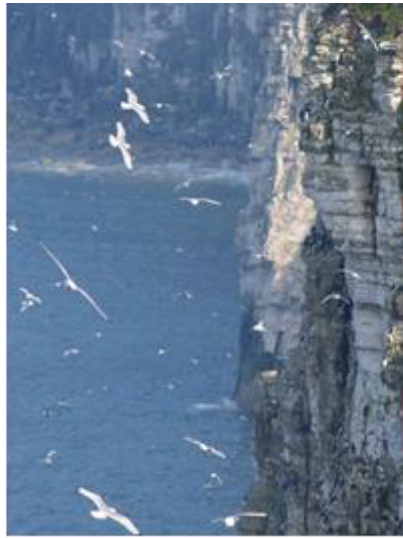




Bat Emergence Survey

**Mendalgief Road**

**Newport, South Wales**

For

**LNT Construction Ltd.**

Report Reference: LNT001-019-006/001/001

August 2025

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| Project Number | Report No. |
|----------------|------------|
| LNT001-019-006 | 001        |

| Revision No. | Date of Issue | Author        | Reviewer     | Approver         |
|--------------|---------------|---------------|--------------|------------------|
| 001          | 08/08/2025    | Joshua Lordan | Chris Bridge | Irfaan Junaideen |

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Figure 1: Site Location

Figure 2: Bat Emergence Survey Results

Figure 3: Photographs of PRF's on Site

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## 1. Summary and Main Recommendations

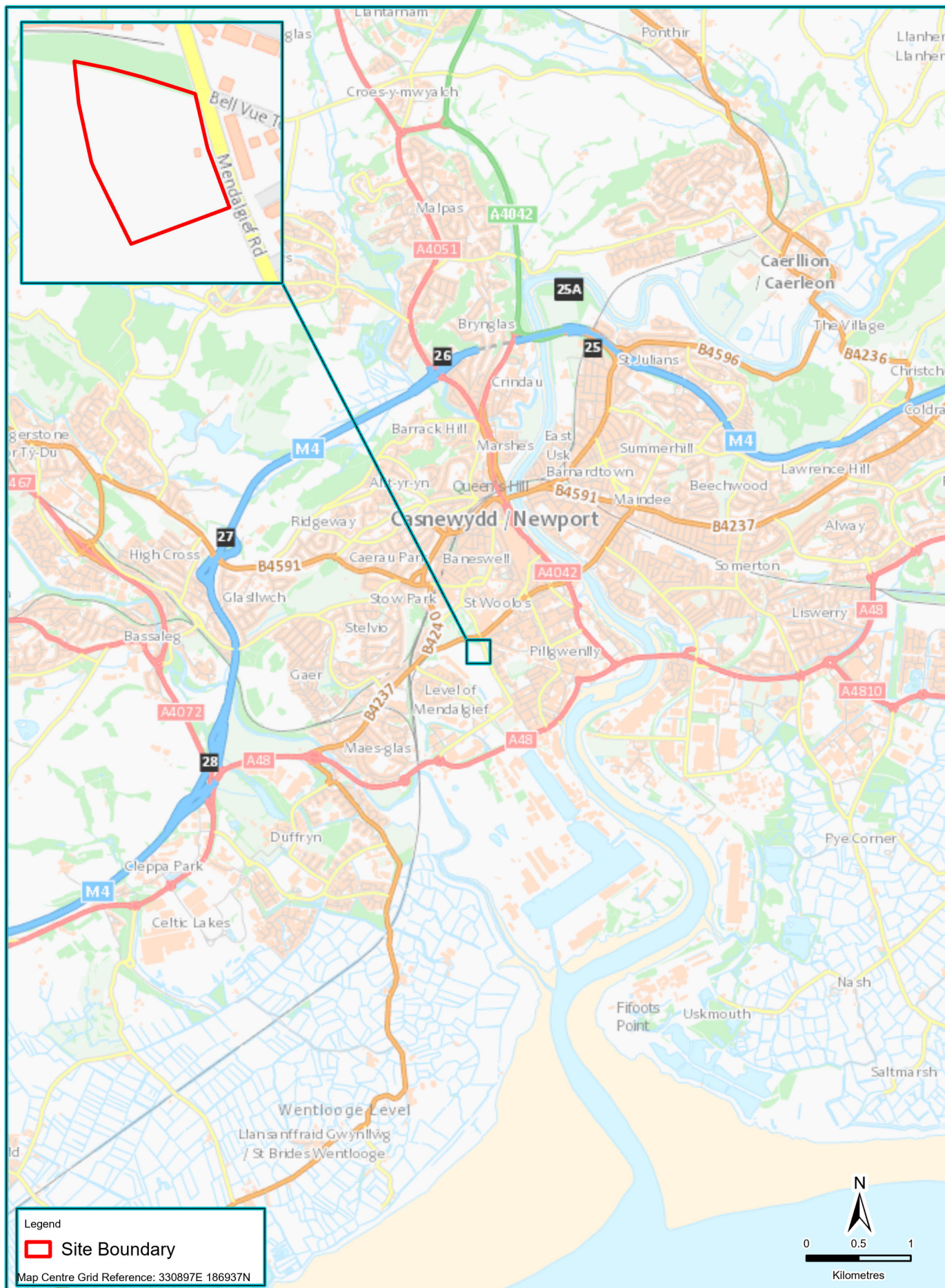
### 1.1 Summary

- 1.1.1 LNT Construction Ltd. is preparing a planning proposal for the construction of a residential development located at Mendalgief Road, Newport, near South Wales. The site currently consists of artificial unvegetated- unsealed surface, buildings, mixed scrub and sparsely vegetated urban land. The project involves the demolition of buildings on site and habitat clearance for the new development. The need for bat emergence surveys was confirmed during a Preliminary Ecological Appraisal (PEA) and a Preliminary Roost Assessment (PRA) to inform the application and any necessary mitigation and compensation measures. Thomson Environmental Consultants Ltd has been appointed by LNT Construction Ltd. to undertake the further bat emergence surveys on the site. The site location is shown on Figure 1.
- 1.1.2 Two buildings on site were classified during the PRA as having moderate suitability to support roosting bats. Further emergence surveys were therefore recommended to be carried out with two dusk emergence surveys conducted on building 1 (u1b5-1) and building 2 (u1b5-2), two in May and two in June, respectively (Second visit for u1b5-1 was split over two nights). All surveys followed Bat Conservation Trust best practice guidelines (4<sup>th</sup> Edition) (Collins (ed.), 2023). Surveyor and camera locations are shown on Figure 2.
- 1.1.3 During all four surveys, no bats were recorded emerging from either building that were surveyed (u1b5-1 & u1b5-2). Photographs of the potential roost features of each building are shown in Figure 3
- 1.1.4 Four species of bat, Common pipistrelle (*Pipistrellus pipistrellus*), Nathusius' pipistrelle (*Pipistrellus nathusii*), Noctule (*Nyctalus noctula*) and Soprano pipistrelle (*Pipistrellus pygmaeus*) were recorded incidentally during the dusk emergence survey visits.
- 1.1.5 All British bats receive comprehensive protection under the Conservation of Habitats and Species Regulations, 2017 (as amended) and the Wildlife and Countryside Act 1981 (as amended).
- 1.1.6 As no bats were observed entering or leaving the buildings during the survey, it is very unlikely a roost is present within the structure and there should be no legal and planning policy issues with respect to bats and this development.

### 1.2 Main Recommendations

- 1.2.1 The main recommendations are set out below:
- Works at night should be avoided. If works at night are necessary, any lighting used to facilitate the works should be implemented using a sensitive lighting regime. This should be designed in consultation with a suitably qualified and licenced bat ecologist and include the focus of lighting to be on the works area only and directed away from suitable habitat for commuting and foraging bats such as the woodland habitat adjacent to the site boundary. Any light spill in the surrounding habitats should be minimised to prevent disturbance to any foraging or commuting bats that may be present.

- 
- During construction, all works should be conducted during daylight hours or directional lighting following guidelines in GN08/23 (ILP, 2023) should be used.
  - If new streetlights are being installed as a part of the development, it is recommended that a lighting plan review takes place with a suitably qualified and licenced bat ecologist.
  - It is advised that a suitably competent bat licenced ecologist is on call during the demolition and ECoW phases of the development, in the unlikely event that bats, or evidence of bats is found - in which case the designated ecologist would be contacted for further recommendations.
  - Enhancement measures, included in the combined PEA and PRA report (Thomson, 2024), should be followed to enhance the site for bats and other wildlife post development. This included, but is not limited to:
    - Integrated bat boxes such as 'Integrated Eco Bat Box, cavity', 'Vivara Pro Build-in', 'Green&Blue's Bat Block' or The Manthorpe Ridge Roost. These boxes should be installed on this site following manufacturer's instructions at a minimum of 3m from the ground, facing south, south-east or south-west to avoid disturbance but remain sheltered from strong wind.



|               |                      |  |             |                     |         |
|---------------|----------------------|--|-------------|---------------------|---------|
| Client        | LNT Construction Ltd |  | Drawing Ref | LNT001-019/408135/1 |         |
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|               |                      |  | Date        | 21/07/2025          | Date    |
|               |                      |  |             | 21/07/2025          | JB      |



Photograph 1: u1b5-1  
Ivy covering the side of the building.



Photograph 2: u1b5-1  
Hole within a window board.



Photograph 3: u1b5-1  
Hole within a brick wall.



Photograph 4: u1b5-2  
Broken window, entry point into the building.



Photograph 5: u1b5-2  
Damaged masonry, building interior.



Photograph 6: u1b5-2  
Missing mortar, external.



Photograph 7: u1b5-2  
Hole within brickwork



Photograph 8: T1  
Dead trees along site boundary.

|               |                         |  |                        |         |                                                                                                                                                                                                               |
|---------------|-------------------------|--|------------------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Client        | LNT Construction Ltd    |  | Drawing Ref            |         | <div><div>Thomson</div><div>environmental consultants</div><div><a href="http://www.thomsonec.com">www.thomsonec.com</a><br/><a href="mailto:enquiries@thomsonec.com">enquiries@thomsonec.com</a></div></div> |
| Figure Number | 3                       |  | LNT001-019-006/001/001 |         |                                                                                                                                                                                                               |
| Figure Title  | Photographs of the Site |  | Drawn                  | Checked |                                                                                                                                                                                                               |
|               |                         |  | JL                     | CB      |                                                                                                                                                                                                               |
|               |                         |  | Date                   |         |                                                                                                                                                                                                               |
|               |                         |  | 08/07/2025             |         |                                                                                                                                                                                                               |

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Legend

 Surveyor Location

 NVA Location

Overall Potential (whole building) to Support Roosting Bats

 Moderate

 Site Boundary

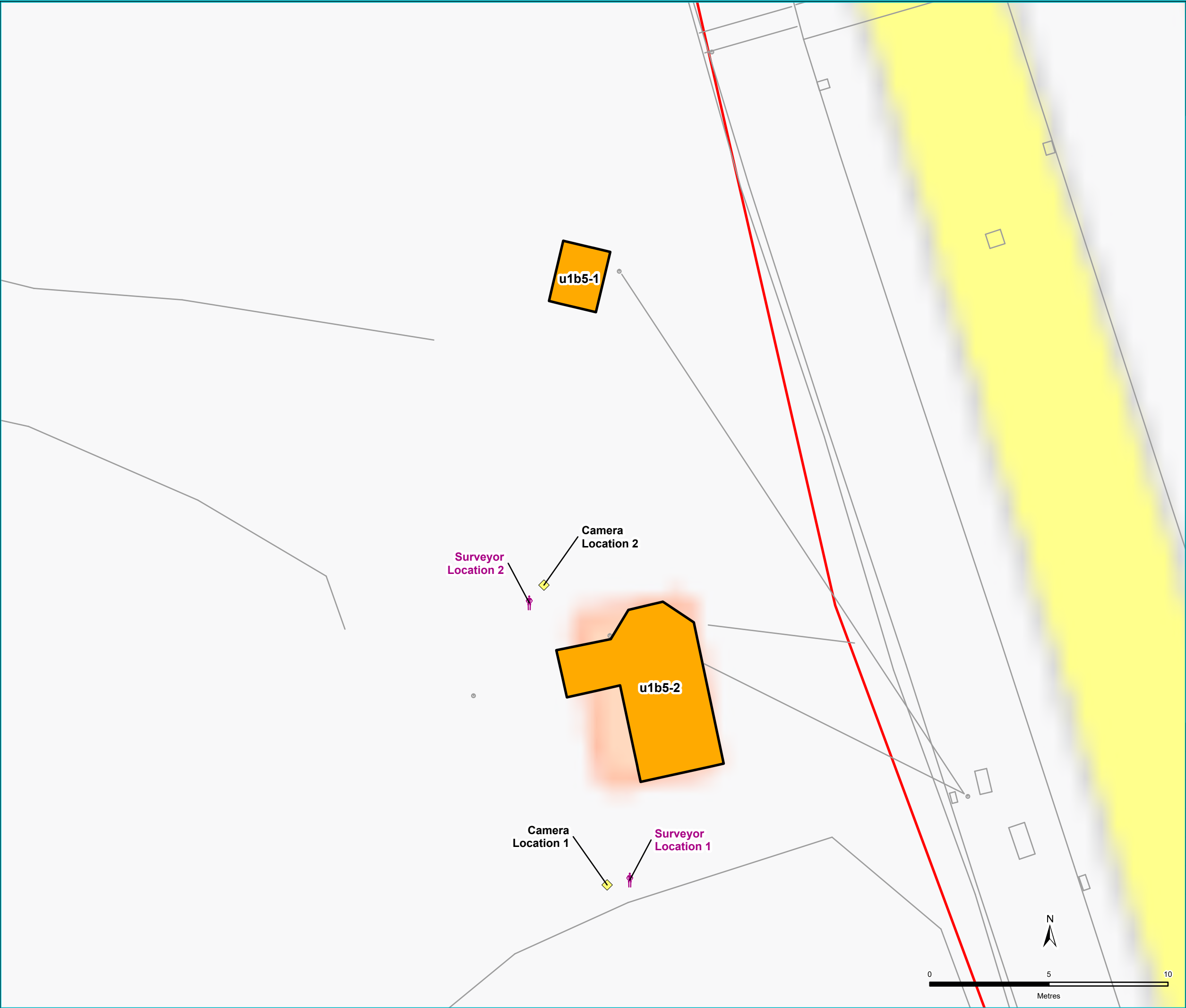
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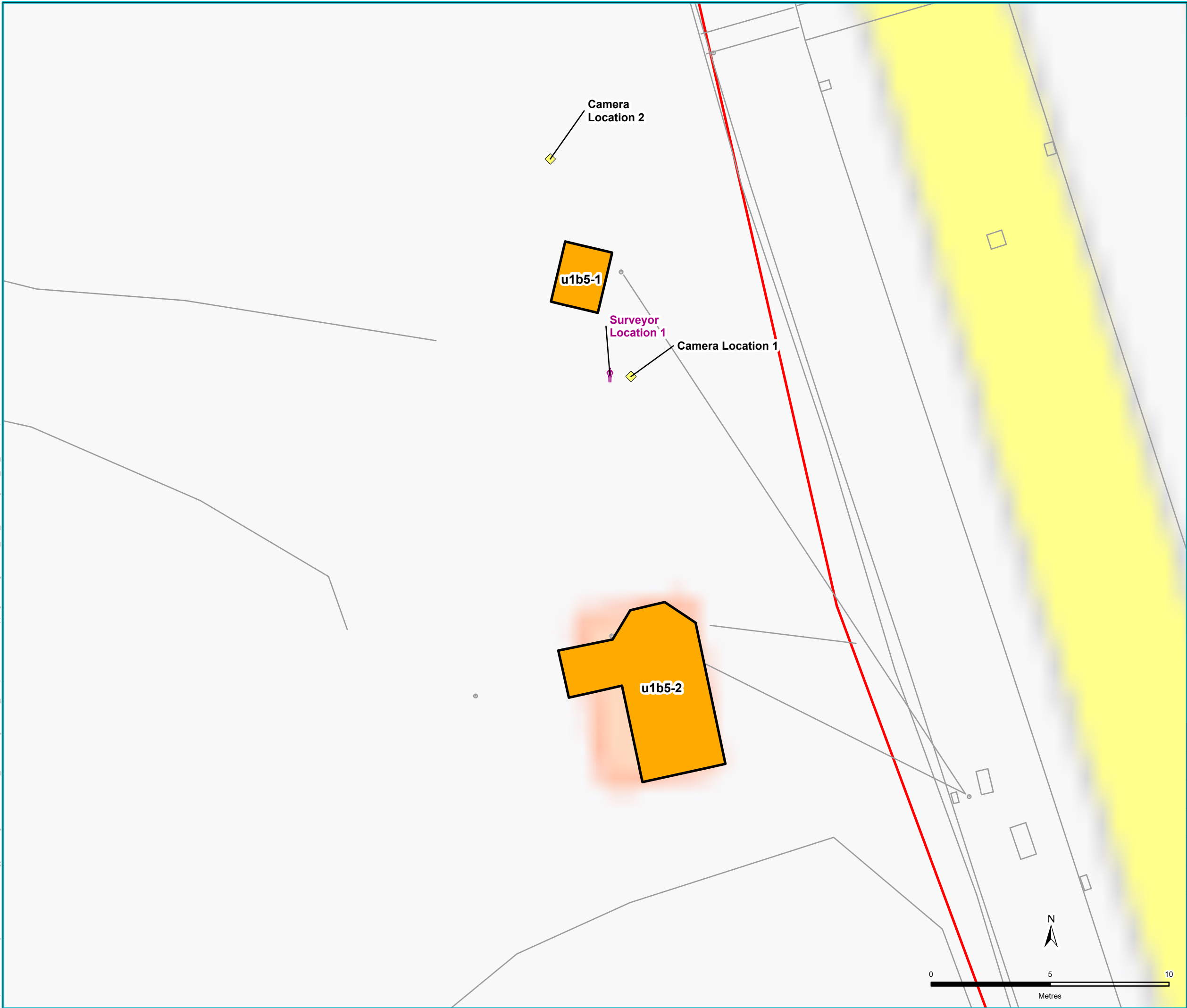
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| Date          | 05/08/2025 | Date                 | 05/08/2025 |
| Client        |            | LNT Construction Ltd |            |
| Figure Number |            | 2a                   |            |
| Figure Title  |            |                      |            |

Bat Emergence  
Survey Results  
(Visit 1)



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- Legend
- Surveyor Location
  - NVA Location
  - Overall Potential (whole building) to Support Roosting Bats
    - Moderate
  - Site Boundary

Map Centre Grid Reference: 330935E 186945N

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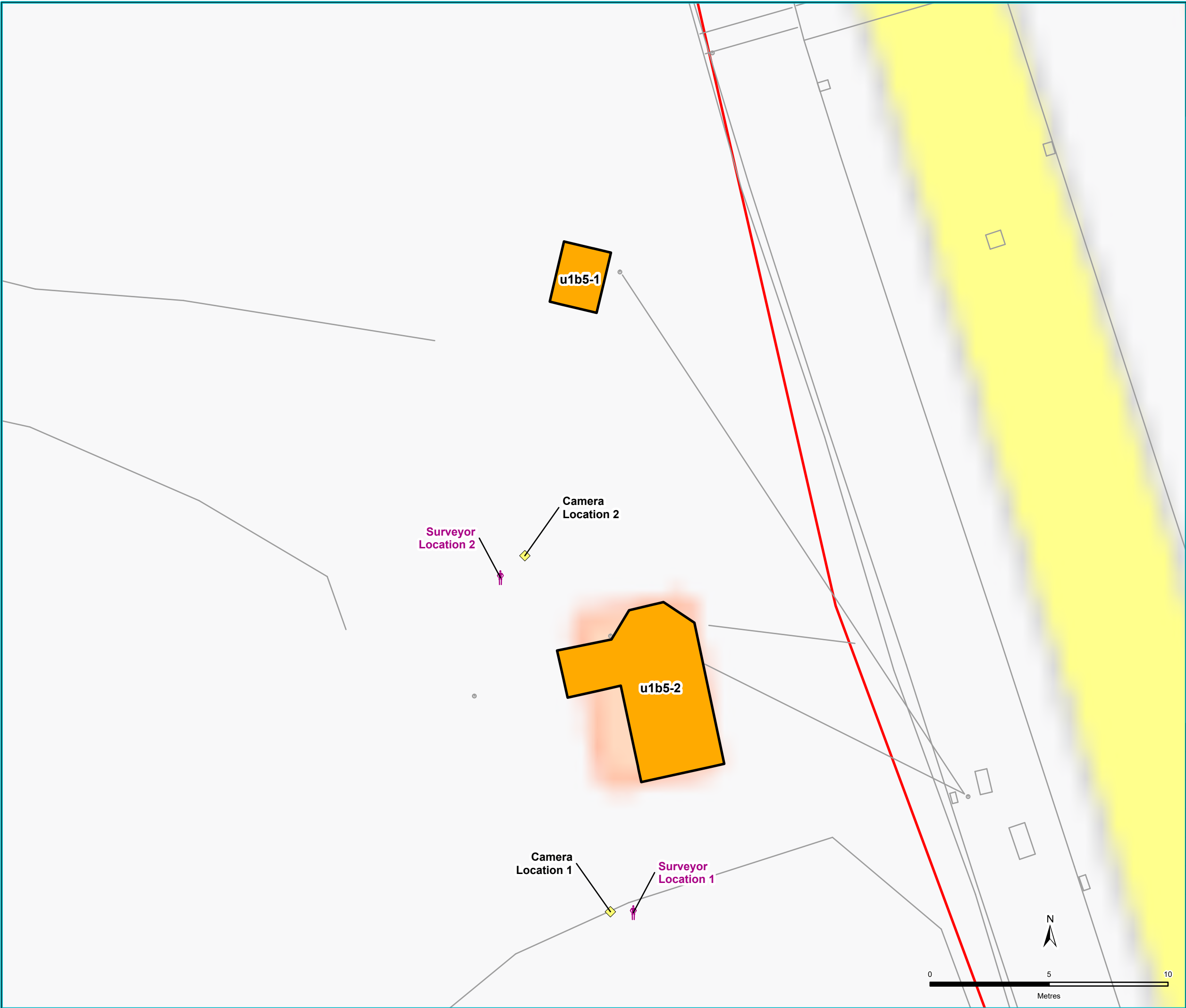
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| Date<br>05/08/2025 | Date<br>05/08/2025 |

Client  
LNT Construction Ltd

Figure Number  
2b

Figure Title  
Bat Emergence  
Survey Results  
(Visit 2)

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- Legend
- Surveyor Location
  - NVA Location
  - Overall Potential (whole building) to Support Roosting Bats
    - Moderate
  - Site Boundary

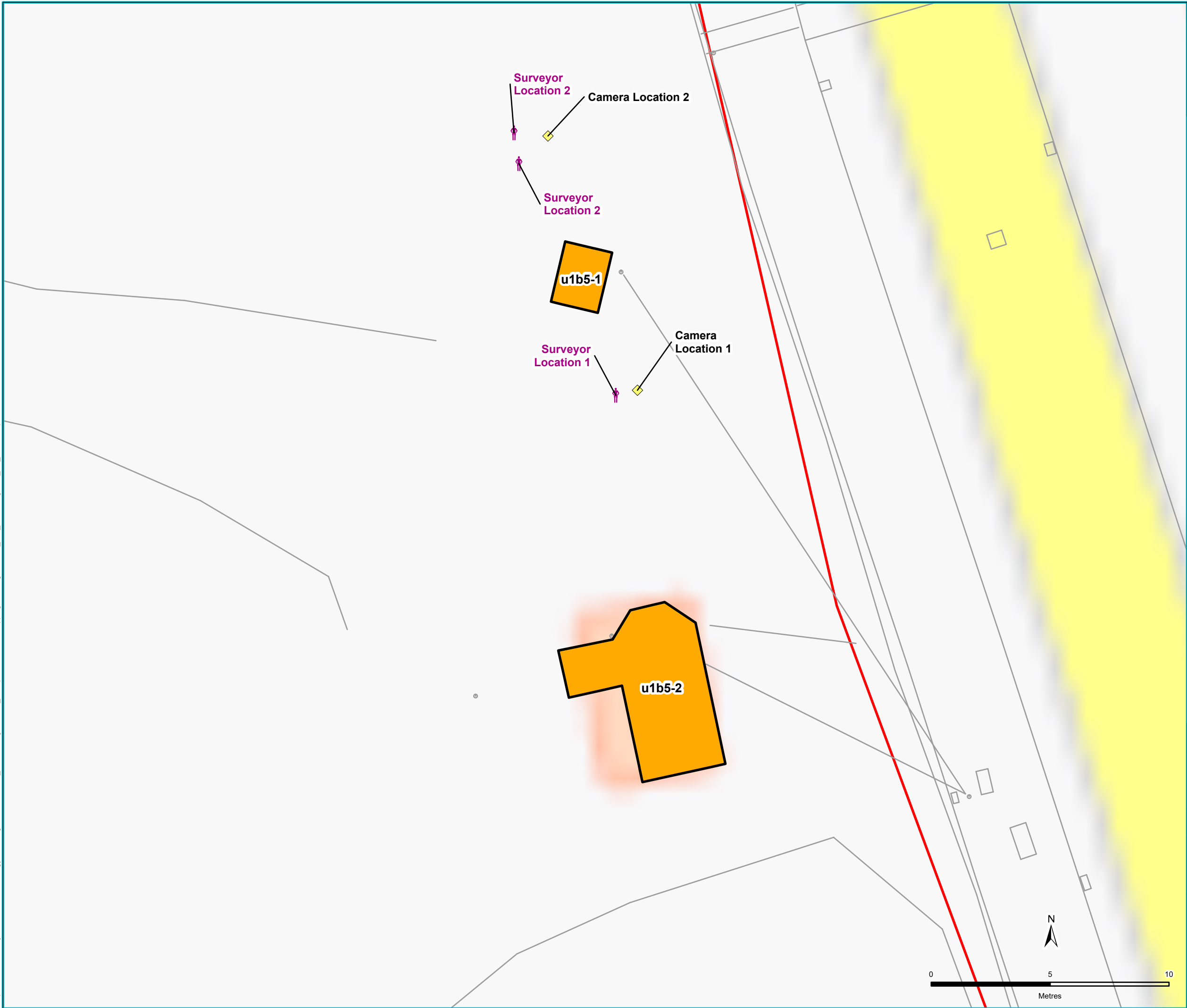
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| Date                 | Date       |
| 05/08/2025           | 05/08/2025 |
| Client               |            |
| LNT Construction Ltd |            |
| Figure Number        |            |
| 2c                   |            |
| Figure Title         |            |

Bat Emergence  
Survey Results  
(Visit 3)

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## Legend

-  Surveyor Location
-  NVA Location

Overall Potential (whole building) to Support Roosting Bats

-  Moderate
-  Site Boundary

Map Centre Grid Reference: 330935E 186945N

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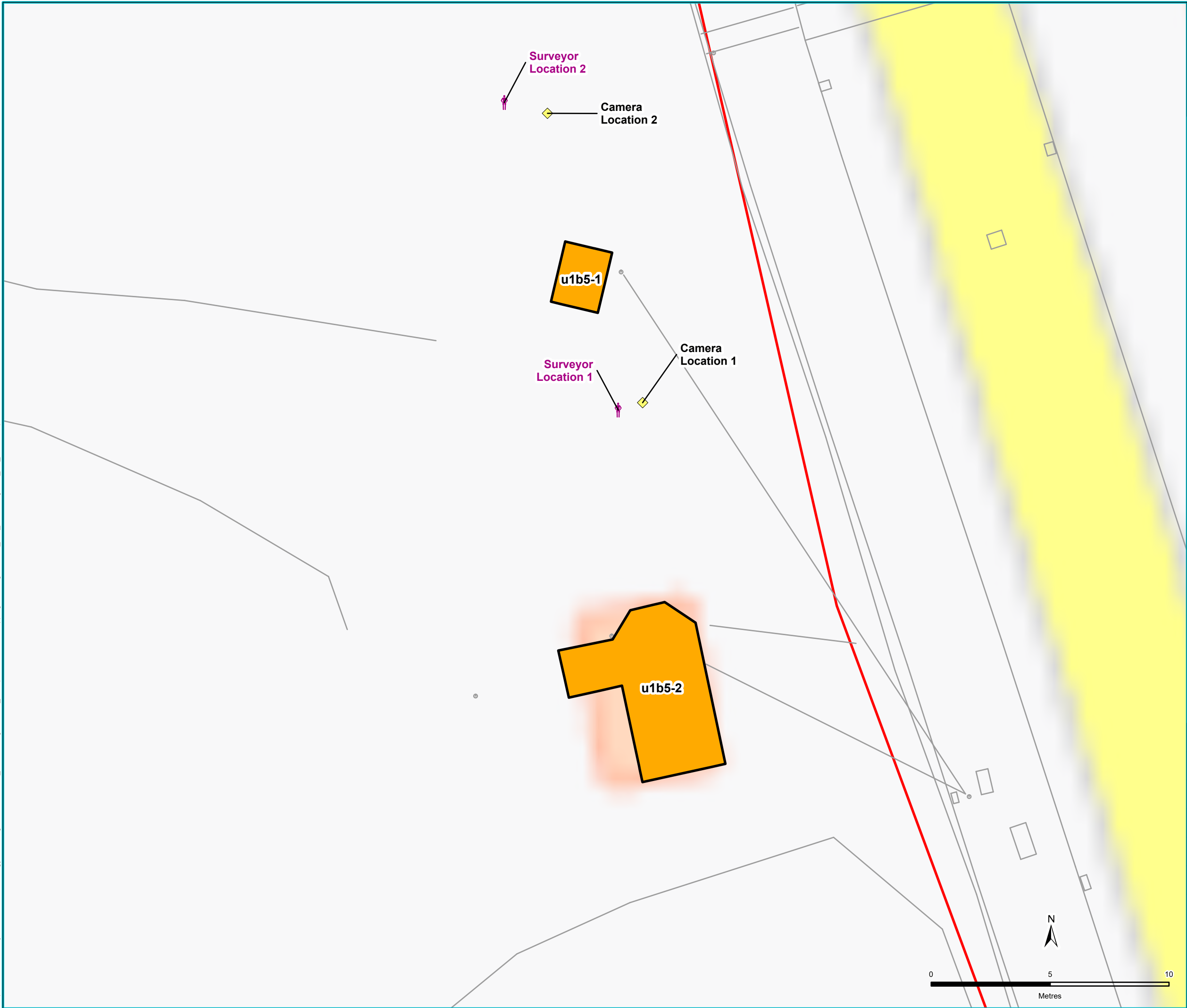
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| Date<br>05/08/2025 | Date<br>05/08/2025 |

Client  
LNT Construction Ltd

Figure Number  
2d

Figure Title  
Bat Emergence  
Survey Results  
(Visit 4)

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Legend

-  Surveyor Location
-  NVA Location

Overall Potential (whole building) to Support Roosting Bats

-  Moderate
-  Site Boundary

Map Centre Grid Reference: 330935E 186945N

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| Date<br>05/08/2025 | Date<br>05/08/2025 |

Client  
LNT Construction Ltd

Figure Number  
2e

Figure Title  
Bat Emergence  
Survey Results  
(Visit 5)

---

## 2. Introduction

### 2.1 Development Background

- 2.1.1 LNT Construction Ltd is preparing a planning proposal for the construction of a new care home on a 0.69ha site at Mendalgief Road, Newport, South Wales, NP20 2SL, (Grid Reference: ST 30876 86936). This will be hereafter referred to as 'the site'. The site location is shown on Figure 1.
- 2.1.2 The site currently consists of artificial unsealed- unvegetated surface, two buildings (u1b5-1 & u1b5-2), mixed scrub and sparsely vegetated urban land. The proposals include the demolition of existing buildings and the construction of a new care home with access, parking and private gardens.
- 2.1.3 The proposals described above are hereafter referred to collectively as 'the development'.
- 2.1.4 This project will require planning consent from Newport City Council.

### 2.2 Ecology Background

- 2.2.1 A Preliminary Ecological Appraisal (PEA) of the site was completed in June 2024 (Thomson, 2024) with further surveys recommended for roosting bats, [Report Ref.: LNT001-019-002/001/00]. A Preliminary Roost Assessment (PRA) & Ground Level Tree Assessment (GLTA) survey was undertaken in November 2024, (Thomson, 2024), with a report provided in January 2025 for the site. [Report Ref.: LNT001-019-005/001/001].
- 2.2.2 Records of five bat species were returned within the 1km desk study area for the PEA report, and there are buildings on the site with the potential to support roosting bats. The woodland adjacent to the site also has potential to support foraging and commuting bats, with connectivity to the wider landscape.
- 2.2.3 The buildings and trees on site have been assessed in the combined PEA and PRA survey report (Thomson, 2024; Thomson, 2025) in accordance with criteria detailed within the Bat Survey Guidelines (Collins (ed.), 2023). The assessment identified two of the buildings onsite (ub15-1 and ub15-2) as having moderate suitability. Further surveys were recommended to determine presence/likely absence of roosting bats within u1b5-1 and u1b5-2.
- 2.2.4 Reptile absence/presence surveys on the site were completed over the course of eight visits in September 2024 (Thomson, 2024) however, no reptiles were identified in all visual and refugia searches, and thus no mitigation measures were recommended [Report Ref.: LNT001-019-001/001/00].
- 2.2.5 A summary of the biology, conservation status, and legal protection of bats is given in Appendix 1.

## 2.3 The Brief and Objectives

2.3.1 LNT Construction Ltd. commissioned Thomson Environmental Consultants Ltd. on 12<sup>th</sup> March 2025 to undertake the following:

- **Bat emergence surveys:** To conduct emergence surveys at Mendalgief Road, Newport, for two buildings with the potential to support a bat roost (u1b5-1 and u1b5-2). The survey method will be based on Bat Conservation Trust guidelines (4th Edition) (Collins, J (ed), 2023).

## 2.4 Limitations

2.4.1 Due to an unforeseen absence, survey efforts for the final visit of u1b5-1 had to be split over the course of two days (09/06 & 10/06) to ensure all features were surveyed.

2.4.2 This report is based on the development boundary and layout shown on Drawing number *NP20 2NW-F-01* (13.03.24) shown in Appendix 1. Subsequent changes to either may result in a requirement to reassess the potential impacts of the development and the requirements for avoidance, mitigation and enhancement.

## 3. Methodology

### 3.1 Desk Study

3.1.1 A desk study was done as part of the PEA for the site. Main findings from the desk study regarding bats can be found in the ecology background section of this report in Section 2.2.

### 3.2 Emergence Surveys

3.2.1 Emergence surveys were carried out to ascertain the presence or likely absence of roosting bats within each building which had previously been identified as suitable for roosting bats during the PEA (June, 2024).

3.2.2 Surveys were completed by Jessica Dangerfield.

- Director of Ecology, Jessica Dangerfield BSc (Hons), Natural Resources Wales (NRW) (Bat survey licence (with handling endorsement) number: S093272-1). Jessica is a full member of the Royal Society of Biology.

3.2.3 Survey assistants were;

- Assistant Ecologist, Frances McNally;
- Assistant Ecologist, Rachel Davies.
- Assistant Ecologist, Kathryn Bell and;
- Assistant Ecologist, Hal Starkie

3.2.4 Survey dates, building surveyed, and relevant surveyors are as listed in table 1 below:

**Table 1: Survey dates, building surveyed, and surveyor names**

| Survey date | U1b5-1 Surveyors                             | u1b5-2 Surveyors                           |
|-------------|----------------------------------------------|--------------------------------------------|
| 09/05/2025  | N/A                                          | Jessica Dangerfield (Lead) & Rachel Davies |
| 10/05/2025  | Jessica Dangerfield (Lead) & Frances McNally | N/A                                        |
| 05/06/2025  | N/A                                          | Jessica Dangerfield (Lead) & Rachel Davies |
| 09/06/2025  | Kathryn Bell (Lead)                          | N/A                                        |
| 10/06/2025  | Hal Starkie (Lead)                           | N/A                                        |

- 3.2.5** The number and timing of the survey visits was determined by the moderate suitability of u1b5-1 and u1b5-2 to support roosting bats, see Table .

**Table 2: Survey effort for buildings and structures according to the suitability of the potential bat roost (adapted from Collins (ed.), 2023)**

| Suitability to Support Roosting Bats | Buildings or Structures                                                                                                                      |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| None/Negligible                      | None                                                                                                                                         |
| Low                                  | One survey visits at dusk, May to August inclusive                                                                                           |
| Moderate                             | Two survey visits at dusk separated by a minimum of three weeks, between May and September with at least one visit between May and August    |
| High                                 | Three survey visits at dusk separated by a minimum of three weeks, between May and September with at least two visits between May and August |

- 3.2.6** The emergence survey began 15 minutes before sunset and ended 120 minutes after sunset, following good practice guidance (Collins (ed.), 2023).
- 3.2.7** Weather conditions including the air temperature at 1m, windspeed and precipitation were recorded by the lead surveyor at the start and end of the survey, making use of temperature monitors/thermometers/weather apps on site. Any limitations that could affect bat behaviour were recorded.
- 3.2.8** Table 2 outlines the weather conditions recorded during all the survey visits. The suitability of the weather conditions for the surveys overall on each visit was determined on a case-by-case basis by taking all the parameters together.

**Table 2: Recorded weather conditions during survey visits**

| Date       | Surveyed structure | Sunset Time | Start Time | End Time | Temp. (°C) | Wind speed (Beaufort) | Precipitation |
|------------|--------------------|-------------|------------|----------|------------|-----------------------|---------------|
| 09/05/2025 | u1b5-2             | 20:49       | 20:34      | 22:19    | 15         | 2                     | 0             |
| 10/05/2025 | u1b5-1             | 20:50       | 20:35      | 22:20    | 16         | 0                     | 0             |
| 05/06/2025 | ub15-2             | 21:24       | 21:09      | 22:54    | 13         | 3                     | 0             |
| 09/06/2025 | u1b5-1             | 21:27       | 21:12      | 22:57    | 17         | 1                     | 0             |
| 10/06/2025 | u1b5-1             | 21:27       | 21:10      | 23:00    | 17         | 1                     | 0             |

- 3.2.9** A total of 2 Night Vision Aids (NVAs) were used to survey u1b5-1 & u1b5-2, respectively.
- 3.2.10** Table 3 shows the type, and model for each NVA location and is also represented on Figure 2. As indicated in good practice guidance (Collins (ed.), 2023) all potential roost features (PRFs) identified during the PEA and PRA were surveyed using NVAs. This reduced uncertainty caused by dark conditions and enables review of footage for detailed re-assessment of bat activity post survey. NVA type (thermal imagery (TI) or Infrared (IR)) and location was determined by the

PRF data gathered during the PRA and PRF inspection surveys. IR cameras were paired with an external IR light source when required by the model.

**Table 3: Specification, supporting equipment, map reference and surveyed building of each NVA used during the survey**

| NVA Type  | NVA Model          | Additional Equipment  | Map Reference                                           | Building |
|-----------|--------------------|-----------------------|---------------------------------------------------------|----------|
| IR camera | Panasonic          | N/A                   | Visit 1, Camera Location 2 & Visit 2, Camera Location 2 | u1b5-1   |
| IR camera | Night Fox Whisker  | N/A                   | Visit 1, Camera Location 1 & Visit 2, Camera Location 1 | u1b5-1   |
| IR camera | Panasonic          | N/A                   | Visit 1, Camera Location 2 & Visit 2, Camera Location 2 | u1b5-2   |
| IR camera | Night Fox Whisker  | N/A                   | Visit 1, Camera Location 1                              | u1b5-2   |
| TI Camera | Thermal Master DV2 | N/A                   | Visit 2, Camera Location 1                              | u1b5-2   |
| IR camera | Night Fox Whisker  | 1 additional IR torch | Visit 2, Camera Location 2                              | u1b5-2   |

- 3.2.11** The GPS location of each surveyor/ NVA location was recorded (Figure 2).
- 3.2.12** During the emergence surveys, access points/PRFs were watched and recorded continuously by the surveyors and NVAs. Sufficient surveyor numbers and positions were used to allow recording of peripheral bat activity and ensured that NVAs functioned properly throughout the survey, including recording, and adjusting infra-red illuminators where necessary. Walkie-talkies were used to maintain contact between surveyors, facilitating cross-referencing of bat activity to enable interpretation.
- 3.2.13** Recordings of bat echolocation were made using Batlogger M detectors at each surveyor and NVA location and any bats seen to emerge from PRFs were noted, along with the flight direction. Species were identified in the field where possible, however, recordings were retained for later analysis if necessary to identify the species more accurately (Russ, 2021) (Middleton et al, 2022). NVAs were monitored during the survey particularly after light levels had decreased below visible levels, to record any roost activity later into the survey not otherwise visible by eye.
- 3.2.14** Incidental bat activity, including likely species, number of passes, direction of flight paths, and number of bats was recorded by the surveyor but only where doing so would not compromise the emergence surveys of the PRFs. These incidental data were used to determine the presence of other on or off-site roosts based on timing and behaviour.

### 3.3 Data Analysis

3.3.1 Bat call analysis was carried out using Bat Explorer by Eleckon.

3.3.2 All NVA footage was reviewed post-survey to check for roost activity not noted during the survey.

---

## 4. Results

### 4.1 Site Description

- 4.1.1 Two buildings (u1b5-1 & u1b5-2) were identified within the site boundary (see Figure 2, Figure 3a).
- 4.1.2 u1b5-1 corresponds to the smaller of the two buildings, with an approximate area of 57ft<sup>2</sup>. Located towards the north-east of the site. Ivy (*Hedera helix*) covers the majority of the building and a parcel of mixed scrub to the north of the building, obscuring ability to be appropriately assessed for PRFs.
- 4.1.3 u1b5-2 corresponds to the larger of the two surveyed buildings with an approximate area of 313ft<sup>2</sup>. Located towards the east of the site. A parcel of mixed scrub surrounds every aspect of the building aside from the north, obscuring ability to appropriately assess for PRFs.
- 4.1.4 u1b5-1 and u1b5-2 were assessed as having moderate suitability, which following this was due to building u1b5-1's features being too high to internally inspect and a lack of internal access to the structure, whilst u1b5-2 supported access to an internal cavity wall which has potential to support multiple bats roosting, however, is deemed unable to support maternity or hibernation roosts. In line with Bat Conservation Trust (BCT) survey guidelines, both buildings were given a moderate suitability as a precautionary measure.
- 4.1.5 The site is set within a network of suburban residential properties with a woodland corridor present to the north and west of the site, which can act as connectivity corridors to the wider landscape, including suitable habitats like those found in Belle Vue Park which is located to the north of the site and hosts the one waterbody present within a 250m buffer of the site. A railway green corridor is also present, approximately 0.6km from site, but is connected to the site via a woodland corridor to the north of the site.

### 4.2 Dusk Emergence Surveys

- 4.2.1 PRFs surveyed included holes in brickwork, missing mortar/gaps between bricks, damaged masonry around windows in building interior, ivy growing around building, smashed windows granting access to building interior and missing exterior mortar fillets. [Report Ref.: LNT001-019-005/001/00].
- 4.2.2 The surveys concluded with no observed bat emergences.

### 4.3 Roost Categorisation

- 4.3.1 No bats were recorded emerging throughout all the surveys undertaken on site. It is therefore plausible to ascertain that there are no active roosts on either building.

### 4.4 Incidental Activity

- 4.4.1 At least four species of bat, Common pipistrelle (*Pipistrellus pipistrellus*), Nathusius's pipistrelle (*Pipistrellus nathusii*), Noctule (*Nyctalus noctula*) and Soprano pipistrelle (*Pipistrellus pygmaeus*) were recorded incidentally during the dusk emergence survey visit.

- 4.4.2** Common pipistrelle was recorded incidentally on all survey visits, for both buildings. Nathusius's pipistrelle and Noctule was only recorded on the 5<sup>th</sup> of June, whilst surveying building u1b5-2. Similarly Soprano pipistrelle was only recorded on 9<sup>th</sup> June, whilst surveying building u1b5-2.
- 4.4.3** Activity across the site was predominantly foraging and commuting bats (Middleton et al, 2022), recorded throughout the survey, which is typical at this time of the year.

## 5. Legal and Planning Policy Considerations

- 5.1.1** This section presents the legislation requirements and policy considerations known to be relevant based on the results of dusk emergence surveys for the site.
- 5.1.2** As set out in Appendix 1, all British bats receive comprehensive protection under
- The Conservation of Habitats and Species Regulations, 2017 (as amended);
  - and the Wildlife and Countryside Act 1981, (as amended).
  - The Countryside Rights of Way Act 2000 (which amends the Wildlife and Countryside Act 1981); and
  - The Natural Environment and Rural Communities (NERC) Act 2006 (which amends the Wildlife and Countryside Act 1981).
- 5.1.3** Taken together, this legislation in combination makes it an offence to deliberately capture, injure, kill or disturb a bat. It is also an offence to damage, destroy and intentionally or recklessly obstruct access to any structure or place used for shelter or protection by a bat.
- 5.1.4** The Conservation of Habitats and Species Regulations 2017 make it an offence to ‘*deliberately disturb a bat in such a way as to be likely to impair its ability to survive to breed or reproduce, or to rear or nurture its young; or to impair its ability to hibernate or migrate; or affect significantly the local distribution or abundance of the species to which they belong.*’
- 5.1.5** In addition, bats are listed as Newport City Council’s priority species, as well as being listed as national priority species. Bats are therefore part of the local Biodiversity Action Plan and are protected under sections 41 (England) and 42 (Wales) of the NERC Act 2006. In addition to the seven bat species listed in section 41 of the NERC Act 2006, Wales also includes common pipistrelle as a priority species, as listed in section 42, as well as section 7 of the Environment (Wales) Act 2016. Four species incidentally recorded during the survey effort of this report are priority species; common, Nathusius’ and soprano pipistrelle as well as noctule.
- 5.1.6** Future Wales - the National Plan 2040 states the following:
- 5.1.7** *“Outcome 10 focuses on places with biodiverse, resilient and connected ecosystems. As such, the variety of flora and fauna found across Wales make Wales a special place. Biodiversity underpins the functioning of healthy, resilient ecosystems and the multiple benefits they provide. While biodiversity has declined in recent decades, we will reverse these losses and enhance the resilience of ecosystems. The planning system will ensure wildlife is able to thrive in healthy, diverse habitats, both in urban and rural areas, recognising and valuing the multiple benefits to people and nature.”*
- 5.1.8** “Policy 9 concerns Resilient Ecological Networks and Green Infrastructure. To ensure the enhancement of biodiversity, the resilience of ecosystems and the provision of green infrastructure, the Welsh Government will work with key partners to:”
- *“identify areas which should be safeguarded and created as ecological networks for their importance for adaptation to climate change, for habitat protection, restoration or creation, to*

*protect species, or which provide key ecosystems services, to ensure they are not unduly compromised by future development; and”*

- *“identify opportunities where existing and potential green infrastructure could be maximised as part of placemaking, requiring the use of nature-based solutions as a key mechanism for securing sustainable growth, ecological connectivity, social equality and well-being. Planning authorities should include these areas and/or opportunities in their development plan strategies and policies in order to promote and safeguard the functions and opportunities they provide. In all cases, action towards securing the maintenance and enhancement of biodiversity (to provide a net benefit), the resilience of ecosystems and green infrastructure assets must be demonstrated as part of development proposals through innovative, naturebased approaches to site planning and the design of the built environment. Diligence in the development with respect to bats will ensure the development remains in line with local planning policy.”*

- 5.1.9** The proposals include the demolition of buildings u1b5-1 and u1b5-2, both of which have been found to support no roosting bats.
- 5.1.10** As no bats were observed as emerging from either building within the site during the surveys, roosting bats are considered likely absent from both buildings.
- 5.1.11** Without mitigation and licensing, the Proposed Development would contravene the legislation and policy set out above with respect to bats. This is because the demolition works of u1b5-1 & u1b5-2 would destroy potential bat roosts and could result in disturbance, harm and death of individual bats. However, using established techniques it should be possible to:
- Avoid harm to individual bats during the development process; and
  - Maintain the population of bats at a favourable conservation status.
- 5.1.12** The recommendations set out in Section 6 for mitigation and licencing should be followed in order to proceed lawfully with regard to bats and their roosts.
- 5.1.13** Planning permission is in the process of being applied for, therefore consideration of policies by the Planning Policy Wales (PPW) relating to the natural environment should be made PPW states that developments should aim to conserve or enhance biodiversity and encourages opportunities to incorporate biodiversity in and around developments.
- 5.1.14** The Biodiversity Action Plan (BAP) includes a species action plan for bats, which includes the local positive factors and threats. The threats include the following: Loss of and damage to roosting sites, including buildings, hollow trees, and underground structures (mines, tunnels, ice-houses, cellars, etc).
- 5.1.15** Within the BAP, the conservation objectives are, to contribute to UK bat species action plans by:
- Enhancing, where necessary, roosting sites (including hibernation sites) and important feeding habitats (particularly around maternity roosts) - with the aim of increasing bat population levels within the County. Recommendations are made in Section 6 to ensure that the development is compliant with respect to the above legislation and policy; and
  - Maintaining known populations of all bat species in the County.

**5.1.16** Moreover, section 7 of the Environment (Wales) Act 2016 lists the living organisms of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales. In this list, three species incidentally observed on site during the survey effort are named. These being the:

- Common pipistrelle
- Noctule and;
- Soprano pipistrelle

## 6. Recommendations

### 6.1 Mitigation and Licencing

- 6.1.1** A mitigation licence is not required as bats are likely absent from both buildings within the site to be demolished.
- 6.1.2** No bats were found during the survey visits; however, bats are mobile and frequently change roosting sites and therefore could begin roosting within the features identified within the buildings at any time. It is recommended that contractors receive a toolbox talk for bats as part of site induction. If in the unlikely event a bat is found during works, works should cease immediately, and a suitably experienced ecologist contacted.
- 6.1.3** A method statement should be produced detailing the precautionary measures to minimise the disturbance of bats if present in the buildings. The method statement should include the following measures:
- A toolbox talk, to be delivered to site operatives by a suitably experienced ecologist prior to the start of the works;
  - Detail on working hours - works to be undertaken during daylight hours, or use of directional lighting pointing away from adjacent buildings where works are to take place at night or in low light levels;
  - Necessary precautions depending on works timings - Demolition works to ideally take place outside of the maternity and hibernation seasons (*i.e.* demolition to occur in late March-April, or September-October, inclusive) as this is when bats are least likely to be vulnerable to disturbance. However, due to the moderate potential of both buildings surveyed on site, potential for maternity roosts is unlikely and therefore works do not have to take place outside of the maternity season, though it is recommended.
  - Working methods - Soft strip demolition of u1b5-1 and u1b5-2;;
  - Control of noise - Use of low noise and low vibration working methods as far as practicable, positioning of generators or other noisy machinery and turning off machinery when not in use, and or use of acoustic barriers;
  - Actions to be taken if a bat is disturbed - Works to pause immediately and a suitably experienced ecologist to be contacted to advise on additional measures.

#### *Commuting and Foraging Bats*

- 6.1.4** During construction, all works should ideally be conducted during daylight hours. If works need to be conducted after dark or during night hours, all lighting should be hooded and directional to avoid glare. This can be achieved by adopting from best practice guidelines such as lights should be directed below a 70° angle to create a large volume of darker space above and ensuring there is no vertical light spill (GN08/23).
- 6.1.5** Parcels of Mixed scrub (h3h-1 & h3h-2) were identified next to both ub15-1 and u1b5-2 on site in a previous PEA survey (Thomson, 2024). These parcels will likely be removed via vegetation clearance during the development of the site. It is unlikely that removal of these parcels of habitat will negatively impact bats as the scrub was not mature enough to support roosting

features, and due to the small sizes of the parcels it is unlikely that the aforementioned parcels will provide opportunities for commuting and foraging - especially as there are more suitable corridors for commuting and foraging such as the woodland adjacent to the north of the site.

- 6.1.6** It should be noted however, that the parcels of scrub (h3h-1 & h3h-2) are beginning to colonise both u1b5-1 and u1b5-2, and as a result made u1b5-1 inaccessible to survey from the northern, eastern and western aspects, whilst making u1b5-2 inaccessible from the eastern, southern and western aspects. Due to this, it is impossible to rule out the potential for more PRF's to be hidden behind the scrub. As a result, if vegetation clearance is to be undertaken, it should be done so carefully and if a PRF or signs of a bat are discovered - a suitably qualified ecologist should be contacted for further recommendations.

## **6.2 Further Bat Surveys**

- 6.2.1** Buildings u1b5-1 and u1b5-2 should be re-assessed for their potential to support roosting bats and dusk emergence surveys repeated if the demolition is delayed beyond December 2025.

## 7. Conclusion

- 7.1.1 No roosts were confirmed during the dusk emergence surveys of both buildings u1b5-1 and u1b5-2, therefore concluding that roosting bats are likely absent from these buildings and no further recommendations are being made for further survey.
- 7.1.2 If new streetlights are being installed as a part of the development, it is recommended that a lighting plan review takes place by a suitably qualified ecologist.
- 7.1.3 Enhancement measures included in the combined PEA and PRA report (Thomson, 2024) should be followed to enhance the site for bats and other wildlife post development. This included but is not limited to the installation of bat boxes (See recommendations section for further information).

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## 8. References

Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines (4<sup>th</sup> edition). The Bat Conservation Trust, London. ISBN-978-1-7395126-0-6.

Institution of Lighting Professionals (ILP) (2023) Bats and artificial lighting at night GN08/23. Available at: <https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/>.

JNCC and Defra (on behalf of the Four Countries' Biodiversity Group). (2012). UK Post-2010 Biodiversity Framework. Available from: <http://jncc.defra.gov.uk/page-6189>.

Institution of Lighting Professionals (ILP) (2023) Bats and artificial lighting at night GN08/23. Available at: <https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/>.

Middleton, N., Froud, A., French, K. (2022). Social calls of the bats of Britain and Ireland. Pelagic Publishing ISBN 9781784273781.

Reason, P.F., Wray, S. (2023). UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats. Chartered Institute of Ecology and Environmental Management, Ampfield.

Russ, J. (2021) Bat calls of Britain and Europe. A Guide to Species Identification. Pelagic Publishing ISBN 9781784272258.

Slack G & L Tinsley (2015) Linking Bat Surveys With Meteorological Data: A Way To Target Operational Wind Farm Mitigation. In Practice. Issue 87: 34-38.

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## Appendix 1 - British Bats

### Introduction

A summary of the biology of British bats and the legislation and policy that protects them is provided below.

### Biology

There are 18 British species of bats, belonging to two families: the horseshoe bats (*Rhinolophidae*) and vesper bats (*Vespertilionidae*). Of the 18 species, two species are horseshoe bats and belong to the genus *Rhinolophus*, the remaining 16 species are vesper bats and are sub-divided between six genera; *Myotis*, *Eptesicus*, *Nyctalus*, *Pipistrellus*, *Plecotus* and *Barbastella*. Whilst there are many differences in the biology of the different species, all share certain characteristics, and these are described below.

### Roosting

Bat species utilise roost sites of varying character; some preferring tree roosts whilst others are thought to be almost entirely dependent on built structures. Most bats will have a number of available roosting sites within their range, which they move between throughout the year. They are generally faithful to their roosts and a colony of bats may use the same roost site(s) year after year.

Bats hibernate during the winter and will often gather to hibernate communally, remaining in the same hibernation roost from November to February/March. Hibernation roost sites typically have a constant low temperature and high humidity levels. Sites include caves, mines, thick walled buildings and hollow trees. With the arrival of spring, the ambient temperature and day length increase, and bats begin to leave their hibernation roosts, either moving immediately to summer roost sites or occasionally, to a transitional roost.

By June, breeding females will begin to congregate in maternity roost sites where they will give birth to and nurture their young. Male bats are also occasionally found roosting in maternity roosts but during this period they mostly roost alone. Maternity roost sites include hollowed out trees, buildings and bridges. Male bats may use similar sites but also cracks and crevices in trees, under loose tiles or even amongst dense ivy growth during the summer period. Similar sites may be used by bats for brief periods during the night when they are resting or feeding on recently caught prey. In autumn, male bats establish mating roosts and are visited by females. A variety of roost sites may be used until the bats return to their hibernation roosts.

### Foraging

All British bat species feed on invertebrates, with flies, beetles, moths and other insects making up much of their diet. Areas with an abundance of insect prey, such as woodlands, scrub, wetlands, river corridors and flower rich grasslands are therefore favoured foraging sites for bats. Habitats such as intensively farmed arable land, and amenity grassland support a much lower invertebrate abundance and are therefore less favoured foraging habitats for bats.

### Commuting

Bats favour roost sites in close proximity to suitable foraging habitat, however, given variation in prey availability, land-use change, and competition with other bats, for at least part of the year bats must commute between their roosts and foraging habitat.

Commuting routes tend to follow linear features in the landscape such as hedgerows, woodland edges, rivers and other watercourses, particularly when crossing areas of less favourable habitat. The distance that bats commute between roost sites and foraging areas is dependent on local geography and also the species of bat. Some species will travel up to 18km, though shorter distances are more typical.

### Site Designation

All bat roosts in the UK receive protection under the following legislation:

- Conservation of Habitats and Species Regulations 2017 as amended (which replaces the Conservation (Habitats &c) Regulations 1994 as amended);
- Wildlife and Countryside Act 1981, as amended;
- The Countryside and Rights of Way Act 2000 (which amends the Wildlife and Countryside Act); and
- Natural Environment and Rural Communities Act 2006 (which amends the Wildlife and Countryside Act).

This is described in more detail under 'Species Protection' below. In addition, the most important sites for certain bat species in the UK receive further statutory protection through designation of Special Areas of Conservation (SACs) and/or Sites of Special Scientific Interest (SSSIs).

Four UK bat species, the greater and lesser horseshoe, barbastelle and Bechstein's bats, are included on Annex II of the European Community Directive of the Conservation of Natural Habitats and of Wild Fauna and Flora, referred to as the Habitats Directive. The Habitats Directive was transposed into UK law by the Conservation of Habitats and Species Regulations 2017 as amended. The Habitat Regulations, amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, now form stand-alone legislation for England and Wales, independent of the Directive. This legislation requires that areas are designated as Special Areas of Conservation (SACs) to protect populations of these 4 bat species. These sites form part of the National site network and are considered to be of international importance for the bat populations they support.

Sites designated under the Wildlife and Countryside Act 1981 (WCA) are known as Sites of Special Scientific Interest (SSSIs). SSSIs received further protection under the Countryside and Rights of Way Act 2000 (CROW) and the Natural Environment and Rural Communities (NERC) Act 2006.

Some SSSIs are designated for the population(s) of bats that they support. The criteria for selecting SSSIs on the basis of their bat populations are provided in Guidelines for the Selection of Biological SSSIs (NCC, 1989):

- Greater horseshoe bat - all main breeding roosts and all winter roosts with 50 or more adult bats;

- Lesser horseshoe bat - all main breeding roosts containing 100 or more adult bats and all winter roosts containing 50 or more bats;
- Barbastelle, Bechstein's and grey long-eared bats - any traditional breeding roosts;
- Natterer's, Daubenton's, whiskered, Brandt's, serotine, noctule and Leisler's bats - only exceptionally large breeding roosts or those with a long history of use; and
- Mixed Roost sites - all hibernacula containing four or more species and more than 50 individuals or three species and 100 or more individuals or two species and 150 or more individuals, though these criteria may be lower in some parts of the UK.

Sites that qualify as SSSIs for the bat populations they support are considered to be of at least national importance.

Sites designated for nature conservation at the county level may also include bat populations as part of the site qualifying criteria, although the criteria used may vary from county to county. Such sites are protected through the planning system and there is generally a presumption against development that affects such sites in local authority development plans.

### Planning Policy

The National Planning Policy Framework (NPPF) 2024, gives further direction with respect to biodiversity conservation and land use change / development. The NPPF encourages local planning authorities to identify, conserve and restore, ecological networks, which should benefit bats, and it also states that planning permission should be refused if significant harm to biodiversity cannot be avoided, mitigated or compensated. In addition, the Government Circular 06/05, which relates to biodiversity conservation, states that all protected species, such as bats, are a material consideration for the planning authority when considering proposed developments.

### Species Protection

#### Legislation

All bat species are protected by the Conservation of Habitats and Species Regulations 2017 as amended. The Regulations make it an offence, with very few exceptions, to:

- Deliberately capture, injure or kill a bat;
- Deliberately disturb a bat in such a way as to be likely:
  - to impair its ability to survive, to breed or reproduce, or to rear or nurture its young; or
  - to impair its ability to hibernate or migrate; or
  - to affect significantly the local distribution or abundance of the species to which they belong.
- Damage or destroy a breeding site or resting place of a bat; or
- Keep, transport, sell or exchange, or offer for sale or exchange, any live or dead bat, or any part of, or anything derived from a bat.

In addition to the protection given to bats under the Conservation of Habitats and Species Regulations 2017 as amended already described, bats are also partially protected in England under the Wildlife and Countryside Act 1981 (as amended), which adds the following offences (with certain exceptions):

- Disturbance while it is occupying a structure or place which it uses for shelter or protection; or
- Obstructing access to any structure or place used for shelter or protection.

A roost is any structure or place used by bats for shelter or protection. As bats tend to re-use the same roosts year after year, the roost is protected whether bats are present or not, at the time.

In this context of the legislation, 'damage' would include such operations as treatment of wood with toxic preservatives or use of rodenticides near roosting bats while 'disturbance' includes any work in or affecting a bat roost.

If proposed actions, such as redevelopment of an existing building may lead to an offence under the above legislation, appropriate mitigation which seeks to avoid these impacts should be devised and implemented under licence from Natural England to allow the activity to proceed legally.

In addition to the above legislation, all bats are protected under the Bonn Convention, within which the Agreement on the Conservation of Bats in Europe (1991) or EUROBAT, establishes a mechanism for international collaboration to conserve bats and their habitats, including foraging habitats. All European bat species are covered under Appendix II of the Conservation of Migratory Species of Wild Animals (CMS).

The Hedgerow Regulations 1997 provide for the conservation of 'important' hedgerows and their constituent trees. The presence of a protected species such as bats is included in the assessment of whether a hedgerow is considered 'important' and applications to remove such hedgerows must be made to the planning authority.

### UK Post-2010 Biodiversity Framework and Species of Principal Importance

Published by the Joint Nature Conservation Committee (JNCC) and the Department for Environment, Food and Rural Affairs (Defra) in July 2012, the UK Post-2010 Biodiversity Framework identifies UK-scale activities and priority works that are required to deliver the EU Biodiversity Strategy. Following a process of devolution, the framework is underpinned by country level strategies which are now largely responsible for continuing the work carried out under the former UK Biodiversity Action Plans (UK BAP). JNCC guidance dictates that UK BAP background information on priority species and habitats still remains relevant and it now forms the basis of country specific priority lists, which for England, are specified under Section 41 of the Natural Environment and Rural Communities Act 2006 (the NERC Act). Targets for England's biodiversity strategy 'Biodiversity 2020': A strategy for England's wildlife and ecosystem services, are informed by this list.

Seven species of bats (Barbastelle, Bechstein's, greater and lesser horseshoe, brown long-eared, noctule and soprano pipistrelle) have been adopted as Species of Principal Importance for the Conservation of Biodiversity in England. This places a duty on all government departments to have regard for the conservation of these species and on the Secretary of State to further, or promote others

to further, the conservation of these species. Furthermore, the NPPF states that local planning authorities should promote the protection and recovery of priority species populations linked to national and local targets, which presumably means those listed under the Section 41 of the NERC Act, the former UK BAP and on Local or Regional priorities species lists.

## References

Altringham, J. (2003) British Bats. New Naturalist Series No. 93.

Entwistle, A. C., Harris, S., Hutson, A., Racey, P., Walsh, A., Gibson, S., Hepburn, I., and Johnston, J. (2002) Habitat management for bats: A guide for land managers, land owners and their advisors. JNCC, Peterborough.

Her Majesty's Stationery Office (HMSO) (2017). The Conservation of Habitats and Species Regulations 2017 as amended. <https://www.legislation.gov.uk/ukSI/2017/1012/contents/made>

Her Majesty's Stationery Office (HMSO) (2019) Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.

Her Majesty's Stationery Office (HMSO) (1981). Wildlife and Countryside Act 1981. Chapter 69. <https://www.legislation.gov.uk/ukpga/1981/69>.

Her Majesty's Stationery Office (HMSO) (2006). Natural Environment and Rural Communities Act 2006. <https://www.legislation.gov.uk/ukpga/2006/16/introduction>.

Highways Agency (1999 et seq) Design Manual for Roads and Bridges, Volume 10 Environmental Design and Management, Section 3 The Good Roads Guide- Nature Conservation, Part 6 Nature Conservation Management Advice in Relation to Bats.

Collins, J. (ed) (2023) Bat Surveys for Professional Ecologists: Good Practice Guidelines. (4<sup>th</sup> Edition). Bat Conservation Trust, London.

Institution of Lighting Professionals (ILP) (2023) Bats and artificial lighting at night GN08/23. Available at: <https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/>.

JNCC and Defra (on behalf of the Four Countries' Biodiversity Group). (2012). UK Post-2010 Biodiversity Framework. Available from: <http://jncc.defra.gov.uk/page-6189>.

Middleton, N., Froud, A., French, K. (2022). Social calls of the bats of Britain and Ireland. Pelagic Publishing ISBN 9781784273781.

Reason, P.F., Wray, S. (2023). UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats. Chartered Institute of Ecology and Environmental Management, Ampfield.

Mitchell-Jones, A.J. & McLeish, A.P. (1999). Bat Workers' Manual (2nd Edition). Joint Nature Conservancy Committee, Peterborough.

NCC (1989) Guidelines for Selection of Biological SSSIs. Nature Conservancy Council, Peterborough.

Office of the Deputy Prime Minister (2005) Planning Policy Statement 9; Biodiversity and Geological Conservation.

Russ, J. (1999). The Bats of Britain and Ireland. Alana Ecology, Shropshire.

Russ, J. (2021) Bat calls of Britain and Europe. A Guide to Species Identification. Pelagic Publishing ISBN 9781784272258.

Slack G & L Tinsley (2015) Linking Bat Surveys With Meteorological Data: A Way To Target Operational Wind Farm Mitigation. In Practice. Issue 87: 34-38.