



## Ecus Ltd


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**Report Title:** Roadchef Rownhams – Nocturnal Bat Survey Report

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## Contents

<b>EXECUTIVE SUMMARY</b> .....	<b>1</b>
<b>1. INTRODUCTION</b> .....	<b>2</b>
1.1 BACKGROUND.....	2
<b>2. METHODOLOGY</b> .....	<b>3</b>
2.1 NOCTURNAL BAT SURVEY .....	3
2.2 SURVEY LIMITATIONS .....	4
<b>3. FINDINGS AND EVALUATION</b> .....	<b>5</b>
3.1 BUILDING NOCTURNAL BAT SURVEYS .....	5
3.2 TREE NOCTURNAL BAT SURVEYS .....	5
<b>4. ASSESSMENT AND MITIGATION</b> .....	<b>7</b>
4.1 PROPOSALS.....	7
4.2 LEGISLATION.....	7
4.3 ASSESSMENT AND RECOMMENDATIONS .....	7
<b>5. REFERENCES</b> .....	<b>9</b>
<b>FIGURE 1: DUSK EMERGENCE SURVEY 29<sup>TH</sup> AUGUST 2023 MAP</b> .....	<b>10</b>
<b>FIGURE 2: DUSK EMERGENCE SURVEY 31<sup>ST</sup> AUGUST 2023 MAP</b> .....	<b>11</b>
<b>FIGURE 3: DUSK EMERGENCE SURVEY 18<sup>TH</sup> SEPTEMBER 2023 MAP</b> .....	<b>12</b>
<b>FIGURE 4: DUSK EMERGENCE SURVEY 19<sup>TH</sup> SEPTEMBER 2023 MAP</b> .....	<b>13</b>
<b>APPENDIX 1: SITE PHOTOGRAPHS</b> .....	<b>14</b>
<b>APPENDIX 2: SURVEY RESULTS</b> .....	<b>15</b>
<b>APPENDIX 3: ARTIFICIAL LIGHTING STRATEGY</b> .....	<b>18</b>

## Executive Summary

Ecus Limited (Ecus) was commissioned by Astrum Planning to undertake nocturnal bat surveys at Roadchef Rownhams, M27 Northbound, SO16 8AP, hereafter referred to as 'the Site'. The Site is centre on National Grid Reference (NGR): SU 38821 17830 and is displayed on **Figure 1**.

The proposals for the Site include an extension and works to the existing building and the creation of a new drive-through.

The requirement for nocturnal bat surveys was identified within the report: '21663 Roadchef Rownhams PEA v1.0', dated August 2023, produced by Ecus. The building and four trees on-Site were assessed as having moderate suitability to support roosting bats. As such, two nocturnal surveys were required on each tree and the building to determine the presence / likely absence of roosting bats from the Site ahead of the proposed demolition and development proposals.

No bats were recorded emerging from the building during the nocturnal surveys. Common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus* and Noctule *Nyctalus noctula* were recorded within the vicinity of the Site.

No bats were recorded emerging from the trees during the nocturnal surveys. Common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, Serotine *Eptesicus serotinus* and Noctule *Nyctalus noctula* were recorded within the vicinity of the Site.

As no bats were identified roosting within the trees or the building, it is considered that the proposed works are unlikely to have any impact on roosting bats.

Given bats were recorded foraging and commuting within the vicinity of the Site, it is recommended that where lighting is required as part of the development that a sensitive lighting strategy be implemented.

Bat roosting opportunities (i.e. bat boxes) could be incorporated into the proposed development, by placing them onto trees or buildings at the Site post-development in order to mitigate the loss of potential roosting 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 Astrum Planning to undertake nocturnal bat surveys at Roadchef Rownhams, M27 Northbound, SO16 8AP, hereafter referred to as 'the Site'. The Site is centre on National Grid Reference (NGR): SU 38821 17830 and is displayed on **Figure 1**.
- 1.1.2 The proposals for the Site include an extension and works to the existing building and the creation of a new drive-through.
- 1.1.3 The requirement for nocturnal bat surveys was identified within the report: '21663 Roadchef Rownhams PEA v1.0', dated August 2023, produced by Ecus. The single service station building and four trees were assessed as having moderate suitability to support roosting bats. As such, it was recommended that two nocturnal surveys be carried out in accordance with Bat Conservation Trust guidelines (Collins, 2016).
- 1.1.4 This report details the findings of the nocturnal bat surveys undertaken at the Site by Ecus in August and September 2023. Methodologies employed during the surveys are described in full, along with survey findings, evaluation and assessment. The requirement of any further ecological assessments and recommendations for mitigation as well as compensatory measures are provided where appropriate.

## 2. Methodology

### 2.1 Nocturnal Bat Survey

- 2.1.1 In accordance with good practice guidance (Collins, 2016) and the Bat Conservation Trust Interim Guidance Note (May, 2022), two dusk emergence nocturnal bat surveys of the service station building and four trees were undertaken. The surveys were undertaken in August and September 2023 to determine the presence / likely absence of roosting bats. The building survey was undertaken by three experienced bat surveyors during the first dusk survey and four experienced surveyors during the second dusk survey to ensure coverage of all aspects. Both of the dusk tree surveys were undertaken by three experienced bat surveyors.
- 2.1.2 Surveyors used a combination of visual assessment and detection using Echometer Touch 2 Pro bat detectors and where available, Canon XA40 and Canon XA45 camcorders, each accompanied by an infrared lighting rig. Surveyors recorded the species and numbers of bats using any roosts at the buildings (where identified) and also recorded incidental bat activity observed and heard in the vicinity during the survey period. The dusk emergence surveys commenced 15 minutes prior to sunset and finished 1.5 hours after sunset. The surveys were conducted during periods when weather conditions were dry, with relatively low winds and temperatures in excess of 10°C.
- 2.1.3 The nocturnal surveys were digitally recorded to allow bat echolocation calls to be analysed using Kaleidoscope sound analysis software, with species identification confirmed with reference to bat call parameters presented in 'British Bat Calls: A Guide to Species Identification' (Russ, 2012). Where identification of bat calls to species level was not possible, calls were identified to genus level only (see Survey Limitations).
- 2.1.4 Following interim guidance published by the Bat Conservation Trust (May, 2022), each surveyor used an infrared camera during the dusk emergence surveys; these were positioned around the building, notably on the north-western and south-western aspects of the Site where there were a significant number of suitable features for roosting bats. Infrared cameras were set up prior to the start of the survey and positioned adjacent to the surveyor, who monitored the camera throughout the survey to ensure recording was functioning.
- 2.1.5 A screenshot was taken during each survey to highlight the darkest point of the survey in which bats could no longer be seen by the naked eye. A selection of site photographs can be seen in **Appendix 1**.
- 2.1.6 Survey details are shown in **Table 1** and **2** below, with surveyor locations and bat activity findings illustrated on **Figures 1 to 4**.

**Table 1. Building Nocturnal Bat Survey Conditions**

Date	Survey Timings	Survey Number and Type	Surveyors	Air Temp. (°C)	General Conditions	Detector Type
29/08/2023	Start: 19:43 Sunset: 19:58	1 <sup>st</sup> Dusk Emergence	AD, ET, PTA	16	Beaufort scale (BF) 1, 100% cloud cover, dry	Echometer Touch 2 Pro

Date	Survey Timings	Survey Number and Type	Surveyors	Air Temp. (°C)	General Conditions	Detector Type
	End: 21:28					
18/09/2023	Start: 18:58 Sunset: 19:13 End: 20:43	2 <sup>nd</sup> Dusk Emergence	CE, IS, CH, MA	19-13	BF1, 10-80% cloud cover, dry	Echometer Touch 2 Pro

AD – Abel Drewett, ET – Emily Taylor, PTA – Penelope Taganyi-Airs, IS – Isabel Soane, MA – Max Abbatt, CH – Charlie Haberfield

**Table 2. Tree Nocturnal Bat Survey Conditions**

Date	Survey Timings	Survey Number and Type	Surveyors	Air Temp. (°C)	General Conditions	Detector Type
31/08/2023	Start: 19:38 Sunset: 19:53 End: 21:23	1 <sup>st</sup> Dusk Emergence	CE, PTA, MA	16	Beaufort scale (BF) 1, 100% cloud cover, heavy rain - dry	Echometer Touch 2 Pro
19/09/2023	Start: 18:57 Sunset: 19:12 End: 20:42	2 <sup>nd</sup> Dusk Emergence	CE, IS, CH, MA	18-17	BF2-3, 10-100% cloud cover, light drizzle	Echometer Touch 2 Pro

CE – Claire Evans, PTA- Penelope Taganyi-Airs, IS – Isabel Soane, MA – Max Abbatt, CH – Charlie Haberfield

## 2.2 Survey Limitations

- 2.2.1 It is frequently difficult to differentiate calls of different bat species within the same genus due to overlapping bat call parameters. In particular there is considerable overlap between echolocation calls of bat species in the *Myotis* genus. Therefore, in certain circumstances, it has only been possible to identify recordings of *Myotis* bats to genus level only.
- 2.2.2 During the first dusk emergence survey only three surveyors were available to cover the building due to staff illness, however all aspects of the roost features were covered. In addition there was little bat activity, thus this was not thought to be a major limitation.

### 3. Findings and Evaluation

#### 3.1 Building Nocturnal Bat Surveys

3.1.1 No bat roosts were recorded at the Site during either of the dusk emergence surveys undertaken on the 29<sup>th</sup> August and 18<sup>th</sup> September 2023.

3.1.2 The findings from the dusk emergence surveys, including surveyor locations and observed bat activity, are presented in **Figures 1 to 4**.

##### ***First Dusk Emergence Survey – 29<sup>th</sup> August 2023***

3.1.3 The first recording pertained to a common pipistrelle *Pipistrellus pipistrellus* which was heard but not seen by surveyors at 20:10 (27 minutes after sunset).

3.1.4 Low levels of bat activity were recorded during the dusk emergence survey and most pertained infrequent foraging and commuting passes of common pipistrelle.

3.1.5 Serotine *Eptesicus serotinus* was also heard by one surveyor.

3.1.6 The last recording pertained to a common pipistrelle which was heard but not seen at 21:26.

3.1.7 No emergences were identified during the survey.

3.1.8 See **Appendix 2, Figure 1** for a full list of bat survey results.

##### ***Second Dusk Emergence Survey – 18<sup>th</sup> September 2023***

3.1.9 The first recording pertained to a soprano pipistrelle *Pipistrellus pygmaeus* which was heard but not seen by surveyors at 19:33 (20 minutes after sunset).

3.1.10 Moderate levels of bat activity were recorded during the dusk emergence survey, including frequent foraging and commuting passes of common pipistrelle and noctule.

3.1.11 The last recording pertained to a common pipistrelle which was heard but not seen at 20:39.

3.1.12 No emergences were identified during the survey.

3.1.13 See **Appendix 2, Figure 3** for full survey results.

#### 3.2 Tree Nocturnal Bat Surveys

##### ***First Dusk Emergence Survey – 31<sup>st</sup> August 2023***

3.2.1 There were no bats seen or heard during the duration of the survey.

3.2.2 No emergences were identified during the survey.

3.2.3 See **Figure 2** for surveyor positions.

##### ***Second Dusk Emergence Survey – 19<sup>th</sup> September 2023***

3.2.4 There were no bats seen or heard during the duration of the survey.

3.2.5 No emergences were identified during the survey.



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3.2.6 See **Figure 4** for surveyor positions.

## 4. Assessment and Mitigation

### 4.1 Proposals

- 4.1.1 The proposals for the Site include an extension and works to the existing service station building and the creation of a new drive-through.

### 4.2 Legislation

#### *Roosting Bats*

- 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 by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. Under regulation 43 bats are protected from deliberate capture, injury or killing, from deliberate disturbance and from deliberate 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) where 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 *R. hipposideros*, noctule *Nyctalus noctula* and soprano pipistrelle *Pipistrellus pygmaeus* bats are included as priority species within Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

### 4.3 Assessment and Recommendations

- 4.3.1 Two nocturnal bat surveys were undertaken at the Site in August and September 2023 on both a building and four trees. They were all carried out in accordance with the good practice guidance (Collins, 2016) and interim guidance by the Bat Conservation Trust (2022). No bats were observed emerging from the building during the survey and there was low bat activity around the building.
- 4.3.2 The identified survey limitations did not significantly impact the outcome of the survey and therefore the survey findings and subsequent recommendations are considered valid.
- 4.3.3 Artificial lighting is known to affect bat roosting and foraging behaviour. Therefore, it is recommended that any artificial lighting required as part of the development be sensitive to bats (See **Appendix 3**). Artificial lighting should be angled away from suitable foraging habitat (i.e. linear habitats such as boundary hedgerows) in order to minimise disturbance. It is also recommended that lower lux bulbs be used in the gardens of the proposed properties that are located adjacent to the boundary hedgerows.
- 4.3.4 As part of replacement/enhancement measures, it is recommended that no fewer than eight bat boxes (e.g. Schwegler 1FR bat tubes or Schwegler 2F), are installed on buildings or trees at the Site. Boxes should be integrated on the buildings/trees at a minimum of four metres from the ground and ideally at eaves level (towards the top of a building), with clear and uncomplicated flight paths from the boxes, facing areas of suitably foraging habitat (e.g. hedgerow) and away from artificial lighting. Boxes should be placed on the various aspects of any buildings and trees, to diversify the range of microclimates available for roosting bats. These will provide long-term

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roosting provision to compensate for the loss of potential roosting features at the Site.

- 4.3.5 These surveys are valid for a period of 12 months from the date of the first survey. If the works have not been completed by September 2024, 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

Bat Conservation Trust (2022). 'Interim Guidance Note: Use of night vision aids for bat emergence surveys and further comment on dawn surveys', May 2022, Bat Conservation Trust.

Bat Conservation Trust (2023) Guidance Note 8 Bats and Artificial Lighting. Bats and Artificial Lighting at Night

Collins, J (ed) (2016). '*Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn)'. The Bat Conservation Trust (BCT), London. ISBN-13 978 872745-96-1.

Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.

Ecus Ltd. (2023) 21663 Roadchef Rownhams PEA v1.0.

Russ, J. (2012) '*British bat calls: a guide to species identification*'. Pelagic Publishing, Exeter




The Wildlife and Countryside Act 1981 (England and Wales) (Amendment) Regulations 2016.

Wildlife Acoustics, Inc. (2021) Kaleidoscope Pro Analysis Software, Version 5.4.8, Wildlife Acoustics

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## Figure 1: Dusk Emergence Survey 29<sup>th</sup> August 2023 Map

Legend

-  Building
-  Common pipistrelle flight lines
-  Surveyors



ET

PTA

AD

0 5 10

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22229 Roadchef Rownhams  
Nocturnal Survey Results

Figure 1  
Dusk Emergence Survey  
29th August 2023 Map



• Unit 4 Prisma Park • Berrington Way, Wade Road •  
Basingstoke • RG24 8GT •  
• tel: 0117 4039050 • [www.ecusltd.co.uk](http://www.ecusltd.co.uk) •

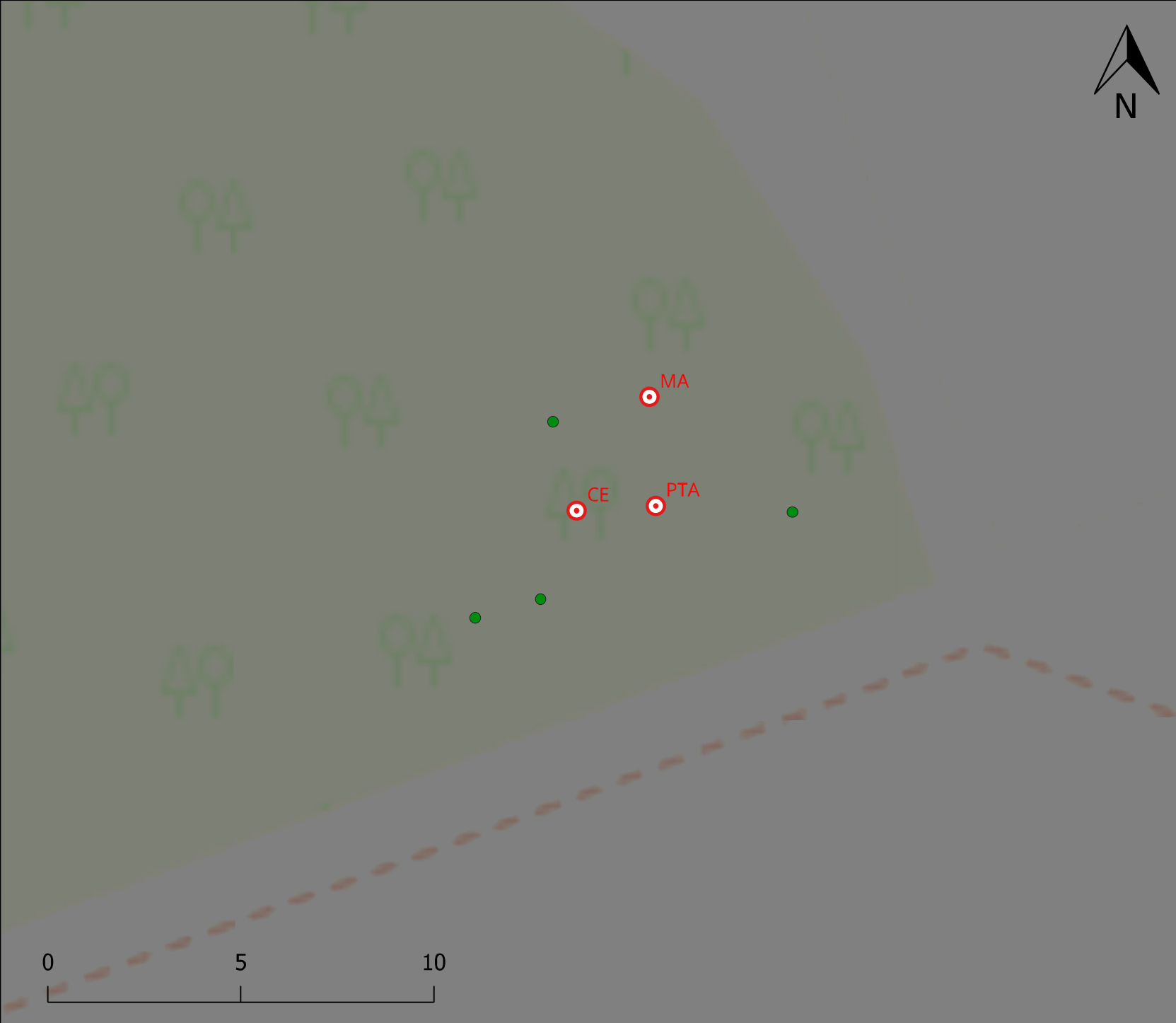
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## Figure 2: Dusk Emergence Survey 31<sup>st</sup> August 2023 Map



Legend

-  Trees
-  Surveyors



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Nocturnal Survey Results

Figure 2  
Dusk Emergence Survey  
31st August 2023 Map


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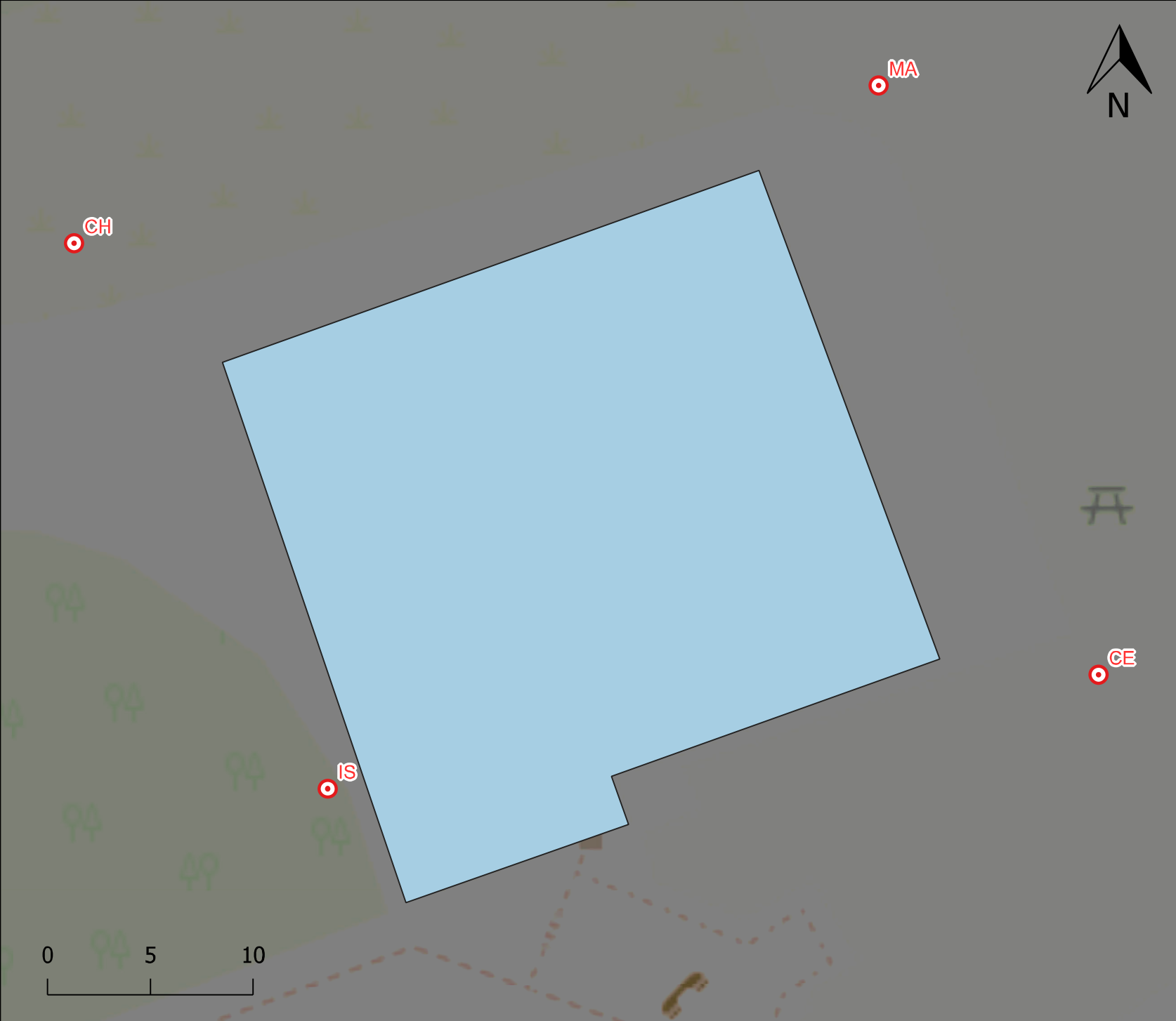
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### **Figure 3: Dusk Emergence Survey 18<sup>th</sup> September 2023 Map**

Legend

 Building

 Surveyors



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Figure 3  
Dusk Emergence Survey  
18th September 2023 Map



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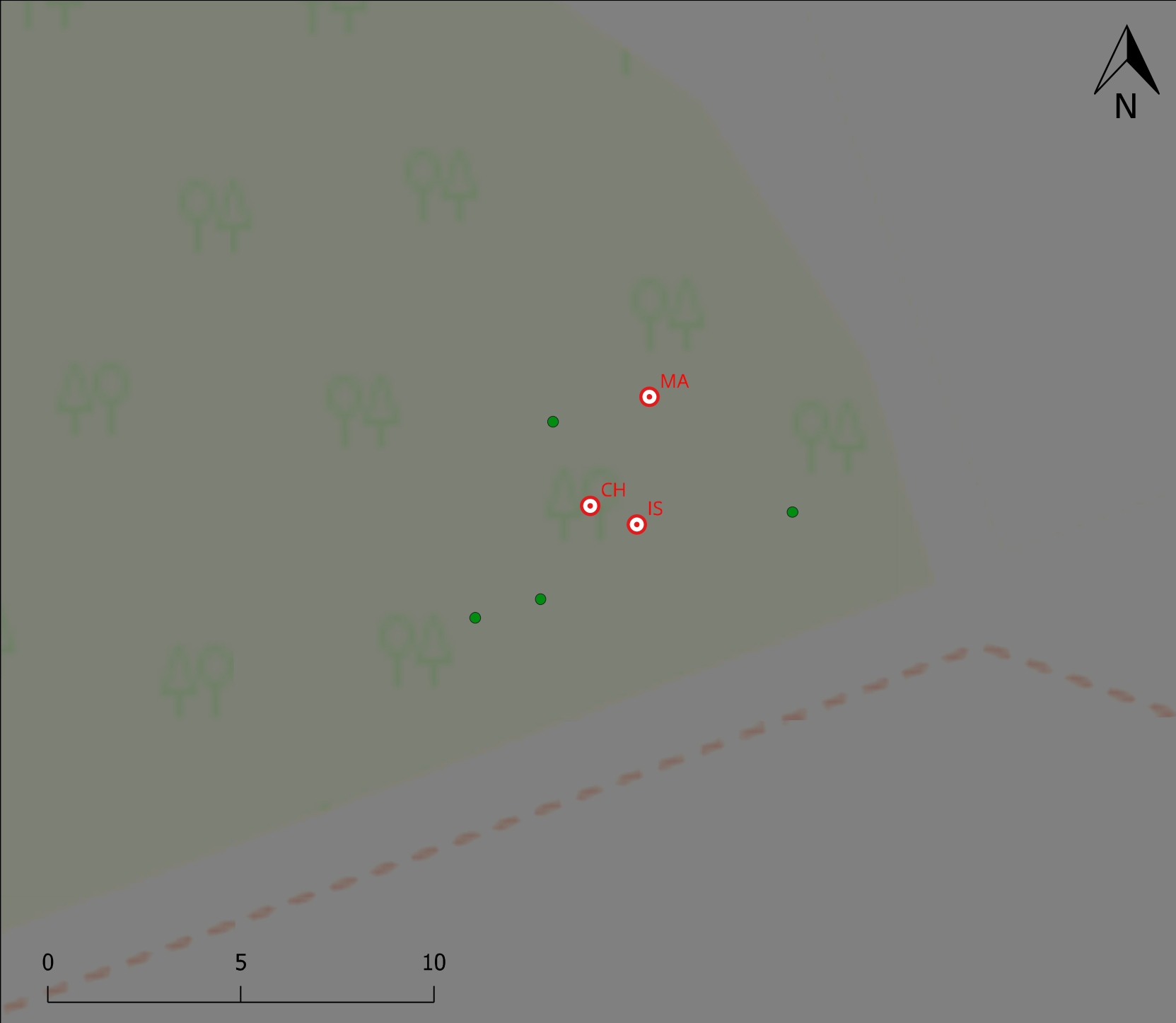
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## Figure 4: Dusk Emergence Survey 19<sup>th</sup> September 2023 Map



Legend

-  Trees
-  Surveyors



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Nocturnal Survey Results

Figure 4  
Dusk Emergence Survey  
19th September 2023 Map

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## Appendix 1: Site Photographs



Plate 1: View of the north western aspect taken by surveyor ET at on 29/08/2023.



Plate 2: View of two trees with rot at the base taken from a north eastern aspect by surveyor CE on 31/08/2023.



Plate 3: View of a tree with holes in its trunk taken from the eastern aspect by surveyor MA on 31/08/2023.



Plate 4: View of moderate roost feature on the building taken by IS on 18/09/2023.

## Appendix 2: Survey Results

**Table 1: Nocturnal Bat Survey Results 29/08/23**

Time (h)	Surveyor Initials (Location)	Record type	Species	*Activity	Notes
20:10	AD	N/A	Common pipistrelle	C	Flight path 1
20:22	ET	N/A	Noctule	C	
20:23	AD	Surveyor	Common pipistrelle	P	Flight path 2
20:28	AD	Surveyor	Common pipistrelle	C	
20:30	AD	N/A	Common pipistrelle	P	
20:36	AD	Surveyor	Common pipistrelle	P	Same as flight path 1
20:56	ET	N/A	Serotine	P	
21:03	ET	N/A	Serotine	P	
21:08	ET	N/A	Common pipistrelle	P	
21:09	AD	N/A	Common pipistrelle	C	
21:20-21:26	ET	N/A	Common pipistrelle	F	
21:27	PTA	N/A	Common pipistrelle	P	

**Table 2: Nocturnal Bat Survey Results 31/08/23**

Time (h)	Surveyor Initials (Location)	Record type	Species	*Activity	Notes
No bats heard or seen					

**Table 3: Nocturnal Bat Survey Results 18/09/2023**

Time (h)	Surveyor Initials (Location)	Record Type	Species	*Activity	Notes
19:38	CH	N/A	Common pipistrelle	P	

Time (h)	Surveyor Initials (Location)	Record Type	Species	*Activity	Notes
19:40	CH	N/A	Common pipistrelle	P	
19:43	CH	N/A	Common pipistrelle	P	Calling until 19:45
19:46	CH	N/A	Soprano pipistrelle	P	
19:59	CE, CH	N/A	Noctule	P	
20:01	CE	N/A	Soprano pipistrelle	F	2 passes
20:02	CE	N/A	Common pipistrelle	F	Multiple passes until 20:09
20:02	CH	N/A	Soprano pipistrelle	P	
20:07	CE, CH	N/A	Common pipistrelle	F	
20:15	IS	N/A	Common pipistrelle	F	Faint and echoing
20:27	CH	N/A	Common pipistrelle	P	Multiple passes till 20:30
20:28	CE	N/A	Common pipistrelle	F	Multiple passes
20:32	IS	N/A	Soprano pipistrelle	F	
20:39	IS	N/A	Common pipistrelle	F	
21:53	CE	N/A	Leisler's	C	Heard not seen
21:53	CE	N/A	Noctule	C	Heard not seen
21:54	CE	N/A	Leisler's	C	Heard not seen
21:56	CH	N/A	Noctule	C	N/A
21:59	CH	N/A	Common pipistrelle	C	N/A
22:14	CE	N/A	Noctule	C	Heard not seen

**Table 4: Nocturnal Bat Survey Results 19/09/23**

Time (h)	Surveyor Initials (Location)	Record type	Species	*Activity	Notes
No bats heard or seen					

\***Activity:** C – Commuting, P – Pass, F – Foraging, S – Socialising



## 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, 2023), 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 myotis 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 2023).

### 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, 2023).

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, 2023) 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, 2023).

