3- Gentle breeze, 4- Moderate breeze, 5- Fresh breeze, 6- Strong breeze, 7- Moderate gale, 8- Fresh gale, 9- Strong gale, 10- Whole gale, 11- Storm, 12- Hurricane force.

The surveys were based on the guidance included in the Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins (ed.), 2016). Bat detectors utilized included Elekon Batlogger M detectors to record any bats emerging from or re-entering the building.

The emergence surveys commenced approximately 15 minutes before sunset and lasted until 1.5 hours after sunset. The pre-dawn re-entry surveys commenced 1.5 hours before sunrise and finished at sunrise.

Surveyors were located on each aspect of the buildings, focused on features identified during the preliminary roost assessment as being suitable for roosting bats. During the survey's emergence and/or re-entry points were mapped, species were identified (where possible) and flight lines were noted.

3.3 Static Monitoring Survey

A static bat detector was deployed within the loft space from 16th to 24th June 2020 to gather data to inform the updated bat survey. The detector was set to record from 30 minutes before sunset until 30 minutes after sunrise. The data were automatically identified using Kaleidoscope Pro classifiers and each sound file was manually checked and corrected to assign the correct species/group identification.

The data were exported into a spreadsheet in order to interpret the recordings. The timing of passes after sunset and before sunrise was calculated in order to interpret any patterns in bat activity. For the purpose of this report a bat pass is the minimum number of bats of a certain species recorded within a single sound file.

3.4 Site/ Species Valuation for Roosting Bats

Based upon the framework for valuing bats in Ecological Impact Assessment designed by Wray *et al.* (2010), the sites roost is categorised and valued from District Level to International. These different bat roosts can be assigned to a geographic frame of reference as detailed in Appendix 4. The valuation of roosts reflects the importance of bats.

4 Results

4.1 Preliminary Roost Assessment

4.1.1 Internal Inspection

The interior loft space was timber framed and bitumen felt lined, with some boarded areas allowing a thorough search of the loft space. Areas of light ingress were noted at the eaves, as well as through tears in the felt, through which the underneath of the tiles could be seen. 10 old bat droppings were identified scattered throughout the loft space, although no clusters of droppings were identified. The majority of bat droppings were identified underneath the ridge, which was lightly cobwebbed. No areas of staining or scratching by bats was noted.

4.1.2 Updated Internal Inspection

The internal inspection update survey concluded that the conditions within the loft space remain largely the same as those recorded during the initial inspection in 2018. Approximately 10 old droppings were recorded scattered throughout the loft which are considered likely to be brown long-eared bat droppings. A moderate level of cobwebbing was noted around the beams and roof structure within the loft.

4.1.3 External Inspection

The building was of brick construction with a pitched tiled roof, with brick gable ends and three dormers on the north and south elevations. The eaves were not enclosed within soffit boxes and gaps were visible leading into the loft space along the exposed eaves, particularly on the southern elevation of the building. There were a number of missing, broken and lifted tiles, concentrated on the southern elevation, with only a few missing tiles on the northern elevation. Overall the building and brickwork was in good condition, and no evidence of bats was noted on any exterior elevation.

4.1.4 Updated External Inspection

The external inspection update confirmed that the conditions were similar to those recorded within the initial assessment in 2018. There were a few more missing tiles on the southern elevation of the building and the wooden veranda on the south of the building had been removed.

4.2 Roost Survey

Table 2. Survey weather conditions

Date	Sunset/ Sunrise	Start	End	Weather
12 th June 2018	21:21	21:10	22:50	17°C to 15°C, cloud 0/8 oktas ³ , wind Beaufort 0 ⁴
25 th July 2018	05:17	03:17	05:17	17°C to 15°C, cloud 1/8 oktas, wind Beaufort 1
6 th August 2018	20:44	20:28	22:15	22°C to 26°C, cloud 2/8 oktas, wind Beaufort 1
17 th June 2020	04:46	03:16	04:46	12°C to 13°C, cloud 1/8 oktas, wind Beaufort 0

4.2.1 Dusk emergence 12th June 2018

There were no emergences seen from the building during the course of this dusk survey.

There was some activity from three species of bats foraging over the site, including; common pipistrelles being the dominant species (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*) and brown long-eared bats (*Plecotus auritus*).

4.2.2 Dawn re-entry 25th July 2018

No re-entry to the building was recorded during the survey.

There was activity from a variety of species of bats foraging over the site, including common pipistrelle, again being dominant, soprano pipistrelle, brown long-eared, and *Myotis* species.

4.2.3 Dusk emergence 6th August 2018

No bats were seen by the surveyors to emerge from the building during the survey.

Three species of bats were recorded foraging over the site, including; again most activity from common pipistrelles (*Pipistrellus pipistrellus*), soprano pipistrelle and a serotine bat (*Eptesicus serotinus*).

4.2.4 Dawn re-entry 17th June 2020

No bats were recorded re-entering the building during the survey.

³ Cloud cover is measured using the system called oktas. The visible sky is divided into eight and cloud presence is determined within each section. A value of one to eight is then assigned (1 okta being cloudless to 8 oktas being total cloud cover).

⁴ The Beaufort scale is an empirical measure from 0-12 which relates wind speed to observed conditions. 0- Calm, 1- Light air, 2- Light breeze, 3- Gentle breeze, 4- Moderate breeze, 5- Fresh breeze, 6- Strong breeze, 7- Moderate gale, 8- Fresh gale, 9- Strong gale, 10- Whole gale, 11- Storm, 12- Hurricane force.

Activity levels were relatively high with frequent activity recorded from 3:24 until 4:31. A total of 96 common pipistrelle bat passes were recorded during the survey including foraging activity. Between three and six common pipistrelle bats were observed at the same time flying within the site. Two soprano pipistrelle bats were recorded commuting through the site. Bats were noted foraging and commuting around trees within the site, particularly the eastern treeline.

4.2.5 Static monitoring survey 16th to 24th June 2020

Table 3. Survey weather conditions

Date	Sunrise	Sunset	Weather
16 th June 2020	N/A	21:23	High 23°C, Low 13°C, wind Beaufort 2, thundery showers
17 th June 2020	04:46	21:23	High 22°C, Low 9°C, wind Beaufort 1, rain showers
18 th June 2020	04:46	21:23	High 16°C, Low 13°C, wind Beaufort 2, persistent rain
19 th June 2020	04:46	21:24	High 18°C, Low 13°C, wind Beaufort 2, rain showers
20 th June 2020	04:46	21:24	High 21°C, Low 11°C, wind Beaufort 2, dry
21 st June 2020	04:46	21:24	High 20°C, Low 10°C, wind Beaufort 2, dry
22 nd June 2020	04:47	21:24	High 22°C, Low 7°C, wind Beaufort 2, dry
23 rd June 2020	04:47	21:24	High 27°C, Low 11°C, wind Beaufort 1-2, dry
24 th June 2020	04:47	N/A	High 31°C, Low 14°C, wind Beaufort 1, dry

The static detector was placed within the loft of the building for nine consecutive nights overlapping with the dawn bat emergence update bat survey. The static detector did not record any bat calls during the time it was deployed therefore, it is considered likely that no bats were flying or roosting within the loft space during this time.

5 Discussion

A third party undertook a preliminary roost assessment of the building during early 2018 and identified a small number of bat droppings in the roof space of the building. Detail of the survey was held from the client and therefore Ecology by Design were commissioned to complete the work. A full emergence survey was recommended which was undertaken during June, July and August 2018 which did not identify any evidence of bats emerging or re-entering the building. The preliminary roost assessment was repeated during September 2018 which identified two very old and deteriorated bat droppings in the loft space but no other evidence of bats. It is considered that these droppings have either been transported into the roof space on stored materials or are the result of an exploratory bat in the past, there is no evidence of roosting.

The update preliminary roost assessment in June 2020 concluded that the site conditions were largely the same as those previously recorded with a few additional missing tiles and the removal of the veranda. Approximately 10 old bat droppings were found scattered throughout the loft space. A dawn re-entry survey was completed in June 2020 during which no bats were recorded roosting within the building and relatively high common pipistrelle activity was recorded within the site. A static bat detector was installed within the loft space for nine nights during which time no bat calls were detected within the loft space. The site is considered to be of value to common bat species at district, local or parish level for commuting and foraging (Wray *et al.*, 2010. See Appendix 4 for details).

Bats do not pose a constraint in relation to the proposed roof repairs and modifications.

6 Recommendations and Enhancements

6.1 Site Design

6.1.1 Sensitive use of lighting

Increased levels of artificial light can cause disturbance to bats. Though several bat species can take advantage of artificial lighting systems for foraging, feeding off the insects they attract (including the pipistrelle species recorded within the site), other species avoid them as foraging within an illuminated area increases the risk of predation by nocturnal birds of prey or even domestic cats. If lighting is intensive and widespread, particularly lighting from lamps, which emit UV light (such as mercury vapour); it can deter some bats from utilising the site and in some instances, can act as a barrier across commuting lines. Research has also shown that certain types of artificial lighting (namely mercury vapour lamps) have been proven to disturb the emergence patterns of bats when they are placed within the vicinity of entrances to a bat roost.

Any additional lighting or alterations to existing lighting within site will be designed sensitively. Only the minimum light levels required to meet health and safety standards will be used within the site. The lighting plan should avoid any light spill towards adjacent on-site trees.

6.1.2 Construction materials

The roof repairs will be completed using traditional sarking or Bitumen 1F roofing felt rather than a modern / breathable roofing membrane to ensure it is safe for bats.

6.2 Site enhancement

To satisfy the local plan policy which seeks a net gain for biodiversity, we recommend that the proposed roofing work includes an enhancement for crevice-dwelling bats such as pipistrelles. Six bat access tiles should be installed to replace some of the broken or slipped tiles across the roof (Appendix 5).

7 Legislation and Policy

7.1 Bats

Bats and their roost sites are protected by UK and European legislation. The Wildlife and Countryside Act 1981 (as amended) makes it an offence to:

- Intentionally or recklessly disturb a bat while it is occupying a structure or place which it uses for that purpose.

Additionally, the Conservation of Habitats and Species Regulations 2017 make it an offence to:

- Deliberately capture or kill a bat;
- Deliberately disturb a bat;
- Damage or destroy a breeding site or a resting place of a bat; and
- Keep, transport, sell or exchange or offer for sale or exchange alive or dead bat or any part of a bat.

7.2 National Planning Policy Framework

Paragraph 174 of the National Planning Policy Framework (MHCLG, 2019) states that to protect and enhance biodiversity, development plans should:

- *“promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity”.*

When determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the following principles (paragraph 175):

- Development whose primary objective is to conserve or enhance biodiversity should be supported; and
- Opportunities to incorporate biodiversity in and around developments should be encouraged.

7.3 Local Planning Policy

The Reading Borough Local Plan, created by Reading Borough Council, was adopted in November 2019 and contains the following relevant policy.

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.

In exceptional circumstances where the need for development clearly outweighs the need to protect the value of the site, and it is demonstrated that the impacts cannot be: 1) avoided; 2) mitigated or; 3) compensated for on-site; then new development will provide off-site compensation to ensure that there is “no net loss” of biodiversity. Provision of off-site compensation shall be calculated in accordance with nationally or locally recognised guidance and metrics. It should not replace existing alternative habitats, and should be provided prior to development.

8 References

Collins, J. (ed.) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)*. The Bat Conservation Trust, London.

MHCLG (2019) *National Planning Policy Framework*. Ministry of Housing Communities and Local Government.

Wray, S., Wells, D., Long, E. and Mitchell-Jones, T. (2010) *Valuing bats in Ecological Impacts Assessment*. In Practice 70, 23-26.

Reading Borough Council (2019) *Reading Borough Local Plan; Adopted November 2019*.

Appendix 1 – 2018 Photographs



Photo 1 – Western end of northern elevation



Photo 2 – Eastern end of northern elevation



Photo 3- Central area of northern elevation



Photo 4 – Eastern end of southern elevation



Photo 5: Western end of southern elevation



Photo 6: Eastern elevation



Photo 7: Western elevation



Photo 8: Various gaps under ridge tiles



Photo 9: Various gaps under the eaves



Photo 10: Many broken/ slipped tiles



Photo 11: Inside sarked section of loft



Photo 12: Inside felt lined section of loft



Photo 13: 3 very old bat droppings in loft

Appendix 2 – 2020 Photographs



Photo 14 – Western end of northern elevation



Photo 15 – Southern elevation



Photo 16 - Missing tiles on central section of southern elevation



Photo 17 – Missing tiles on east section of southern elevation

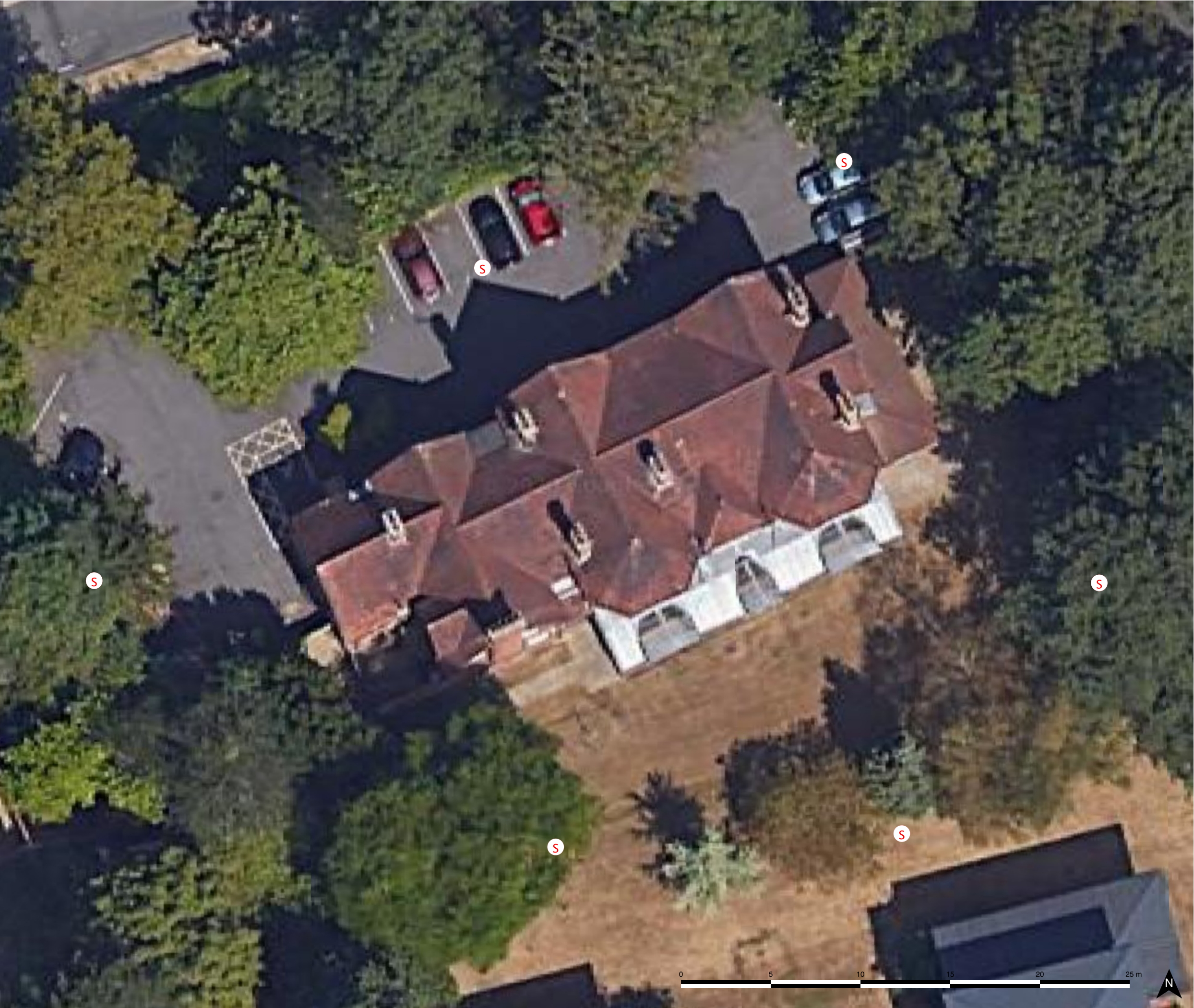


Photo 18: Hole in felt within loft exposing tiles



Photo 19: Interior of loft space

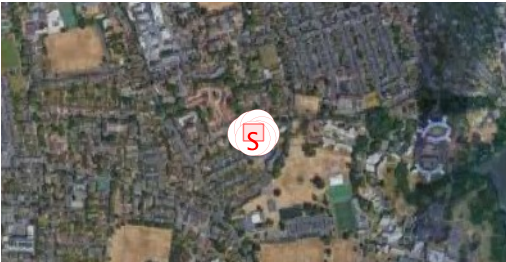
Appendix 3 – Survey Plan



LEGEND

Surveyors

Location (1:25000):



Project:
35 Upper Redlands
Client:
University of Reading
Drawing Title:
Bat Survey Plan

Drawing No.:	Scale (@A3):
EBD_0540_DR001	1:202
Central Grid Ref.:	Date Drawn:
SU 72872 72317	25/06/2020
Drawn by:	Approved by:
EB	BG

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Appendix 4 – Site/ Species Value

Table 4. Categorising bats by distribution and rarity

Rarity within range	England
Rarest (popn. Under 10,000)	Greater horseshoe (<i>Rhinolophus ferrumequinum</i>) Bechstein's (<i>Myotis bechsteinii</i>) Alcathoe (<i>Myotis alcathoe</i>) Greater mouse-eared (<i>Myotis myotis</i>) Barbastelle (<i>Barbastella barbastellus</i>) Grey long-eared (<i>Plecotus austriacus</i>)
Rarer (popn. 10,000 – 100,000)	Lesser horseshoe (<i>Rhinolophus hipposideros</i>) Whiskered (<i>Myotis mystacinus</i>) Brandt's (<i>Myotis brandtii</i>) Daubenton's (<i>Myotis daubentonii</i>) Natterer's (<i>Myotis nattereri</i>) Leisler's (<i>Nyctalus leisleri</i>) Noctule (<i>Nyctalus noctula</i>) Nathusius' pipistrelle (<i>Pipistrellus nathusii</i>) Serotine (<i>Eptesicus serotinus</i>)
Common (popn. Over 100,000)	Common pipistrelle (<i>Pipistrellus pipistrellus</i>) Soprano pipistrelle (<i>Pipistrellus pygmaeus</i>) Brown long-eared (<i>Plecotus auritus</i>)

Table 5. Valuing commuting routes

Species	Number of bats	Roosts/potential roosts nearby	Type and complexity of linear features
Common (2)	Individual bats (5)	None (1)	Absence of (other) linear features (1)
-	-	Small number (3)	Unvegetated fences and large field sizes (2)
Rarer (5)	Small number of bats (10)	Moderate number/Not known (4)	Walls, gappy or flailed hedgerows, isolated well-grown hedgerows, and moderate field sizes (3)
-	-	Large number of roosts, or close to a SSSI for the species (5)	Well-grown and well-connected hedgerows, small field sizes (4)
Rarest (20)	Large number of bats (20)	Close to or within a SAC for the species (20)	Complex network of mature well-established hedgerows, small fields and rivers/streams (5)

Table 6. Valuing foraging areas

Species	Number of bats	Roosts/potential roosts nearby	Foraging habitat characteristics
Common (2)	Individual bats (5)	None (1)	Industrial or other site without established vegetation (1)
-	-	Small number (3)	Suburban areas or intensive arable land (2)
Rarer (5)	Small number of bats (10)	Moderate number/Not known (4)	Isolated woodland patches, less intensive arable and/or small towns and villages (3)
-	-	Large number of roosts, or close to a SSSI for the species (5)	Larger or connected woodland blocks, mixed agriculture, and small villages/hamlets (4)
Rarest (20)	Large number of bats (20)	Close to or within a SAC for the species (20)	Mosaic of pasture, woodlands and wetland areas (5)

Table 7. Scoring system for valuing commuting and foraging bats

Geographic frame of reference	Score
International	>50
National	41 - 50
Regional	31 - 40
County	21 - 30
District, local or parish	11 - 20
Not important	1 - 10

Appendix 5 – Proposed Enhancement

Products	Description
	An example of an access tile for bats. Available from; https://www.nhbs.com/bat-access-tile-set