



Ty Gwynn Jones, Abergele

Bat Survey Technical Report

Prepared For: Enfys Developments

Document Reference: 11137.002

August 2025

Version 1.0

TEP
401 Faraday Street
Birchwood Park
Warrington
WA3 6GA
Tel: 01925 844004
Email: tep@tep.uk.com
Offices in Warrington, Market Harborough, Gateshead, London and Cornwall

Document Title	Bat Survey Technical Report
Document Ref	11137.002
Version	1.0
Prepared For	Enfys Developments

Author	LM
Date	August 2025
Checked	JC
Approved	JC

Amendment History					
Version	Date	Modi fied by	Check/ Approved by	Reason	Status
1.0	August 2025	LM	JC/JC		

The Environment Partnership Ltd is a private limited company registered in England. Registered number 7745159. Registered office: 401 Faraday Street, Birchwood Park, Warrington, WA3 6GA.

© Copyright 2025 The Environment Partnership Ltd. All Rights Reserved.

This document has been prepared by The Environment Partnership Ltd ("TEP") for sole use of our Client in accordance with the provisions of the contract between TEP and the Client. No third party may use or rely upon this document or its content. TEP accepts no liability or responsibility for any such use or reliance thereon by any third party.

TEP is a Registered Practice of the Chartered Institute of Ecology and Environmental Management. The content of this document has been prepared in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) Code of Professional Conduct and is compliant with British Standard BS42020:2013 Biodiversity Code of Practice for Planning and Development.

The conclusions and recommendations contained in this document are based upon information gathered by TEP and provided by third parties. Information provided by third parties and referred to herein has not been independently verified by TEP, unless otherwise expressly stated in the document.

Nothing in this report constitutes legal opinion. If legal opinion is required, the advice of a qualified legal professional should be secured.

Contents

1.0	Introduction	4
2.0	Legislation	6
3.0	Methods	8
4.0	Results	11
5.0	Evaluation and Impact Assessment	13
6.0	Recommendations	14

Tables

Table 1: Summary of structures surveyed, number of surveyors/vantage points, number of survey visits and survey dates.	9
Table 2: Summary of the categorisations of structures within the site.	11
Table 3: PRF inspection survey findings, photographic record and potential roost habitat suitability categorisation of trees based on their location, characteristics and PRFs.....	12

Figures

Figure 1: Site location in the context of the wider landscape.	5
Figure 2: VP1 17.06.25	2
Figure 3: VP2 17.06.25	2
Figure 4: VP3 17.06.25	3
Figure 5: VP5 17.06.25	3
Figure 6: VP6 17.06.25	4
Figure 7: VP1 15.07.25	4
Figure 8: VP2 15.07.25	5
Figure 9: VP3 15.07.25	5
Figure 10: VP4 15.07.25	6
Figure 11: VP5 15.07.25	6
Figure 12: VP6 15.07.25	7

Drawings

Drawing 1: G11137.007 Surveyor Vantage Points, NVA Locations and Survey Results

1.0 Introduction

- 1.1 The Environment Partnership (TEP) was commissioned by Enfys Developments in April 2025 to undertake a Potential Roost Feature (PRF) inspection survey and Presence/Likely Absence Surveys as part of an Ecological Impact Assessment (EcIA) to support a redevelopment at the site of Ty Gwynn Jones in Abergele, Wales.
- 1.2 An Ecological Desk Study has been produced to support this technical report, provided under separate cover (TEP Ref: 11137.001). This technical report should be read in conjunction with the Ecological Desk Study.
- 1.3 A Preliminary Roost Assessment (PRA) was undertaken by Arbtech Consulting Ltd in February 2025 as part of a Preliminary Ecological Appraisal (PEA) of the site (Arbtech, 2025). In line with Bat Conservation Trust Guidelines, a single building was assessed for its suitability to support roosting bats.

Purpose of this Document

- 1.4 This technical report has the following objectives:
 - Give an overview of the habitats present within the site which could be used by bats for roosting, foraging and commuting;
 - Identify and characterise any confirmed bat roosts within the site, including species and status of roosts;
 - Assess potential impacts of site proposals on bat roosting, foraging and commuting; and
 - Determine required further actions for implementing avoidance, mitigation, compensation and enhancement measures, in relation to impacts of site proposals on bat roosting, foraging and commuting.

Site Description

- 1.5 The site is located near Abergele (central grid reference SH 94928 77491) immediately south of Rhuddlan Rd and 0.5km west of the A55 North Wales Expressway.
- 1.6 The site is surrounded by residential development comprising of private gardens and public greenspace with pockets of woodland to the south and west. The wider landscape comprises arable land, with Pensarn Beach approximately 1.5km north. Water bodies such as Pentre Mawr Lake can be found nearby, approximately 0.8km to the northwest. The location of the site in the context of the wider landscape is depicted by the red line shown in Figure 1.

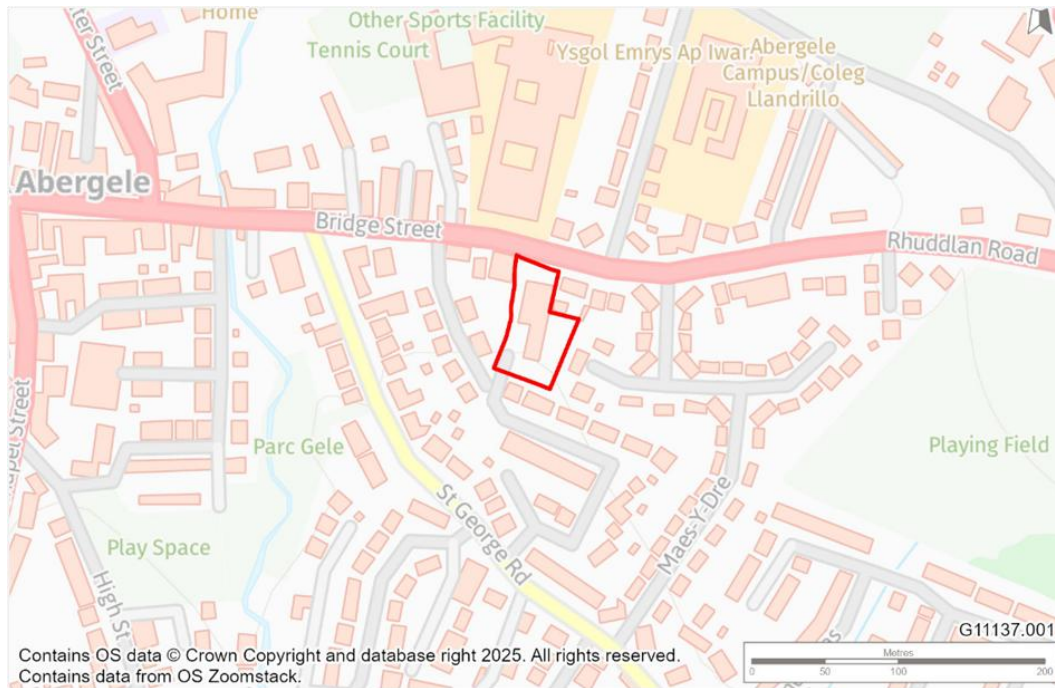


Figure 1: Site location in the context of the wider landscape.

2.0 Legislation

- 2.1 All bat species and their roosts are legally protected in the UK. All bats are listed as European Protected Species (EPS) in the Conservation of Natural Habitats and of Wild Fauna and Flora, better known as the Habitats Directive¹. Annex II of the Habitats Directive lists bat species of community interest requiring designation of Special Areas of Conservation (SACs). Annex IV of the Habitats Directive lists all bats as species of community interest in need of strict protection.
- 2.2 The Conservation of Habitats and Species Regulations 2017² and the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019³ (England and Wales), The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended)⁴ (Scotland) and The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended)⁵, transpose elements of the Habitats Directive into national law and are referred to as the 'Habitats Regulations'. There is also protection for bats and roosts in England and Wales under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended)⁶. Under UK legislation it is a criminal offence if any persons:
- Intentionally kill, injure, or take any bat;
 - Intentionally or recklessly damage, destroy or obstruct any place used for shelter or protection by a bat (even if bats are not occupying the roost at the time);
 - Intentionally or recklessly disturb a bat whilst it occupies a place used for shelter or protection; and
 - Possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat.
- 2.3 Section 41 (S41) of the Natural Environment and Rural Communities Act 2006 (NERC) (England)⁷, Section 7 (S7) of the Environment (Wales) Act 2016⁸, Section

¹ Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. Eur-Lex. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A01992L0043-20130701>

² Conservation of Habitats and Species Regulations 2017 (SI 2017/1012). Available at: <https://www.legislation.gov.uk/uksi/2017/1012/>

³ Conservation of Habitats and Species Regulations 2019 (SI 2019/579). Available at: <https://www.legislation.gov.uk/uksi/2019/579/>

⁴ The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) No. 2716. Available at: <https://www.legislation.gov.uk/uksi/1994/2716/contents/made>

⁵ The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended) No. 380. Available at: <https://www.legislation.gov.uk/nisr/1995/380/contents/made>

⁶ Wildlife and Countryside Act 1981 (as amended) c. 69. Available at: <https://www.legislation.gov.uk/ukpga/1981/69/>

⁷ Natural Environment and Rural Communities Act 2006 c. 16. UK Public General Acts. Available at: <https://www.legislation.gov.uk/ukpga/2006/16/>

⁸ Environment (Wales) Act 2016 (anaw 3) Part 1 Section 7. Acts of the National Assembly for Wales. Available at: <https://www.legislation.gov.uk/anaw/2016/3/section/7>

2(4) (S2) of the Nature Conservation (Scotland) Act 2004⁹ and Section 3(1) (S3) of the Wildlife and Natural Environment Act (Northern Ireland) 2011¹⁰ also identify bat species regarded by Statutory Nature Conservation Organisations (SNCOs) as being of 'principal importance' for the purposes of conserving biodiversity. Species of principal importance (SPI) are drawn from earlier lists of United Kingdom Biodiversity Action Plan (BAP) Priority Species and Habitats.

⁹ Nature Conservation (Scotland) Act 2004 asp 6 Part 1 Section 2. Acts of the Scottish Parliament. Available at: <https://www.legislation.gov.uk/asp/2004/6/section/2>

¹⁰ Wildlife and Natural Environment Act (Northern Ireland) 2011, C. 15. Acts of the Northern Ireland Assembly: <https://www.legislation.gov.uk/nia/2011/15/contents>

3.0 Methods

- 3.1 The following bat surveys were undertaken in accordance with the Bat Conservation Trust (BCT) Good Practice Guidelines (Collins, 2023)¹¹. Detailed data collation, field survey and data analysis and evaluation methodologies are provided at Annex A.

Ecological Desk Study

- 3.2 Information regarding historic bat species records, protected habitats and protected sites was collated as part of an Ecological Desk Study (TEP Ref: 11137.001) completed by TEP in July 2025. Desk Study data provided by Cofnod Local Records Centre (CLRC) included species records of the past decade, within a 2km minimum radius of the site. Designated sites within 10km were also reviewed to inform this technical report.

Data Constraints

- 3.3 An absence of records does not indicate the absence of protected species from the search area. Furthermore, the species investigated are mobile and will move into and out of areas over time. For these reasons a precautionary approach has been taken in the review of desk study data.
- 3.4 Where there is any doubt, except where specifically noted, species are assumed to be present, and the impact assessment assumes a higher level of significance (within the spectrum of possible significance).

Roost Surveys

Preliminary Roost Assessment - Structures

- 3.5 A daytime Preliminary Roost Assessment (PRA) of a single structure within the site (building B1) was undertaken by an Arbtech ecologist on 11 February 2025. Detailed methods are provided in the PEA report (Arbtech, 2025).
- 3.6 Following the PRA, the structure was categorised with reference to its bat roost habitat suitability (high, moderate, low, negligible or none) as determined by the location, characteristics and potential roost features (PRFs).

¹¹ Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists Good Practice Guidelines (4th edition). The Bat Conservation Trust, London. ISBN-978-1-7395126-0-6

Presence/Likely Absence Surveys - Structures

- 3.7 Building B1 was assessed during the PRA as having moderate suitability to support roosting bats and was therefore subject to nocturnal presence/likely absence surveys.
- 3.8 Surveys were led by qualified TEP ecologists, supported by TEP bat survey trained assistant ecologists and night vision aids (NVAs). A summary of structures surveyed, number of surveyors/ vantage points, number of survey visits and dates of survey are provided in Table 1, in addition to survey times and weather conditions. Surveyor vantage points and NVA locations used to gain coverage of the structure's aspects/elevations and PRFs identified during the PRA are shown on the TEP Drawing G11137.007.

Table 1: Summary of structures surveyed, number of surveyors/vantage points, number of survey visits and survey dates.

Structure Ref.	No. of Surveyors / Vantage Points	Survey Visit No.	Survey Dates	Sunset Time	Timings	Weather Conditions at Start/End				Moon Phase ¹²
						Temp (°C)	Rain	Cloud ¹³	Wind ¹⁴	
B1	6	1	17.06.25	21:41	Start: 21:26	19	0	2	1	Waning Gibbous
					Finish: 23:11	18	0	3	2	
B1	6	2	15.07.25	21:30	Start: 21:15	18	1	7	4	Waning Gibbous
					Finish: 23:00	18	0	7	4	

Survey Constraints

- 3.9 During Visit 2 light, intermittent drizzle was recorded at the start of the survey along with a high level of wind throughout. Bat activity continued to be recorded during this period, and therefore weather conditions were not considered to be a significant constraint.

¹² Moon Phase: New Moon, Waxing Crescent, First Quarter, Waxing Gibbous, Full Moon, Waning Gibbous, Third Quarter, Waning Crescent.

¹³ Cloud cover is reported in oktas or eighths (i.e., 0 oktas represent the complete absence of cloud, 1 okta cloud cover of 1 eighth or less, and so on to 8 oktas which represents full cloud cover), with the additional convention that 9 oktas represent sky obscured by fog or mist.

¹⁴ Wind strength is reported using the Beaufort Scale of Wind Force, this scale runs from 0 to 12, information on the conditions denoted by scores are as follows: 0 – Calm (vertical smoke); 1 - Light Air (slight smoke drift); 2 - Light Breeze (leaves gently rustle); 3 - Gentle Breeze (small twigs constantly move); 4 - Moderate Breeze (small branches begin to move) and 5 - Fresh breeze (small trees in leaf begin to sway).

- 3.10 There were no further constraints affecting the nocturnal presence/likely absence emergence surveys.

PRF Inspection Surveys - Trees

- 3.11 Tree T2, a wild cherry tree (*Prunus avium*), was identified during the PRA undertaken by Arbtech as having a PRF on its southern aspect (Arbtech, 2025). The PRF was too high to inspect from ground level and was therefore subject to a PRF inspection survey to determine its suitability for roosting bats.
- 3.12 A PRF inspection survey was undertaken of T2 by a TEP bat licensed ecologist, supported by a TEP assistant ecologist on 22 July 2025.

Survey Constraints

- 3.13 There were no constraints affecting the PRF inspection survey.

Data Analysis and Species Identification

- 3.14 Sonogram analysis of raw data files from detectors was undertaken using the most current version of Kaleidoscope software (currently V5.7) by qualified TEP ecologists.
- 3.15 NVA data was reviewed by a TEP bat survey trained assistant ecologist.

Data Constraints

- 3.16 Detectability of some bat species e.g. *Plecotus* and *Barbastella* is lower than others, e.g., *Nyctalus* and *Pipistrellus*, due to their less detectable echolocation calls and hunting strategies that take them into less open habitats. Careful interpretation is therefore applied if comparison across species or species groups is required.

Evaluation

- 3.17 For the purposes of this technical report and of assigning value to bat roosts, the guidance set out in the Chartered Institute of Ecology and Environmental Management (CIEEM) UK Bat Mitigation Guidelines (Reason and Wray, 2023¹⁵) as detailed at Annex A, has been followed. This takes account of regional variations in bat distribution and rarity, and roost status importance.

¹⁵ Reason, P.F. and 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.

4.0 Results

Ecological Desk Study

- 4.1 The Ecological Desk Study identified multiple records of bat species for the last ten full years within 2km of the site. These include:
- Brown Long-eared *Plecotus auritus*;
 - Lesser Horseshoe *Rhinolophus hipposideros*; and
 - Pipistrelle species *Pipistrellus*.
- 4.2 There is one Site of Special Scientific Interest (SSSI) (Coed Y Gopa) designated for a hibernation roost of lesser horseshoe bats 1.3km west of the site.

Roost Surveys

Preliminary Roost Assessment - Structures

- 4.3 The detailed findings and a photographic record of the PRA are presented in the PEA undertaken by Arbtech (Arbtech, 2025). No evidence of roosting bats was identified on or within B1.
- 4.4 A summary of the categorisations of structures within the site is provided in Table 2.

Table 2: Summary of the categorisations of structures within the site.

Structure Reference	Categorisation of Potential Bat Roost Habitat Suitability
B1	Gable ended, two storey blocks of flats. The walls are constructed of brick with a pitched, gable roof constructed of cement tiles. The eaves are wooden, with no chimneys observed on the building. The windows and doors are constructed of a mix of UPVC and wood. There are several loft spaces present within the property. The building has moderate suitability for roosting bats.

Presence/Likely Absence Surveys - Structures

- 4.5 Nocturnal presence/likely absence emergence surveys supported the findings of the PRA. Surveyor vantage points and NVA locations used to gain coverage of B1 aspects/elevations and PRFs in addition to bat activity observations are shown on TEP Drawing G11137.007.
- 4.6 No evidence of bat roosts or roost activity was recorded during the surveys.

- 4.7 During the surveys common pipistrelle was recorded foraging and commuting within the site with surveyors noting foraging activity around trees adjacent to B1.

PRF Inspection Surveys - Trees

- 4.8 Following the PRF inspection survey, tree T2 (located at grid ref: SH 94952 77467) was assessed to have PRF-I bat roost habitat suitability.
- 4.9 No residual evidence was identified on or in T2 during the PRF inspection survey. The detailed findings and a photographic record are presented in **Error! Reference source not found.**

Table 3: PRF inspection survey findings, photographic record and potential roost habitat suitability categorisation of trees based on their location, characteristics and PRFs.

T2	PRF 1 - The tree is measured to have a DBH of ~90cm. PRF is a tear in the trunk, located approximately ~2.2m from ground level on southern aspect (south facing). PRF measures approximately 10cm wide and 35cm high. Categorisation: PRF-I		Visit 1 - 22/07/2025	No bat evidence found.
----	---	--	-------------------------	------------------------

5.0 Evaluation and Impact Assessment

- 5.1 Surveys did not confirm the presence of roosting bats within the site and therefore building B1 is suitable for demolition with no mitigation licence required.
- 5.2 Common pipistrelles were recorded commuting and foraging within the site during surveys which is a common and widespread species of no more than site level value.
- 5.3 Whilst no roosting bats were found the buildings do have features suitable for roosting bats. Therefore, precautionary working measures will be required during demolition of the building.

6.0 Recommendations

Roost Habitat

Structures

- 6.1 Prior to works commencing on building B1, which was identified as having potential bat roost habitat suitability, a licensed bat consultant will induct all contractors via a toolbox talk and complete an external and internal inspection of all safely accessible areas of the associated structures. Where practicable bat suitable features will be dismantled by hand under the supervision of a licensed bat ecologist.
- 6.2 Should any bats be found during works, the safety of the bats must be ensured, and works must cease until a mitigation licence has been applied for and granted by Natural Resources Wales (NRW) to enable works to proceed. If any bat is found in state of torpor, sick or injured, the Bat Conservation Trust or a local bat carer must be contacted.
- 6.3 Loss of potential roost habitat for bats due to the demolition of building B1 within the site should be negated via the provision of replacement roost boxes. Boxes should be installed on the new building at a height of three metres and positioned facing southeast or southwest.
- 6.4 If works do not take place within two survey seasons i.e. by September 2026, then updated surveys will be required.

Trees

- 6.5 Should tree T2 require removal, this will impact bat roost resource availability within the site. Where bats are transitional in their use of roost habitat roosts may be destroyed or roost functionality impacted by severance of commuting routes and indirect disturbance from external lighting.
- 6.6 Loss of roost habitat for bats due to the removal of trees within the site should be negated via the provision of replacement roost boxes. Replacement roost boxes should act to replicate the size, height and aspects of tree roost habitat lost. Roost boxes should include a variety of designs that will support a variety of species and roost types. Boxes should be installed at a height of three metres and positioned facing southeast or southwest in areas where conditions such as temperature and humidity will be maintained by surrounding vegetation structure e.g. on trees sheltered by surrounding tree or scrub cover.
- 6.7 Most bat species prefer to fly in dark areas straight into vegetation. All replacement roost habitat should be positioned away from sources of external lighting or where

light spillage may influence use of a box. Positioning and specification of any boxes should be agreed at an early stage with the project ecologist to ensure that they are fully considered in the overall scheme design.

- 6.8 If works on trees with bat roost habitat suitability are required (including removal or pruning) a Precautionary Working Measures Method Statement (PWMMS) should be produced and implemented. The PWMMS should include details of precautionary soft felling measures to be implemented whilst removing or pruning trees with bat roost habitat suitability. Precautionary soft felling measures should include:
- A toolbox talk to contractors identifying the best practice methods to be adhered to and what to do in the event any bats are discovered during works;
 - Pre-commencement checks of any PRFs prior to tree removal under supervision of a licensed bat ecologist via aerial inspection either by climbers or use of ladders or a Mobile Elevating Work Platform (MEWP) as required. The licenced bat ecologist will inspect PRFs using an endoscope to confirm absence of bats;
 - Work must be conducted in a sensitive manner, and where reasonably practicable, timber with bat roost suitability should not be directly sawn through. If such timber is removed, crevices and holes will be checked by a licenced bat ecologist and then the timber must be left at the base of the tree for at least 48 hours; and
 - If there is any concern that bats may be present within features not previously identified, works will cease, and contractors will seek advice from a suitably qualified ecologist.
- 6.9 Trees with bat roost habitat suitability that are retained within the proposed development should be protected by implementing a buffer zone around the trees. The buffer zone around retained trees should as a minimum adhere to the root protection area in accordance with BS5837: 2012 Trees in Relation to Design Demolition and Development to maintain the health of the tree and to minimise impacts on bats roosting within the locality.

Commuting and Foraging Habitat

- 6.10 Mitigation, compensation and enhancement measures are recommended to ensure that the proposed development can provide offsetting for the loss of foraging and commuting habitats with regard to bats.
- 6.11 Enhancing the existing grass lawns with wildflower/diverse grassland mixes and managed as tall grassland would increase the invertebrate assemblage and therefore the prey availability for bats.

- 6.12 New tree, hedgerow and scrub/shrub planting within the proposed development should be designed to provide linear features which may be used by commuting bats and connect with habitats in the wider landscape.

Sensitive Lighting Scheme

- 6.13 If any lighting is required within the site a sensitive lighting scheme should be implemented. Where lighting is required within the proposed development, the lighting scheme should be designed in line with the Institution of Lighting Professionals Guidance Note 08/23: Bats and Artificial Lighting at Night.
- 6.14 In line with the recommendations outlined in the PRA undertaken by Arbtech (Arbtech, 2025) consideration will need to be given to potential disturbance impacts associated with artificial lighting. Artificial lighting may be required during earthworks, for example, where working hours extend beyond daylight hours (particularly during winter) or where security lighting is required. Lighting should only be used where and when necessary and should be appropriate, i.e. at levels that are visible and serve the intended function but that do not light excessive areas or provide light at times beyond the functional requirement.

Drawings

Drawing 1: G11137.007 Surveyor Vantage Points, NVA Locations and Survey Results



KEY

- Site boundary
- Surveyor location
- Building

No bat emergence recorded during visit.



Rev	Description	Drawn	Approved	Date



THE ENVIRONMENT PARTNERSHIP

401 Faraday Street, Birchwood Park, Warrington, WA3 6GA
Tel 01925 844004 e-mail tep@tep.uk.com www.tep.uk.com

Project
Development Proposal at Ty Gwynn Jones, Abergele

Title
Nocturnal Bat Emergence Survey

Drawing Number
G11137.007

Drawn	Checked	Approved	Scale	Date
MC	CW	LM	1:400 @ A3	20/08/2025

Annex A: Methodologies

- 6.15 All bat surveys were undertaken in accordance with the Bat Conservation Trust (BCT) Good Practice Guidelines (Collins, 2023)¹⁶. Survey design is determined by scope of proposals, ecological features present and landscape context. Detailed data collation, field survey and data analysis and evaluation methodologies are provided below.

Ecological Desk Study

- 6.16 Information regarding historic bat species records, protected habitats and protected sites is collated as part of a desk study. Desk Study data is provided by Cofnod Local Records Centre including species records of the past decade, within a 2km minimum radius of a site/survey area. Designated sites within 2 to 10km are also reviewed. The preliminary Zones of Influence (pZOI) within which ecological features are searched for as part of a desk study are varied according to the geo-spatial and/or legal significance of the ecological features identified. The scope and the pZOIs applied during a desk study, are searched from the site or survey area boundary/central grid reference. A review of previous surveys and reports relating to the site/survey area is also undertaken where required/relevant.

Roost Surveys

Presence/Likely Absence Surveys - Structures

- 6.17 Structures are subject to nocturnal presence/likely absence emergence surveys in accordance with their categorisation (high, moderate, or low bat roost habitat suitability) to establish presence or likely absence of bat roosts.
- 6.18 Repeat visits are spread across the survey season (generally May to August) with at least three weeks separation for multiple surveys of the same structure in accordance with Table 7.1 and Table 7.2 of the BCT 2023 Guidelines. Where roosts are identified, additional survey visits are undertaken to inform roost characterisation.

Table A1: Recommended timings and number of presence/likely absence survey visits required (dependent on the potential roost habitat suitability of structures and trees) to give confidence in likely roost absence in accordance with Table 7.1 and Table 7.2 of the BCT 2023 Guidelines.

Potential Roost Habitat Suitability	Survey Timings to Give Confidence in Likely Roost Absence	Minimum Number of Survey Visits to Give Confidence in Likely Roost Absence
None	No further surveys required.	
Negligible	No further surveys required.	

¹⁶ Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists Good Practice Guidelines (4th edition). The Bat Conservation Trust, London. ISBN-978-1-7395126-0-6

Potential Roost Habitat Suitability	Survey Timings to Give Confidence in Likely Roost Absence	Minimum Number of Survey Visits to Give Confidence in Likely Roost Absence
Low	May to August (structures).	For structures one dusk emergence survey (more surveys may be required depending on complexity of the site and the number of structures present).
Moderate	Structures must be surveyed from May to September (dependent on weather and location), with at least one of the surveys undertaken between May and August (multiple survey visits should be spread out to sample as much of the recommended survey period as possible) and with surveys spaced at least three weeks apart.	Structures must have two dusk emergence surveys (spaced at least three weeks apart, preferably more to sample more of the recommended survey period).
High	Structures must be surveyed from May to September (dependent on weather and location), with at least two of the surveys undertaken between May and August (multiple survey visits should be spread out to sample as much of the recommended survey period as possible) and with surveys spaced at least three weeks apart. Surveys should maximise the possibility of detecting maternity roosts.	Structures must have three dusk emergence surveys (spaced at least three weeks apart, preferably more to sample more of the recommended survey period).

- 6.19 Surveys are led by qualified TEP ecologists, supported by TEP bat survey trained assistant ecologists and night vision aids (NVAs). Surveyors and NVAs are used to gain coverage of the aspects/elevations and PRFs associated with structures that are identified during Preliminary Roost Assessment (PRA) as requiring further survey. All potential access points for bats are covered by strategic placements of equipment, with each surveyor and NVA deployed with a full spectrum bat detector.
- 6.20 All surveys are conducted as dusk emergence surveys. Dusk emergence surveys commence at least 15 minutes before sunset and finish at least 1.5 hours after sunset.
- 6.21 During each survey all equipment is closely monitored by surveyors to ensure efficacy and weather conditions are recorded at the start and end of surveys in addition to any significant change in condition during the survey to ensure conditions remain optimal.
- 6.22 Following each survey, video footage and sonogram analysis is undertaken to inform observations such as bat species, the number of bats entering or leaving structures, the location of entry and exit points, behaviours such as close interest in a structure or its features and commuting or passing bats.

Use of Night Vision Aids

- 6.23 Infrared camera night vision aids (NVAs) are deployed by surveyors during presence/likely absence surveys as a complementary method to increase precision and to reduce visibility bias. Bats often emerge after it is too dark for surveyors to accurately observe them or survey conditions limit precise observations e.g., very dark conditions between buildings or under tree canopies or fluttering foliage camouflaging activity. Late emerging or quieter species can also easily be missed by surveyors limited visibility.
- 6.24 The number and positioning of NVAs required on a survey is informed by the potential roost features (PRFs) and/or aspects of structures requiring survey as determined by the Preliminary Roost Assessment (PRA). Full coverage of structures is ensured in case of unexpected PRFs being present.
- 6.25 Infrared cameras are used in combination with bat detectors to enable species identification and are operated by trained and experienced surveyors.
- 6.26 TEP NVAs include a single infrared recording video camera (Canon XA11 or Sony AX53) with a battery pack and an external infrared illuminator lighting kit (including a range of light specifications for spotlight and wide-angle focus), positioned on tripods.
- 6.27 The NVAs are directed towards PRFs and/or angled to encompass the full aspect of structures requiring survey as determined by the PRA. Positioning of NVAs is designed to allow surveyors to determine when bats have flown out of PRFs or over/through structures.
- 6.28 Larger or more structurally diverse aspects requiring coverage during surveys may require additional NVAs/lighting to ensure full and clear coverage by cameras. The requirement for additional NVAs/lighting is identified firstly during the PRA, and secondly after the initial survey visit or subsequent survey visits, dependent on surveyor feedback and site conditions.
- 6.29 For structures, deployment of NVAs internally may be considered depending on habitat and potential roosts and species present.
- 6.30 NVAs are set up in locations to ensure the view and lighting of PRFs and/or aspects of structures requiring survey are free from limitations i.e., PRFs not being visible due to shadow, over-lighting, foliage obstructing views etc.
- 6.31 NVAs are set up prior to the survey start, with recording initiated at or before the survey start and continued until after the survey end. Recording start times of NVAs are recorded by surveyors for reference when reviewing data.

- 6.32 NVAs are checked for any adjustment or recording issues throughout surveys, particularly where unaccompanied NVAs are deployed to achieve coverage of structures. This ensures that the lighting, angle, light levels and zoom view can be adjusted during the survey to ensure PRFs/survey aspects are illuminated appropriately and that full, clear coverage is maintained.
- 6.33 The location of NVAs in the context of the structures being surveyed and the surveyor, is annotated on the surveyor vantage point sketch plan and/or site map.
- 6.34 Once visibility in the field declines to the point where surveyors can no longer see the PRFs/survey aspects fully, surveyors focus on the infrared camera digital view finder, peripheral activity and accompanying bat detectors to ensure observations remain accurate despite the dark conditions.

PRF Inspection Surveys - Trees

- 6.35 Trees identified as having suitability for bat roosting are subject to Potential Roost Feature (PRF) inspection surveys in accordance with their categorisation and potential impacts.
- 6.36 A PRF inspection survey involves the use of tree-climbing or access equipment such as ladders, Mobile Elevating Working Platforms (MEWPs) or scaffold towers to gain access to PRFs. PRFs are inspected at height to allow a more detailed assessment of their likely suitability for bats and to determine the presence/likely absence of bats at the time of the survey. Closer inspection of PRFs also allows more accurate assessment of the need for further survey and/or mitigation. For example, PRFs that appear to have bat roost habitat suitability from the ground may have none when inspected at height e.g., if they are superficial and shallower than they initially appeared, or scar tissue not identified as a PRF may be obscuring a PRF-M with suitability not detected from ground level.
- 6.37 PRF inspections surveys are undertaken by a combination of qualified aerial tree climbing and rescue teams, health and safety assistants and bat licensed consultants dependent on methods used for aerial inspection. As a minimum, a bat licensed consultant is always used to undertake PRF inspection surveys as evidence of bats such as live or dead bats and droppings (staining or odour may also be present) are searched for and surveys may cause disturbance to roosting bats where present.
- 6.38 Close focusing binoculars, a high-powered torch, an Explorer Premium digital endoscope camera, mirrors and extendable ladders up to maximum ladder height of 3.8m are used, where appropriate, to search for any bats or field signs.
- 6.39 PRF inspection surveys are undertaken during daylight hours as poor light conditions can have health and safety constraints and cause disturbance to bats closer to emergence times.

- 6.40 PRF inspection surveys are carried out systematically and consistently around all parts of the tree, with the results recorded consistently. Observations noted during PRF inspection surveys include:
- Stem or limb dimensions where the PRF is and the entrance dimensions.
 - PRF internal dimensions, substrate, condition and shape.
 - Whether any competitors are present e.g., nesting birds, squirrels.
 - Whether bats or any signs of bats are absent or present.
 - If bats are present the species, number and status and their location within the PRF.
- 6.41 Where bats are recorded and where feasible a photograph is taken and any droppings present are taken, dried and sent off for DNA analysis.
- 6.42 PRF inspection surveys can be carried out at any time of year to further assess the suitability of a PRF.
- 6.43 Where PRF inspection surveys are required to determine presence or likely absence of roosts, three visits between May and September, with at least two in the period May to August are undertaken. Multiple survey visits should be spread out to sample as much of the recommended survey period as possible and as a minimum, surveys should be spaced at least three weeks apart more.
- 6.44 Where access is not possible for PRF inspection surveys due to health and safety constraints or where features are too extensive to survey thoroughly, these should be surveyed using presence/likely absence emergence surveys supported by NVAs. Where PRF inspection surveys identify large roosts or maternity roosts then presence/likely absence emergence surveys should be undertaken as an alternative to PRF inspection surveys to minimise disturbance.
- 6.45 PRF inspection surveys are best carried out in dry and calm weather to ensure the safety of surveyors.
- 6.46 PRF inspections surveys also consider other protected species such as birds and red squirrels and, where present, the timing of surveys is adjusted as required to avoid any impacts or the appropriate mitigation licensing obtained.

Data Analysis and Species Identification

- 6.47 Raw data files from surveys are downloaded in the office immediately after the survey and stored according to a standardised project folder structure. Separate data folders are created to store data files from roost and activity surveys including individual folders for separate structures/trees/NBWs/static detector locations to avoid data duplications or omissions. An initial quality check of data is undertaken at this stage to immediately highlight any data errors.

- 6.48 Sonogram analysis of raw data files from detectors used during bat roost and activity surveys is undertaken using the most current version of Kaleidoscope software by qualified TEP ecologists.
- 6.49 Analysing bat sonograms using Kaleidoscope can automatically identify some sonograms to a 100% accuracy depending on the quality and signal parameters recorded of the sonogram.
- 6.50 Kaleidoscope is set to an 80% auto identification threshold maintaining a standard high end of certainty for bat species identification. Any sonograms with parameters below the 80% auto identification are manually identified, where sufficient call characteristics are available.
- 6.51 If insufficient call characteristics are available, the bat contact is recorded as an unidentified bat. The proportion of unidentified bat contacts are tallied for each data set (individual walkover route or static detector location and individual survey visits). Should the proportion of unidentified bat contacts comprise more than 1% of the data set, a second quality assurance review of the data is undertaken.
- 6.52 Some genus groups (such as *Myotis* species) can be difficult to determine the specific species due to similar styles of calls. In addition, it can be difficult to determine species or even genus in some circumstances due to partial calls or other noises such as passing cars or rain or wind distorting the data. In these cases when it not possible to identify a bat call even to genus, it is labelled as an unknown bat. If the genus can be identified but not the species, the call is labelled only by the genus group.
- 6.53 *Myotis* species have overlapping call characteristics, and it is therefore not possible to identify these bats to species level with good confidence (at least 80%). *Myotis* data often represents a small proportion of the activity recorded and therefore for the purposes of meaningful data interrogation, *Myotis* species are generally grouped. Where possible, individual *Myotis* species are identified particularly when larger datasets of *Myotis* species are recorded.
- 6.54 Detectability of some bat species e.g., *Plecotus* and *Barbastella* is lower than others, e.g., *Nyctalus* and *Pipistrellus*, as a consequence of their less detectable echolocation calls and hunting strategies that take them into less open habitats. Careful interpretation is therefore applied if comparison across species or species groups is required.

NVA Data

- 6.55 NVA footage is reviewed following the survey to ensure any uncertain roosting results are assessed, that any missed roosting is confirmed and that additional surveys can be scheduled where roosts are confirmed/uncertain.

- 6.56 A screenshot from the NVA footage of the darkest point during each survey is taken during data analysis post-survey, to illustrate the field of view and extent of illumination during the surveys.
- 6.57 Survey footage is reviewed in real-time post-survey and cross checked in combination with observations recorded by surveyors on field forms. NVA footage is automatically broken down into 5-15 minute files. Where bat roosting is recorded/suspected, footage is reviewed at 1x or slower playback.
- 6.58 Results between surveyor observations, bat detector recordings and NVA footage is analysed and cross-referenced to more accurately establish survey results and confirm presence/likely absence of roosting bats.

Evaluation Method

- 6.59 For the purposes of assessment and of assigning value to bats, the guidance set out in the Chartered Institute of Ecology and Environmental Management (CIEEM) UK Bat Mitigation Guidelines (Reason and Wray, 2023¹⁷) has been followed. While bats are nationally and internationally protected species, it does not follow that any ecological feature supporting bats is similarly of national or international importance. Importance should be assessed at an appropriate spatial scale, based on species distribution, conservation status, current population trends, functionality of the site/survey area and the zone of influence of any proposals in relation to bats. This includes an assessment of whether the site/survey area supports habitats for bat roosting, foraging and/or commuting. The method for assessment of importance of a site/survey area with regard to bats, aims to provide consistency across evaluation of sites/survey areas, whilst taking account of regional variations in bat distribution and rarity, roost status importance and the importance of bat commuting and foraging habitat in the context of the surrounding landscape.

Species Rarity

- 6.60 Conservation status varies between the different countries of the UK, based on current understanding of abundance and distribution. Within each county boundary there are also differences in bat species abundance and distribution. Consultation with statutory bodies and recognised regional experts has resulted in the categorisation of bat species as set out below in accordance with Table 3.1 of the 2023 UK Bat Mitigation Guidelines, reflecting the relative abundance or 'rarity' of bat species across different areas of the UK.
- 6.61 In all locations, local experience/knowledge are used to underpin professional judgement of presence/likely abundance as it is acknowledged that the boundaries

¹⁷ Reason, P.F. and 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.

between categories are not absolute and require caution where species are at the edge of their range. It is not possible to divide the country into defined areas that cover all situations. For example, between mid-Wales and the Midlands (broadly Herefordshire/Worcestershire and the Welsh Borders), the species composition more closely resembles that of South-west England and South Wales (except for grey long-eared bat *Plecotus austriacus*, which has not been recorded).

- 6.62 The geographical variation set out below underpins the subsequent assessment of the importance of roosts, commuting routes, and foraging areas, and of the overall assemblage of bats present within a site/survey area and the locality.

Table A2: Categorisation of bat species 'rarity' as set out in Table 3.1 of the 2023 UK Bat Mitigation Guidelines.

Rarity Category	South-west England and South Wales	Southern England	South-eastern/ East Anglia to The Wash	North/mid-Wales	Central England/ Midlands	Northern England	Southern Scotland	Northern Scotland	Northern Ireland
Widespread all geographies	Common pipistrelle <i>Pipistrellus pipistrellus</i> Soprano pipistrelle <i>Pipistrellus pygmaeus</i> Brown long-eared bat <i>Plecotus auritus</i>	Common pipistrelle Soprano pipistrelle Brown long-eared bat	Common pipistrelle Soprano pipistrelle Brown long-eared bat	Common pipistrelle Soprano pipistrelle Brown long-eared bat	Common pipistrelle Soprano pipistrelle Brown long-eared bat	Common pipistrelle Soprano pipistrelle Brown long-eared bat	Common pipistrelle Soprano pipistrelle	Common pipistrelle Soprano pipistrelle	Common pipistrelle Soprano pipistrelle Brown long-eared bat
Widespread in many geographies, but not as abundant in all	Brandt's <i>Myotis brandtii</i> Daubenton's <i>Myotis daubentonii</i> Natterer's <i>Myotis nattereri</i>	Brandt's Daubenton's Natterer's Whiskered Noctule	Daubenton's Natterer's Noctule	Brandt's Daubenton's Natterer's Whiskered Noctule	Brandt's Daubenton's Natterer's Whiskered Noctule	Brandt's Daubenton's Natterer's Whiskered Noctule	Daubenton's Natterer's Brown long-eared bat	Daubenton's Natterer's Brown long-eared bat	Daubenton's Natterer's Leisler's

Rarity Category	South-west England and South Wales	Southern England	South-eastern/ East Anglia to The Wash	North/mid-Wales	Central England/ Midlands	Northern England	Southern Scotland	Northern Scotland	Northern Ireland
	Whiskered <i>Myotis mystacinus</i> Noctule <i>Nyctalus noctula</i>								
Rarer or restricted distribution	Nathusius' pipistrelle <i>Pipistrellus nathusii</i> Leisler's <i>Nyctalus leisleri</i> Serotine <i>Eptesicus serotinus</i> Lesser horseshoe bat <i>Rhinolophus hipposideros</i>	Nathusius' pipistrelle <i>Alcathoe Myotis alcathoe</i> Leisler's Serotine <i>Eptesicus serotinus</i> Lesser horseshoe bat	Nathusius' pipistrelle Brandt's Whiskered Leisler's Serotine	Lesser horseshoe bat	Nathusius' pipistrelle Leisler's Serotine	Nathusius' pipistrelle Alcathoe Leisler's	Nathusius' pipistrelle Whiskered Leisler's Noctule	Nathusius' pipistrelle	Nathusius' pipistrelle Whiskered
Rarest Annex II species and very rare	Grey long-eared <i>Plecotus austriacus</i>	Grey long-eared Bechstein's Barbastelle	Alcathoe Barbastelle	Nathusius' pipistrelle Leisler's	Alcathoe Barbastelle	N/A	Brandt's	N/A	N/A

Rarity Category	South-west England and South Wales	Southern England	South-eastern/ East Anglia to The Wash	North/mid-Wales	Central England/ Midlands	Northern England	Southern Scotland	Northern Scotland	Northern Ireland
	Bechstein's <i>Myotis bechsteinii</i> Barbastelle <i>Barbastella barbastellus</i> Greater horseshoe bat <i>Rhinolophus ferrumequinum</i>	Greater horseshoe bat Lesser horseshoe bat		Serotine Barbastelle Greater horseshoe bat					

Roost Assessment

- 6.63 Bats use many different types of roost, and not all roosts have the same level of importance in supporting a local population of bats. Survey work aims to sufficiently characterise bat roosts likely present in the locality through appropriate survey effort to inform impact assessment.
- 6.64 The table below identifies the valuation of different types of roost in accordance with Table 3.2 of the 2023 UK Bat Mitigation Guidelines and depending on the relative abundance or 'rarity' of bat species. In all cases, the geographic scale set out presents a likely minimum, and modifying factors may increase but will not usually decrease the importance assigned to roosts.

Table A3: Valuation of different types of roost¹⁸ in accordance with Table 3.2 of the 2023 UK Bat Mitigation Guidelines and depending on the relative abundance or 'rarity' of bat species. In all cases, 'size' needs to be interpreted as 'relative to typical sizes for the species'.

	Roost Category (N.B. This table relates to valuation of roosts and does not mean that all such sites are 'places of shelter' as referenced in the WCA or 2017 Regulations. Inclusion in this table does not indicate that a mitigation licence would be required; this would be driven by roost status, any impacts, and the likelihood of an offence.)						
Conservation Status/ Distribution	Feeding perches; Night-roosts; Individual or very small occasional/ transitional/ opportunistic roosts	Non-breeding day roosts (small numbers of species)	Mating sites (excluding individual trees and larger swarming sites); Small numbers of hibernating bats	Larger transitional roosts	Hibernation sites ¹⁹	Autumn swarming sites (largely vesper species which hibernate underground)	Maternity sites ²⁰
Widespread all geographies	Site	Site	Site	Site/Local	District/County (large hibernation sites are rare in the UK)	District/County (very large pipistrelle swarming sites as yet unknown in the UK)	Unlikely to exceed District importance unless colonies are atypically large; Importance increased for assemblages

¹⁸ Sites within or functionally linked to Special Areas of Conservation (SACs) are of International importance for Qualifying Species. Sites that could be functionally linked to SACs may or may not have that level of importance (e.g., a small lesser horseshoe bat maternity roost from a multi-component 'bat' SAC may be too far away to be a direct satellite of a maternity roost within the SAC but may be part of the same population through intermediate unidentified roosts. Sites meeting SSSI guidelines are of National importance (though note that many SSSI citations do not reflect the 'bat' importance of the sites they describe, and not all sites of National Importance are designated).

¹⁹ For tree-roosting bats that are likely to use multiple trees for breeding and then hibernate in small numbers (which means individual hibernation sites are difficult to detect and many may be missed), the importance of the roost resource (i.e., the collection of PRFs which are available to bats) rather than individual confirmed roosts, should be assessed.

²⁰ Satellite roosts (i.e., alternative roosts found in close proximity to the main nursery colony) should be considered with the associated main colony.

Widespread in many geographies, but not as abundant in all	Site	Site	Site; dependent on local distribution (for Myotis see swarming site column)	District	District/County importance dependent on size and number of species	County/Regional importance dependent on size, importance increased for larger sites that serve larger numbers/ more species	Unlikely to exceed County importance unless colonies are atypically large; Importance increased for assemblages
Rarer or restricted distribution	Site (very well-used night roosts may be of District importance for some species)	Site/Local/District, dependent on local distribution	Site/Local/District, dependent on local distribution	District	District/County importance dependent on size and local distribution; increased value for assemblages	County/Regional importance dependent on size and local distribution; Increased value for assemblages	County/Regional importance dependent on size and local distribution; Increased value for assemblages
Rarest Annex II species and very rare	Site (very well-used night roosts may be of District importance for some species)	Site/Local/District, dependent on local distribution	Site/Local/District, dependent on local distribution	District	County/Regional importance dependent on size and local distribution; increased value for assemblages	County/Regional importance dependent on size and local distribution; Increased value for assemblages	County/Regional importance dependent on size and local distribution; Increased value for assemblages

Annex B: NVA Footage at Darkest Points of Survey



Figure 2: VP1 17.06.25



Figure 3: VP2 17.06.25



Figure 4: VP3 17.06.25



Figure 5: VP5 17.06.25



Figure 6: VP6 17.06.25



Figure 7: VP1 15.07.25



Figure 8: VP2 15.07.25

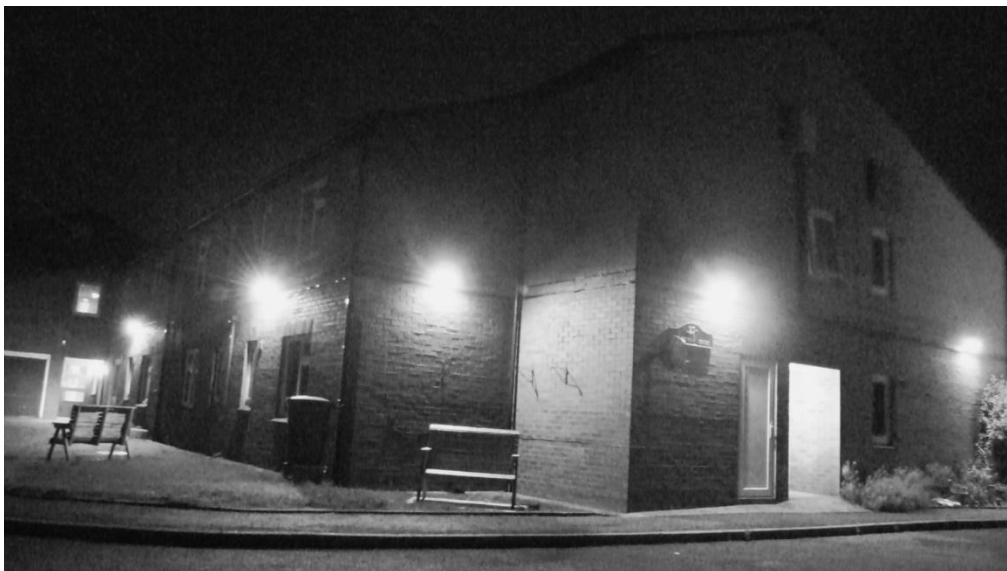


Figure 9: VP3 15.07.25



Figure 10: VP4 15.07.25

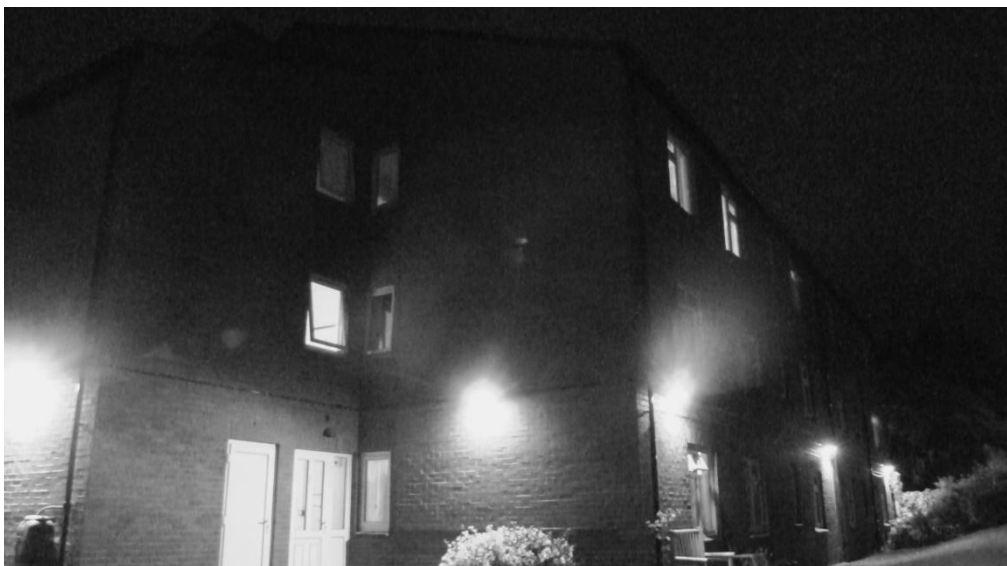


Figure 11: VP5 15.07.25



Figure 12: VP6 15.07.25



WARRINGTON

401 Faraday Street
Birchwood Park
Warrington
WA3 6GA

T: 01925 844004
E: tep@tep.uk.com

MARKET HARBOROUGH

The Reynard Suite
Bowden Business Village
Market Harborough
Leicestershire
LE16 7SA

T: 01858 383120
E: mh@tep.uk.com

GATESHEAD

Office 26 Gateshead
International Business
Centre
Mulgrave Terrace
Gateshead
NE8 1AN

T: 0191 6053340
E: gateshead@tep.uk.com

LONDON

8 Trinity Street
London
SE1 1DB

T: 020 3096 6050
E: london@tep.uk.com

CORNWALL

Nr Falmouth
Cornwall

T: 01326 240081
E: cornwall@tep.uk.com
