Bat Roost Assessment Report Land to the rear of Newcastle Road

Brett Property Lettings Ltd

Ecus Ltd.
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Business Village
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September 2022

Ecus Ltd

Report to:	**Brett Property Lettings Ltd**
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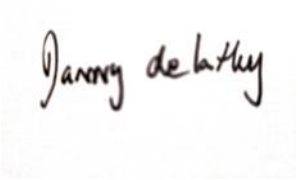

Principal Ecologist **Date: 03 August 2022**

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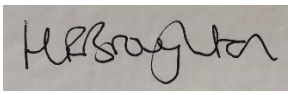

Regional Manager **Date: 20 September 2022**

Version	Author	Description	Date
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0.4	Hannah Broughton	Approver review	20/09/2022
1.0		Issued to client	20/09/2022

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Summary

Ecus Limited (Ecus) was commissioned by Brett Property Lettings Ltd to undertake a Bat Roost Assessment and later Bat Emergence Surveys on two buildings (B1 and B2) at 19 Newcastle Road, Reading, RG2 7TN, hereafter referred to as 'the Site'. The Site is centred on National Grid Reference (NGR): SU 72315 71674 and is displayed on **Figure 1**.

The PBRA was required to inform the proposed demolition of the buildings and subsequent construction of nine dwellings with associated landscaping and parking within the footprint.

A visual inspection of the exterior of the buildings within the Site was undertaken on 20th May 2022 by Consultant Ecologist Sinead McCarthy (ACIEEM) in accordance with the recommended building survey protocol (Collins, 2016).

No internal access was undertaken as no loft voids were present on either of the two buildings.

No evidence of roosting bats was recorded during the external building inspection of B1; however, due to the number of Potential Roost Features (PRFs) present within the external aspects of the property, the potential overall for roosting bats was assessed as **Moderate**.
B2 was assessed as displaying **Low** suitability for roosting bats given that only a few potential roost features in the form of gaps underneath the soffit were identified.

It was recommended that two further surveys are undertaken on B1 and one further survey undertaken on B2 to determine the presence or likely absence of bats. The results of the nocturnal survey would inform the requirement for any mitigation, compensation or enhancement measures to facilitate the demolition of the buildings on the Site.

The recommended nocturnal surveys were completed in August 2022. No emergences were recorded on the 2nd August or 18th August 2022.

Common pipistrelle *Pipistrellus pipistrellus,* soprano pipistrelle *Pipistrellus pygmaeus* and noctule *Nyctalus noctula* were heard and seen within the vicinity of the Site.

As no bats have been identified roosting within the structures, it is considered that the proposed works are unlikely to have any impact on roosting bats.

It is recommended that where lighting is required during the works, a sensitive lighting strategy should be implemented.

Bat roosting opportunities and bird boxes should be incorporated into the proposed development to mitigate the loss of habitat.

Should bats be encountered at any point during the works, then work must stop immediately and an experienced bat ecologist contacted for further advice. The results, conclusions and recommendations contained within this report are considered valid for 12 months from the date of

survey.

1. Introduction

1.1 Background

1.1.1 Ecus Limited (Ecus) was commissioned by Brett Property Letting Ltd to undertake a Bat Roost Assessment for 19 Newcastle Road, Reading, RG2 7TN, hereafter referred to as 'the Site'. The Site is centred on National Grid Reference (NGR): SU 72315 71674 and is displayed on **Figure 1**.

1.1.2 The PBRA was required to inform the proposed demolition of the buildings and subsequent construction of nine dwellings with associated landscaping and parking within the footprint.

1.1.3 The property was considered to offer potential for roosting bats, therefore it was recommended nocturnal bat surveys were carried out in accordance with Bat Conservation Trust guidelines (Collins, 2016).

1.1.4 This report details the findings of a desk based data consultation and a PBRA undertaken for the Site.

1.2 Site Description

1.2.1 The Site comprised of two buildings, the main property 19 Newcastle Road (B1) and a small outhouse (B2). Both buildings were occupied at the time of the survey.

1.2.2 B1 was a two-storey, brick built building with extensions. The original build had a pitched tiled roof, containing hanging tiles whilst the newer extensions consist of flat bitumen roofing felt. uPVC double glazed windows were located across all aspects of the building and uPVC doors were located on the northern and western aspects of the building. This building also featured timber weatherboarding.

1.2.3 The outhouse located north of the main property was a single-storey converted garage, made up of red brick walls and a pitched tiled roof. The windows and doors on this building were uPVC double glazed.

1.2.4 All aspects of both buildings were surrounded by a mixture of rendered and plastic fascia with plastic soffits.

1.2.5 The Site is situated within the urban town of Reading. A large area consisting of allotments is located towards the east of the Site. Cintra Park, a flat, open parkland with a variety of recreational facilities is located north of the Site.

2. Methodology

2.1 Data Consultation

2.1.1 A desk based data consultation for existing records of bat species within a 2 km radius of the Site was undertaken with the Thames Valley Environmental Records Centre (TVERC) in July 2022.

2.1.2 The Multi-Agency Geographic Information for the Countryside (MAGIC) website (www.magic.defra.gov.uk) was consulted by Ecus Ltd for previously granted European Protected Species (EPS) mitigation licences for bats within a 2 km radius of the Site.

2.1.3 Information obtained from the data consultation is summarised within the report as appropriate.

2.2 Preliminary Bat Roost Assessment

2.2.1 A visual inspection of the exterior of the buildings was undertaken on 20th July 2022 by Consultant Ecologist Sinead McCarthy (ACIEEM) assisted by Nicole Bell MSc BSc (Hons) in accordance with the recommended building survey protocol and CIEEM (Collins, 2016).

2.2.2 Weather conditions and visibility were considered to be suitable for the purpose of the survey (temperature = 23 °C, wind = Beaufort 2, cloud = 100% cover, precipitation = none).

2.2.3 The building inspection included an examination of the exterior for features which may provide roosting opportunities for bats, such as gaps in brickwork and lead flashing or missing mortar. Where present, potential bat access points were noted, and potential roost features (PRFs) were inspected more closely. Any evidence of roosting bats, including live or dead bats, staining from fur oils, urine, or droppings were recorded. It should be noted that where no evidence of roosting bats is found, it does not confirm absence of bats within a building.

2.3 Bat presence / likely absence surveys

2.3.1 Bat presence / likely absence surveys were undertaken based upon the Bat Conservation Trust's Bat Survey for Professional Ecologists – Good Practice Guidelines (Collins, 2016).

2.3.2 Bat presence / likely absence surveys can aid a visual inspection of a structure by confirming whether bats are using a feature, including access and egress points and they may also identify bat activity in areas which were not available for inspection during the initial survey.

2.3.3 This method also allows recordings of bat echolocation calls for species identification, to help determine the use and importance of a roost if present.

2.3.4 The surveyors were situated so as to ensure that all relevant aspects of the structure were observed at all times, particularly those areas that had the highest potential to be used by bats and / or where evidence of bat use was found.

2.3.5 Dusk emergence surveys commence 15 minutes prior to sunset and continue for at least 1.5 hours after sunset.

2.3.6 Bat activity, including passes, foraging, roosting locations and species type were recorded during each survey, along with other incidental bat activity observed.

2.3.7 The surveyors used Echo Meter Touch Pros to listen for, and record, bat calls.

2.3.8 Two dusk emergence surveys were undertaken, after the buildings were evaluated as having 'medium' and 'low' potential to be used by roosting bats.

2.3.9 Survey details including dates and weather conditions are shown in **Table 1** below.

Table 1 Dusk emergence survey details

Date / time / surveyors	Air temperature	Weather conditions
• 2 August 2022 • 20:35 – 22:20 (sunset 20:50) • Claire Evans, Molly Mills, Nicole Bell, Esme Langford, Mitchell Prescott and Harriet Wishart	• 23ºC	• 0% Cloud Cover; • Wind – Beaufort 4; • No precipitation
• 18 August 2022 • 20:06 – 21:51 (sunset 20:21) • Molly Mills, Nicole Bell, Esme Langford, Mitchell Prescott, Isabel Soane and Penny Taganyi-Airs	• 21ºC	• 100% Cloud Cover; • Wind – Beaufort 3; • No precipitation

2.4 Survey limitations

2.4.1 An internal inspection of the buildings on Site were unable to be carried out, as both were occupied at the time of the survey and access had not been granted by the tenants. This is not considered to be a significant limitation as signs of bat presence will be able to be determined during emergence/ re-entry surveys. Neither of the two buildings contained a loft void.

2.4.2 During the second dusk emergence survey, the bat detector in use by Surveyor EL (See **Figures 2-3** for surveyor locations) failed to record for the whole duration of the survey. During this time the surveyor did not see any bats but heard a single bat briefly. The same bat was recorded by Surveyor MP. It is considered that this limitation did not significantly impact the validity of the survey findings, given that no emergences were seen during this time.

3. Results

3.1 Data Consultation

TVERC

3.1.1 TVERC returned 626 records of 12 bat species present within 2 km of the Site. These include brown long-eared bat *Plecotus auritus*, common pipistrelle, Daubenton's bat *Myotis daubentonii*, Nathusius's pipistrelle *Pipistrellus nathusii*, Natterer's bat *Myotis nattereri*, noctule bat, serotine *Eptesicus serotinus*, soprano pipistrelle, unidentified long-eared bat species *Plecotus spp*., unidentified myotis bat species *Myotis spp*., unidentified nyctalus bat species *Nyctalus spp.* and unidentified pipistrelle bat species *Pipistrellus spp*. The closest record pertained to common pipistrelle located 281 m east of the Site in 2016.

3.1.2 One confirmed soprano pipistrelle roost was identified 1.86 km east of the Site in 2014. A potential roost pertaining to common pipistrelle was also identified 1.76 km south west of the Site in 2013.

MAGIC

3.1.3 MAGIC maps returned records for 12 EPS Mitigation Licences for bats within 2 km of the Site. Details of these licences are provided in Table 2.

Table 2 Granted European Protected Species Mitigation Licences for bats within 2 km of the site

Licence Reference Number	Licence Dates	Licence Details	Distance from site
2014-3941-EPS-MIT	21/10/2014 - 30/11/2019	Licence to allow the damage and destruction of a resting place for common pipistrelle and soprano pipistrelle.	0.7 km north east
2014-3941-EPS-MIT-1	17/12/2014 - 30/09/2019	Licence to allow the damage and destruction of a resting place for common pipistrelle and soprano pipistrelle.	0.7 km north east
2014-3941-EPS-MIT-2	26/01/2015 - 30/09/2019	Licence to allow the	0.7 km north east

		damage and destruction of a resting place for common pipistrelle and soprano pipistrelle.	
2016-22301-EPS-MIT	21/04/2016 - 20/04/2021	Licence to allow the damage and destruction of a resting place for common pipistrelle.	1.2 km north
EPSM2010-2126	02/09/2010 - 31/08/2012	Licence to allow the destruction of a resting place for common pipistrelle.	1.2 km north east
EPSM2010-2266	01/09/2010 - 28/02/2011	Licence to allow the destruction of a breeding site and destruction of a resting place for common pipistrelle and brown long-eared bat.	1.2 km east
2019-44194-EPS-MIT	01/02/2020 - 31/03/2020	Licence to allow the destruction of a resting place for common pipistrelle and soprano pipistrelle.	1.7 km north
EPSM2012-4478	03/09/2012 - 30/09/2016	Licence to allow the destruction of a resting place for common pipistrelle and soprano pipistrelle.	1.7 km north east
2014-500-EPS-MIT	29/04/2014 - 30/09/2016	Licence reason unknown. Regards common pipistrelle and soprano pipistrelle.	1.7 km north east
2017-32379-EPS-MIT	04/12/2017 - 29/11/2022	Licence to allow the	1.7 km north west

		damage and destruction of a resting place for common pipistrelle.	
2015-14868-EPS-MIT	10/12/2015 - 30/11/2018	Licence to allow the destruction of a resting place for brown long-eared bat and common pipistrelle.	2 km south west
EPSM2013-6388	07/10/2013 - 30/11/2018	Licence to allow the destruction of a resting place for brown long-eared bat and common pipistrelle.	2 km south west

3.1.4 One European Protected Species Mitigation Licence pertaining to common pipistrelle was recorded within the last year, within 2 km of the property. There is potential for this species to utilise the proposed development for roosting.

3.2 Bat External Inspection

3.2.1 No evidence of roosting bats was recorded during the external inspection; however, numerous access points and roosting opportunities were observed. **Table 3** below provides details of the features identified. A reference number was allocated to each feature, this number corresponds to the feature's location on the Building Inspection Results Plan provided as **Appendix 1**.

Table 3: External Building Inspection Results

Building	PRFs Present	Map Reference (See Appendix 1)	Suitability for Roosting Bats
B1	Gaps in brick tiles	1,2	Moderate
	Gaps in lead flashing	3	
	Gaps underneath soffit	4,5,7,8	

	Missing mortar on ridge	6	
	Gap in brickwork	9	
B2	Gaps underneath soffit.	10,11	Low

3.2.7 No incidental observations of nesting birds were identified during the external inspection of the buildings. Guttering may provide opportunities for nesting house sparrows and starlings.

3.3 Bat Emergence Survey Results

3.3.1 Full details of the findings from the nocturnal surveys are presented as **Appendix 2**. Bat activity recorded during the surveys is summarised below.

Dusk emergence survey 2nd August 2022

3.3.2 No emergences were recorded from either of the buildings during the survey.

3.3.3 Moderate levels of bat activity were recorded during the dusk emergence survey. The first bat was recorded at 21:17 hrs (27 minutes after sunset) and was a common pipistrelle bat which was heard and not seen by the surveyor. Multiple commuting common pipistrelle and noctule bats were heard not seen by the surveyors throughout the duration of the surveys.

3.3.4 Soprano pipistrelle were recorded flying west-south west past B2, once at 21:25 and then at 21:32. A common pipistrelle was also seen passing west over B2 at 21:36.

3.3.5 The last recording pertained to a Noctule which was heard not seen at 21:56.

3.3.6 See **Figure 2** for surveyor locations and bat activity.

Dusk emergence survey 18th August 2022

3.3.7 No emergences were recorded from either of the buildings during the survey.

3.3.8 Low activity of common pipistrelle and noctule bats were recorded during the survey. The first bat was recorded at 20:40 hrs (19 minutes after sunset) and was a common pipistrelle bat which was heard and not seen by the surveyor.

3.3.9 Three observed common pipistrelle bat passes were recorded during the survey. These pertained to two bats commuting north, adjacent to the Site at 20:41 and 20:54 and a third individual commuting west over the top of B2.

3.3.10 See **Figure 3** for surveyor locations.

4. Ecological evaluation and enhancement opportunities

4.1 Proposals

4.1.1 The proposed works will include the demolition of 19 Newcastle Road to allow for the construction of nine dwellings with associated landscaping and parking located at the rear of 17-29 Newcastle Road.

4.2 Legislation

4.2.1 All species of bat occurring within the UK are included in Schedule 2 of the Conservation of Habitats and Species Regulations (2017, as amended). Under Regulation 43, bats are protected from deliberate capture, injury or killing, from deliberate disturbance and from damage or destruction of a breeding site or resting place (roost).

4.2.2 All UK bats are also included on Schedule 5 of the Wildlife and Countryside Act (1981, as amended). It is an offence to intentionally or recklessly disturb bats while they are occupying a structure or place used for shelter or protection, or to obstruct access to any such place.

4.2.3 Barbastelle *Barbastella barbastellus*, Bechstein's *Myotis bechsteinii*, brown long-eared bat *Plecotus auritus*, greater horseshoe *Rhinolophus ferrumequinum*, lesser horseshoe *Rhinolophus hipposideros*, noctule *Nyctalus noctula* and soprano pipistrelle *Pipistrellus pygmaeus* are included as priority species under Section 41 of the NERC Act 2006.

4.3 Assessment and Recommendations

4.3.1 Building B1 was assessed as displaying moderate suitability for roosting bats, whilst Building B2 was assessed as displaying low suitability for roosting bats. The desk study data provided by TVERC demonstrates that bat activity has been recorded close to the Site, therefore bats may use the Site and may use PRFs within the buildings where present.

4.3.2 In accordance with good practice guidelines (Collins, 2016) and accounting for the legal protection afforded to all bats and their roosts, any works which may directly or indirectly impact PRFs should not proceed until further nocturnal surveys have been undertaken to determine the presence or likely absence of roosting bats and an appropriate licencing and bat mitigation strategy devised, where required.

4.3.3 During the PBRA, B1 was classed as having **medium** bat roost potential whilst B2 was classed as having **low** bat roost potential. As a result two further surveys were carried out on B1. As there was moderate activity recorded around B2, two surveys were also carried out on this building.

4.3.4 As no bats have been identified roosting within the structures and no emergences were recorded on either the 2nd or 18th of August, it is considered that the proposed works are unlikely to have any impact on roosting or foraging bats.

4.3.5 Artificial lighting is known to affect bat roosting and foraging behaviour. Therefore it is recommended that works should be conducted under a scheme of bat sensitive lighting (See **Appendix 3**).

4.3.6 As a general enhancement for roosting bats, it is recommended that long term bat roosting opportunities are incorporated in the new development. This should include at least a single bat box on each of the newly built properties at the Site (at least nine boxes in total). Integral bat boxes such as the Schwegler 1FR Bat Tube or external boxes such as the Schwegler 2F Bat Box (or similar products) are recommended to be located beneath the eaves (at least 4 m high).

4.3.7 All boxes should be situated so that they are avoiding bright light spill, i.e. security lights, and be located on elevations which are south facing or towards foraging habitat.

4.3.8 Bird boxes should be integrated into the new development by being incorporated into the new dwellings walls and placed on any new trees planted on the Site.

4.3.9 Recommendations include general bird boxes with 26 mm and 32 mm entrance holes suitable for a range of garden bird species. The bird boxes should be placed at a minimum height of 3 m in a number of locations facing different aspects to maximise the chances of occupation, although full south aspects which receive full sun all day during the summer months present a risk of overheating and should therefore be avoided.

4.4 Survey validity

4.4.1 The information contained within this report is considered valid for a period of 12 months from the date of the survey.

4.4.2 If the works have not been completed by August 2023, it is recommended that the Site is re-surveyed to determine if there have been any changes to the status of bats on the Site.

5. References

BCT (2018) Bats and Lighting in the UK. Bat Conservation Trust.

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Rowse, E.G., Lewanzik, D., Stone, E.L., Harris, S. and Jones, G., 2016. Dark matters: the effects of artificial lighting on bats. In Bats in the Anthropocene: Conservation of bats in a changing world (pp. 187-213). Springer, Cham.

Figure 1: Preliminary Bat Roost Assessment Findings

Potential Roost Features
Buildings

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18762 Newcastle Road
Preliminary Bat Roost Assessment

Figure 1
Bat Roost Potential Map

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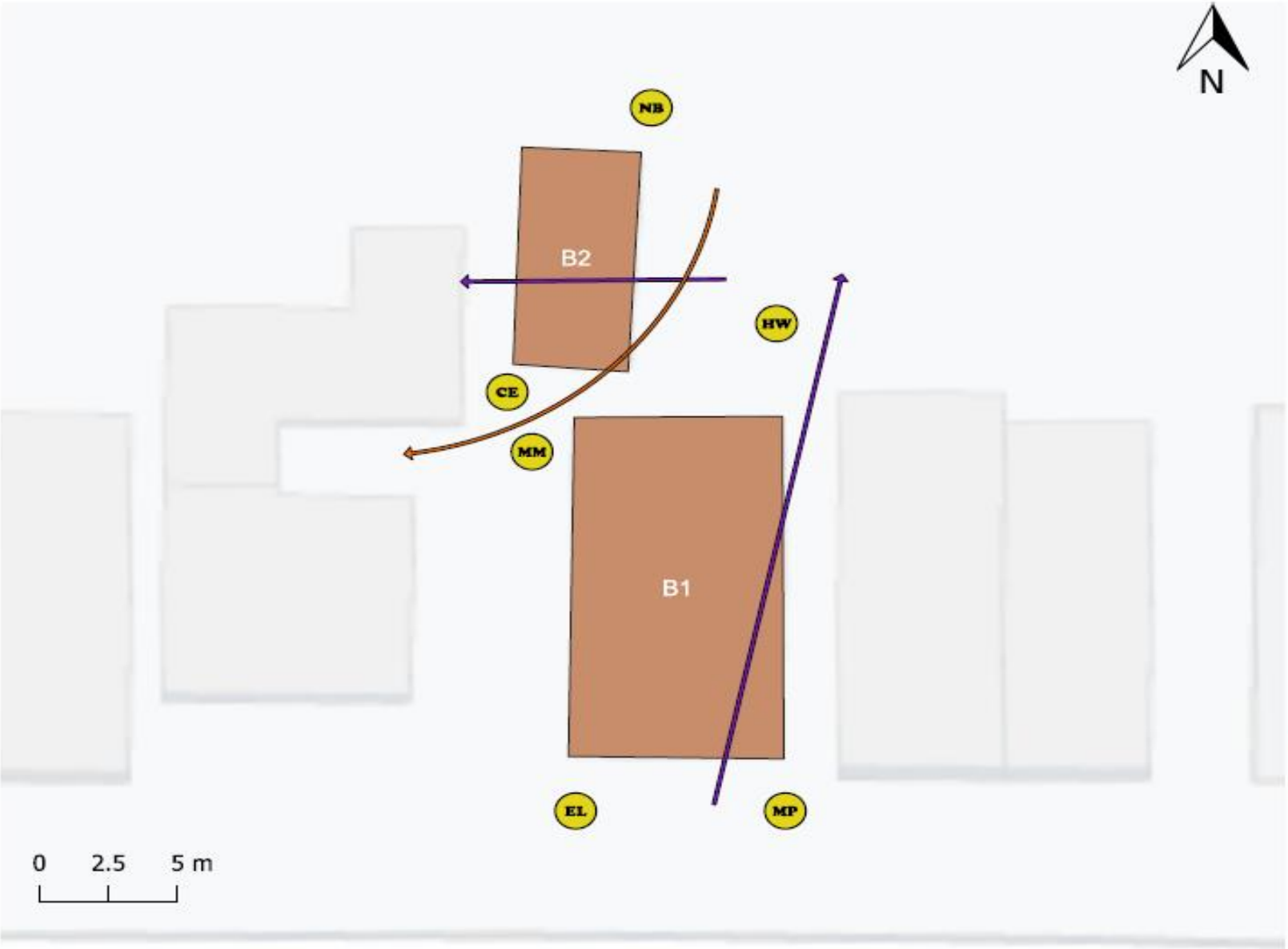
Figure 2: Dusk Emergence Survey 02 August 2022 Map



Surveyor Locations
Buildings

Bat Flight Lines
Common Pipistrelle
Soprano Pipistrelle

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18762 Newcastle Road
Phase 2 Bat Survey

Figure 1
Phase 2 Bat Survey Results
02/08/22

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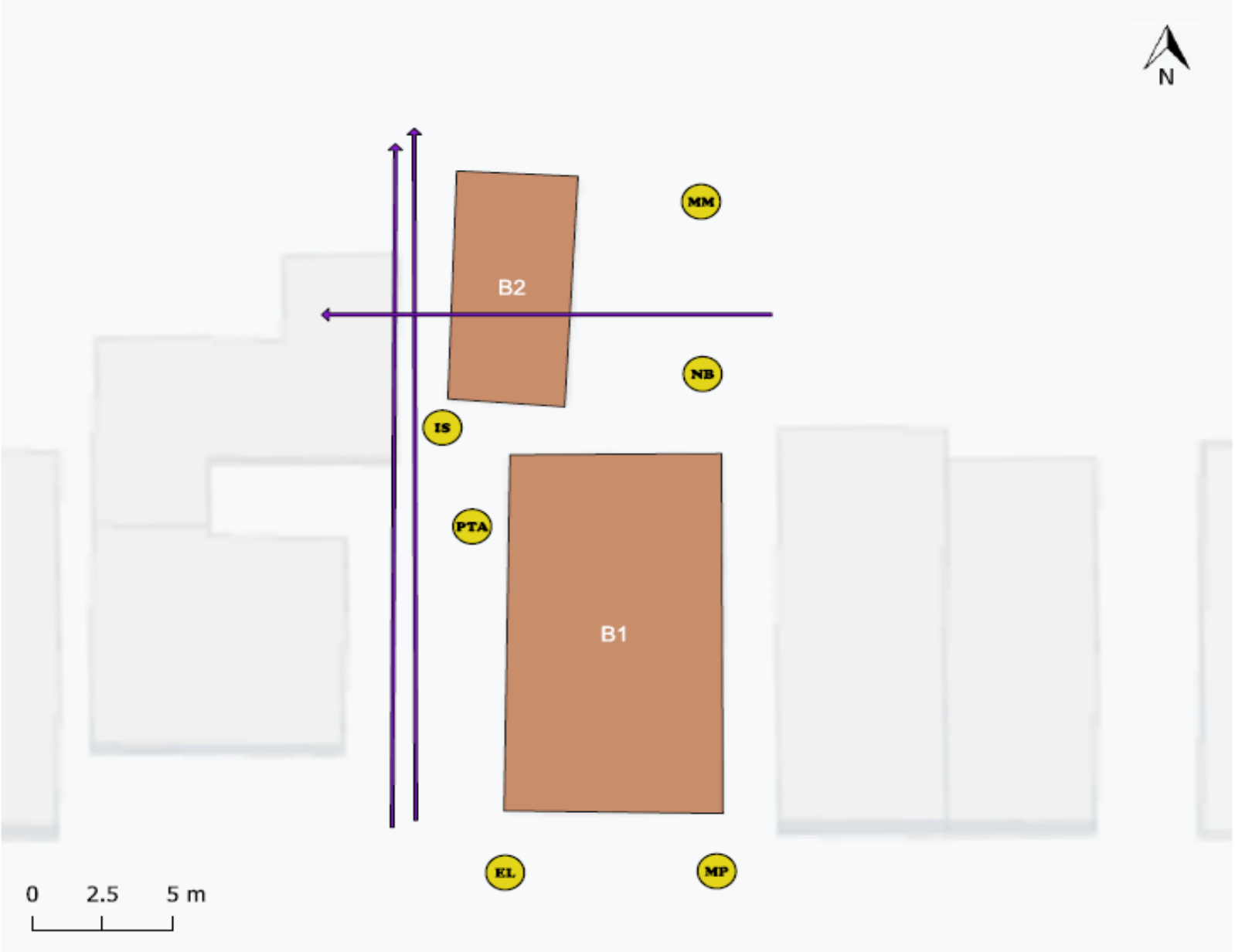
Figure 3: Dusk Emergence Survey 18 August 2022 Map



Surveyor Locations
Buildings

Bat Flight Lines
Common Pipistrelle

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Phase 2 Bat Survey

Figure 2
Phase 2 Bat Survey Results 18/08/2022

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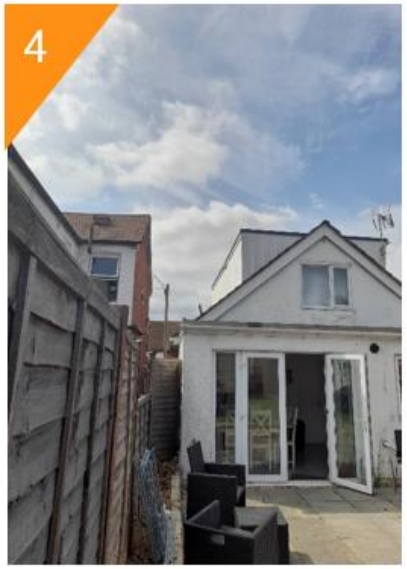
Appendix 1: Site photographs

Plate 1	Southern aspect of Building 1
Plate 2	Northern aspect of Building 1
Plate 3	Western aspect of Building 1
Plate 4	Eastern aspect of Building 1, unable to attain clear view.



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Site Photographs

July 2022

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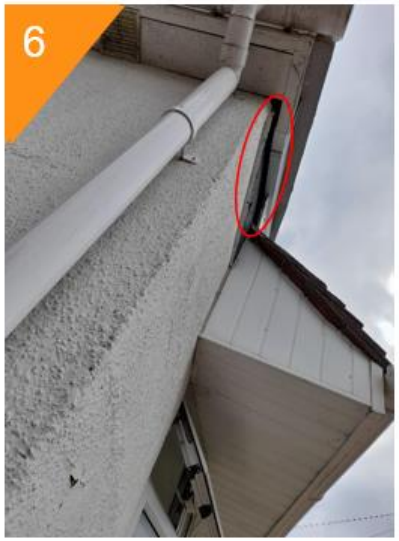

Plate 1	Gap in lead flashing
Plate 2	Gap underneath soffit
Plate 3	Gaps in roof tiles of building 1
Plate 4	Gap underneath soffit

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Land to the Rear of Newcastle Road,
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Site Photographs

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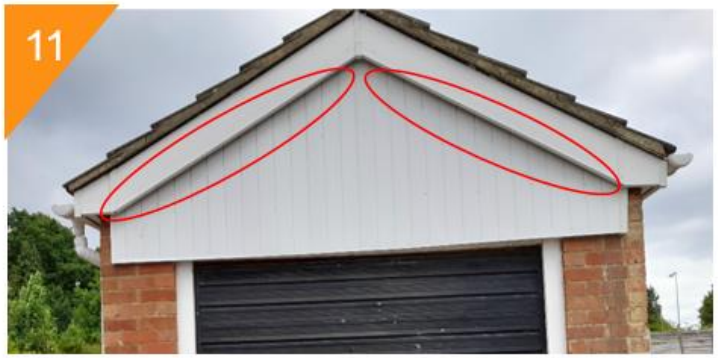

Plate 1	Southern aspect of Building 2
Plate 2	Eastern aspect of Building 2
Plate 3	Gaps underneath soffit of Building 2
Plate 4	View of Building 1 and adjacent buildings

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Land to the Rear of Newcastle Road, Reading, RG2 7TN

Site Photographs

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Appendix 2: Survey Results

Table 1 Results from the dusk emergence survey on 20 August 2022

Time (h)	Surveyor Initials (Location)	Species	Activity	Notes
21:17	CE, MM, HW, NB	Soprano pipistrelle	Commuting	Hearn not seen, very faint
21:21	MP, EL	Common pipistrelle	Commuting	Heard not seen
21:22	NB	Noctule	Commuting	Very brief, check sound analysis
21:24	CE, MM, MP, EL, NB	Noctule	Commuting	Heard not seen, two passes. Heard until 21:25
21:25	CE, MM, HW	Soprano pipistrelle	Commuting	Seen flying south west past garage
21:27	CE, MP, EL, HW	Common pipistrelle	Commuting	Heard not seen. MP saw bat fly north from behind him. HW saw same bat foraging in neighbours' garden.
21:30	MP	Common pipistrelle	Commuting	Heard not seen
21:32	CE, MM, HW	Soprano pipistrelle	Commuting	Flew past garage
21:33	CE, MM, HW	Common pipistrelle	Commuting	Heard not seen
21:36	CE, MM, HW, NB	Common pipistrelle	Pass	MM saw flying west over garage
21:41	MM	Noctule	Commuting & Foraging	Heard not seen, foraging sounds heard
21:43	CE, MP, EL, NB	Noctule	Pass	Heard not seen, three passes, loud
21:56	CE, MM, MP, EL	Noctule	Pass	Heard not seen loud, three passes

Table 2 Results from the dusk emergence survey on 18 August 2022

Time (h)	Surveyor Initials (Location)	Species	Activity	Notes
20:40	MP, EL	Common pipistrelle	Commuting	Heard not seen
20:41	MM, NB, IS, PT	Common pipistrelle	Commuting	Flying northwards over neighbours house

Time (h)	Surveyor Initials (Location)	Species	Activity	Notes
20:54	MM, NB, IS, PT	Common pipistrelle	Commuting	Flying northwards over neighbours house
21:00	NB	Noctule	Commuting	Brief
21:01	MP, IS, PT	Noctule	Commuting	Potentially same individual heard by NB
21:14	MM	Common pipistrelle	Commuting	Heard not seen – very brief and quiet
21:15	IS, PT	Common pipistrelle	Commuting	Heard not seen. Potentially same individual seen by MM and NB at 22:16
21:16	MM, NB	Common pipistrelle	Commuting	Flew westwards between MM and NB and over garage building

6. Appendix 3: Artificial Lighting Strategy

Bats and Lighting

- Artificial lighting is known to affect bat roosting and foraging behaviour in a range of impacts including roost desertion (BCT, 2018), increased risk of predation (Rowse et al., 2016), delayed emergence of roosting bats (Downs et al., 2003), increased activity of some bat species and decreased activity by others (Stone et al., 2012).
- Studies have shown these changes to bat behaviour, examining existing street lighting and the differences in foraging behaviour exhibited by fast-flying and slow-flying bat species. An experimental approach using LED units, demonstrated that relatively fast-flying bat species, including common pipistrelle, showed no significant impacts as a result of new artificial lighting, even when lighting was set at relatively high levels close to 50 lux. In contrast slow flying bats, including myotid bats (Myotis spp.) showed sharp reductions in presence, even at low light levels of 3.6 lux (Stone et al., 2012). The avoidance of light sources seen mainly in slow-flying bat species can be partly attributed to the increased risk of predation (Rowse et al., 2016). Current recommendations for all bat species specifies that no bat roost should be directly illuminated (BCT 2018).

Mitigation and Lighting design

- Bat friendly lighting plans should firstly look to avoid lighting where possible and minimise lighting impacts by adopting the following measures:
- Consider no lighting where possible. There is no legal requirement for an area or road to be lit and lighting on key habitats and features should be avoided altogether. Where lighting may be needed for safety of users consider options such as white lining, good signage and LED cats eyes, should be considered as preferable, especially within Zones 1 and 2. Reflective fittings may help make use of headlights to provide any necessary illumination in some areas.
- Creation of dark buffers. Separation of habitats or features important to bats from artificial illumination by creation of a dark perimeter. Subdivision of the area to be developed into main core development, transition area, buffer zone and key habitat zones with site will aid in the creation of this dark buffer. Walls, fences and hard surface landscaping can be used to create divisions in buffer zones and minimise spread of light between them.
- Use only warm white LED lamps where possible. Warm white LED lamps emit lower proportions of insect attracting UV light than compact fluorescent, metal halide lamps and white LED lighting. Lamps with a warm white spectrum less than 2700 Kelvin and that feature peak wavelengths greater than 550nm (Stone et al., 2012) are recommended (BCT, 2018).
- Considerate planning of lighting and building positions. Larger buildings to be considered for the interior of sites away from key features to minimise light spill. Recommended that key habitats and features should be located within unlit public open spaces where possible (BCT, 2018) to prevent delay in emergence and impacts

upon foraging behaviour.

- Consider the height of the lighting column. Whilst downward facing bollard lighting is often preferable, it should be noted that a lower mounting height does not automatically reduce impacts to bats as bollard lighting can often be designed to provide up-lighting. Where bollard lighting is considered to be the most appropriate system, bollard spacing or unit density should be kept to a minimum and units should be fitted with the appropriate hoods/deflectors to reduce up-lighting. Column height should be carefully considered to balance task and mitigation measures.
- Light curfews or use of PIR sensors. Lighting curfews may be employed to reduce artificial light during specific times of the night either by turning off or dimming the light source. The timings of the lighting curfew needs to be considered in relation to bat foraging behaviour during dusk and dawn to prevent delay of emergence and reduction in foraging. Lighting to be triggered by PIR sensors can be expected to be illuminated only when required and for a low proportion of the overall time.
- Minimise the spread of light. Light spread should be kept at or near horizontal in order to ensure that only the task area is lit. Flat cut-off lanterns or accessories should be used to shield or direct light to where it is required. Baffles, hoods, louvres and shields should be used where necessary to reduce light spill. Internal lights may be recessed to reduce glare and light spill, alternatively glazing treatments may be considered such as retrofit window films and factory-tinted glazing. These methods will aid in reducing light spill during key foraging times for bat populations (BCT, 2018).