



Princess Helena College, Temple Dinsley, Hertfordshire

Ecology Report

Produced for The Door PHC Ltd

By Applied Ecology Ltd

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APPLIED ECOLOGY LTD

St John’s Innovation Centre
Cowley Road
Cambridge
CB4 0WS

Tel: 01223 422 116
Email: info@appliedecology.co.uk

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1 Introduction

Background

- 1.1 Applied Ecology Ltd (AEL) was commissioned by Studio Cullinan & Buck Architects Ltd on behalf of The Door PHC Ltd, in June 2023, to carry out a Preliminary Ecological Appraisal (PEA) and select protected animal species surveys of the former Princess Helena College and its grounds, Temple Dinsley, Hertfordshire ("the Site"). The location of the Site is shown by **Figure 1.1**.
- 1.2 The appraisal was required to determine the likely ecological constraints associated with a proposal to restore and redevelop the Site and buildings to provide private residential accommodation, including elements of demolition, new construction, and landscaping ("the Development").
- 1.3 Where possible, the likely impacts of the Development on ecology are discussed. However, the report does not provide, and nor is it intended to provide, a detailed or comprehensive assessment of development impacts in the form of an Ecological Impact Assessment (EclA).

Legislation and Planning Policy

Legislation

- 1.4 The Wildlife and Countryside Act 1981 (as amended) provides the main legal framework for nature conservation and species protection in the UK. The Site of Special Scientific Interest (SSSI) is the main statutory nature conservation designation for sites in the UK. Such sites are notable for their plants, animals, or habitats, their geology or landforms, or a combination of any of these features. Natural England is the key statutory agency in England for advising Government, and for acting as the Government's agent in the delivery of statutory nature conservation designations.
- 1.5 Designation of a SSSI is a legal process, by which sites are notified under the Wildlife and Countryside Act 1981. The 1981 Act makes provision for the protection of sites from the effects of changes in land management, and owners and occupiers receive formal notification specifying why the land is of special scientific interest and listing any operations likely to damage the special interest.
- 1.6 Species protection in the UK is provided by the Wildlife and Countryside Act 1981 (as amended), with some species receiving additional European-wide protection from the Conservation of Habitats and Species Regulations 2017 (commonly referred to as 'European Protected Species'). Some examples, but not an exhaustive list, of the species and form of protection offered by these legislations follow below.
- 1.7 A wide variety of species such as: reptiles, birds, bats, hazel dormice *Muscardinus avellanarius* and great crested newts *Triturus cristatus* (GCN) are protected from killing, injuring and capture. The nests of birds are additionally protected from damage and destruction and, for those listed on schedule 1 of the Wildlife and Countryside Act 1981, from deliberate or reckless disturbance.



- 1.8 The habitats of European protected species are additionally protected. For example, bat roosting sites are protected from either deliberate or reckless damage, destruction, or obstruction (even if a bat is not present) and places used for shelter and protection by GCN are similarly protected from destruction, damage, or obstruction.
- 1.9 Specific protection for badgers *Meles meles* is provided by the Protection of Badgers Act 1992. This Act protects badgers from being taken, injured, or killed. Furthermore, badger setts are protected from interference, making it an offence to damage, destruct or obstruct access to a sett as well as to disturb a badger whilst it occupies a sett.
- 1.10 The Countryside and Rights of Way Act 2000, and The Natural Environment and Rural Communities (NERC) Act 2006, provide supplementary protected species legislation.

Habitats and Species of Principal Importance in England

- 1.11 The Natural Environment and Rural Communities (NERC) Act came into force on 1 October 2006. Section 41 (S41) of the Act requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. The list has been drawn up in consultation with Natural England, as required by the Act.
- 1.12 The S41 list is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 40 of the Natural Environment and Rural Communities Act 2006, to have regard to the conservation of biodiversity in England, when carrying out their normal functions.

Habitats of Principal Importance

- 1.13 Fifty-six habitats of principal importance are included on the S41 list. These are all the habitats in England that were identified as requiring action in the UK Biodiversity Action Plan (UK BAP) and continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework. They include terrestrial habitats such as upland hay meadows to lowland mixed deciduous woodland, and freshwater and marine habitats such as ponds and sub-tidal sands and gravels.

Species of Principal Importance

- 1.14 There are 943 species of principal importance included on the S41 list. These are the species found in England which were identified as requiring action under the UK BAP and which continue to be regarded as conservation priorities under the UK Post-2010 Biodiversity Framework. In addition, the hen harrier *Circus cyaneus* has also been included on the list because without continued conservation action it is unlikely that the hen harrier population will increase from its current very low levels in England.
- 1.15 In accordance with Section 41(4) the Secretary of State will, in consultation with Natural England, keep this list under review and will publish a revised list if necessary.

National Planning Policy Framework

- 1.16 The National Planning Policy Framework (NPPF) was published in March 2012 (and replaced previous planning policy guidance (PPS 9) on biodiversity. The NPPF was updated in July



2018, February 2019, July 2021, and September 2023, and states the following in relation to biodiversity and planning:

1.17 *“When determining planning applications, local planning authorities should apply the following principles:*

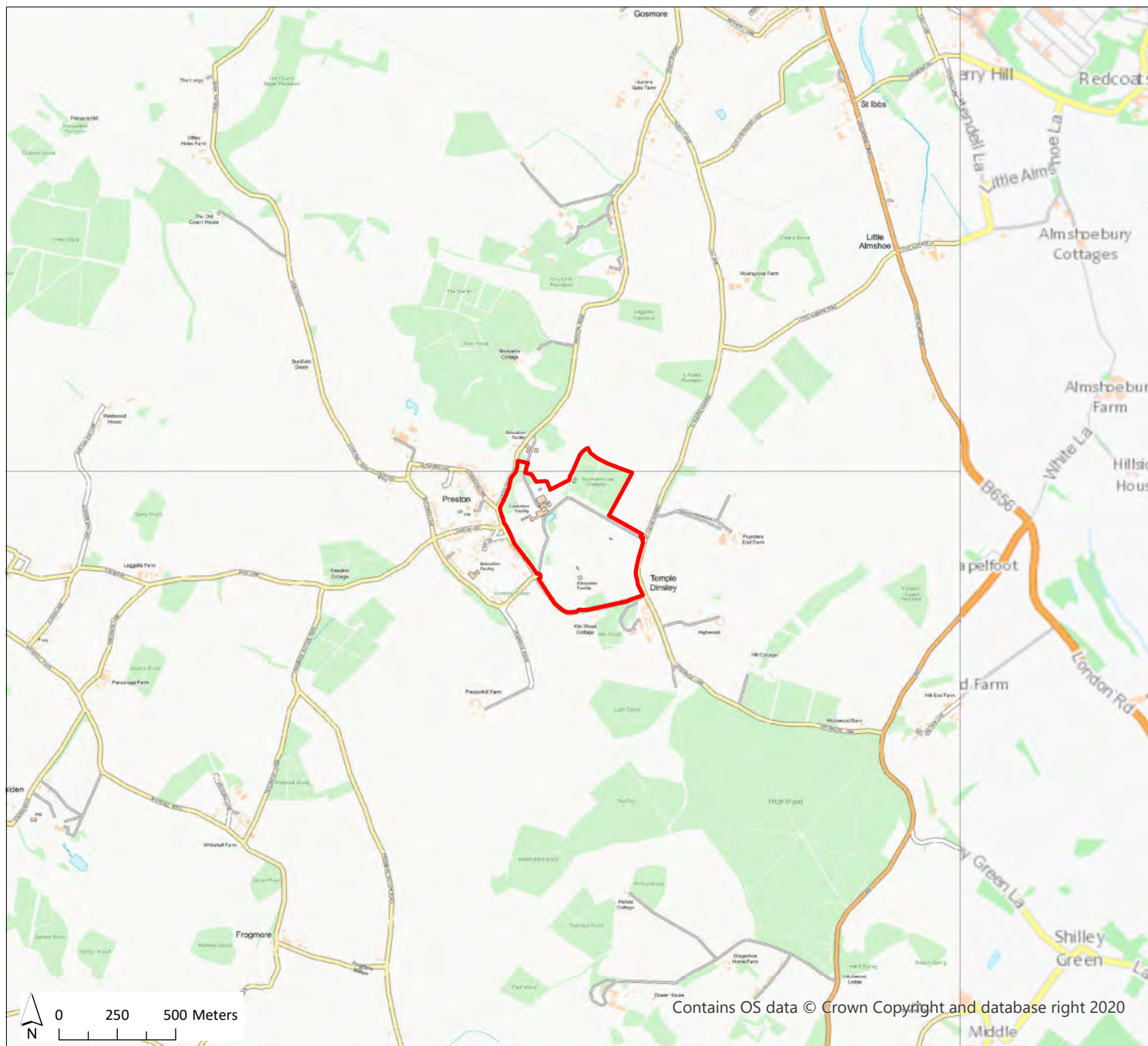
- if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
- development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;*
- development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and*
- development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.*

1.18 *The following should be given the same protection as habitats sites:*

- potential Special Protection Areas and possible Special Areas of Conservation;*
- listed or proposed Ramsar sites; and*
- sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.*

1.19 *The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other projects) unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site.”*





Princess Helena College, Temple Dinsley, Herts

Site location

 Site boundary

Figure 1.1

Map Scale @ A4: 1:25,000

Surveyed by: n/a	
Survey date: n/a	
Drawn by: RJH	
Checked by: DP	
Status: Final	

2 Existing Information

Sources of Information

- 2.1 The Hertfordshire Environmental Records Centre (HERC) was commissioned by AEL to complete a search of its database for existing biological records. This included details of statutory and non-statutory wildlife sites, ancient woodland, and records of protected and notable species both on the Site and within 1 km of the Site's central point (grid reference TL 18355 24797)
- 2.2 The location of statutory wildlife sites beyond the search area and associated Impact Risk Zones (IRZ) was checked using the online MAGIC map database¹ which is managed by Natural England.

Designated Wildlife Sites

- 2.3 The locations of the statutory wildlife sites and ancient woodland in relation to the Site are shown in **Figure 2.1**.
- 2.4 The closest statutory wildlife site is **Wain Wood Site of Special Scientific Interest (SSSI)** which is located off-Site 120 m to the north-north-west of the Site boundary. Wain Wood is a 19.2 ha ancient oak/hornbeam woodland.
- 2.5 The Site is located within a Natural England SSSI Impact Risk Zone (IRZ) around Wain Wood SSSI, which states that any residential development of 50 or more houses outside existing settlements/urban areas or residential development of 100 units or more constitute a theoretical risk to the SSSI.
- 2.6 A non-statutory Local Wildlife Site (LWS) occurs within the Site boundary called **28/059 Princess Helena College**. This is reported as "*buildings and environs important for protected species. Wildlife Site criteria: Species*". In practice it appears that the designation relates to an historic ice house (grid reference TL 18329 24841) that has a number of old (1991) records of winter roosting (hibernating) bats including Daubenton's *Myotis daubentonii*; Natterer's *Myotis nattereri* and brown long-eared *Plecotus auritus*.

Protected and Notable Species

- 2.7 The HERC dataset included 1,704 individual species records. Protected species records of potential relevance to the habitats present within the Site and likely development proposals can be summarised as:
 - Great crested newt *Triturus cristatus* – a 1934 and 1984 record from an undisclosed site or sites in Hitchin;
 - Reptiles: adder *Vipera berus*; common lizard *Zootoca vivipara*; grass snake *Natrix helvetica* and slow-worm *Anguis fragilis*;

¹ <https://magic.defra.gov.uk/MagicMap.aspx>



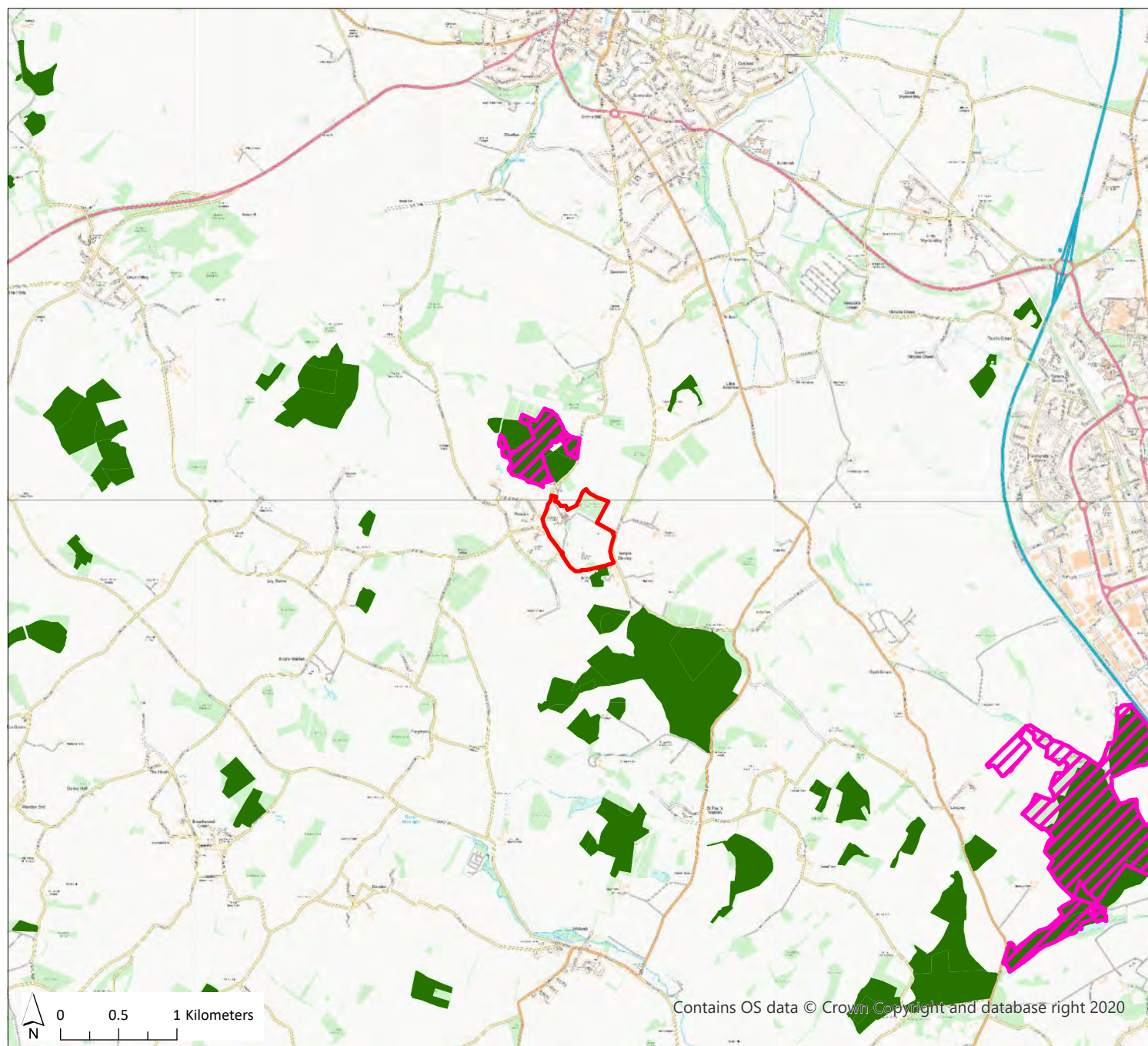
- Badger *Meles meles*;
- Schedule 1 birds: barn owl *Tyto alba*; and red kite *Milvus milvus*;
- West European hedgehog *Erinaceus europaeus*;
- Bats: western barbastelle *Barbastella barbastellus*; serotine *Eptesicus serotinus*; Daubenton's bat; natterers's bat; lesser noctule *Nyctalus leisleri*; noctule *N. noctula*; common pipistrelle *Pipistrellus pipistrellus*; soprano pipistrelle *P. pygmaeus* and brown long-eared *Plecotus auritus*.



Princess Helena College, Temple Dinsley, Herts

Statutory wildlife sites and ancient woodland

-  Site boundary
-  Site of Special Scientific Interest (SSSI)
-  ancient woodland



Contains OS data © Crown Copyright and database right 2020

AEL2170_01-02-01_designatedsites_20240711 A4 11/07/2024

Figure 2.1

Map Scale @ A4: 1:50,000

Surveyed by: n/a

Survey date: n/a

Drawn by: RJH

Checked by: DP

Status: Final



3 Survey Approach and Findings

Survey Approach

Phase 1 habitat survey

- 1.1 A Phase 1 habitat survey of the Site was undertaken on 22 June 2023 by AEL ecologist Rob Hutchinson MCIEEM. Rob is a Principal Ecologist at AEL and holds a Level 5 Field Identification Skills Certificate (FISC) for plant identification from the Botanical Society of Britain & Ireland (BSBI), and Natural England survey licences for great crested newt (Level 2), bats (Level 1) and dormouse.
- 1.2 The methodology adopted followed the Phase 1 survey approach (JNCC, 2016)² by which all habitats were classified and mapped according to standard categories. Notes were taken of habitats of typical and unique botanical character, and plant species abundance was noted using the DAFOR³ scale. Habitats were converted in the field to corresponding UKHab habitat types (as used by the Biodiversity Metric 4.0 calculator) and habitat condition was assessed using the appropriate habitat condition sheets.
- 1.3 The habitat map has subsequently been digitised using a Geographical Information System (ArcPro).

Animal species

- 3.1 The standard Phase 1 habitat survey was "extended" to include a search for evidence of or potential for the presence of protected species or species of nature conservation interest within and close to the Site. This was not a detailed survey for such species but included noting the presence of habitats suitable to support specific protected species, and where seen, any evidence of presence such as droppings, mammal tracks and footprints, shelters (or nests/roosts), hair caught on fence-wire, foraging signs, and so on.

Bats

Building Roosting Bats

- 3.2 A preliminary bat roost assessment (PRA) involving an internal and external (accessible roof void) survey of the 18 buildings/structures within the Site (see **Appendix A** for location plan) was completed by Dr Duncan Painter CEnv MCCIEM⁴ on 29 June 2023 in accordance with best practice guidance at the time of survey⁵.
- 3.3 The inspection of the on-Site buildings to assess their roosting use/suitability for bats can be conducted at any time of year, according to the best practice survey guidance. However,

² JNCC (2016) *Handbook for Phase 1 Habitat Survey – A technique for Environmental Audit*. JNCC, Peterborough.

³ DAFOR: where species relative abundance is classified as Dominant, Abundant, Frequent, Occasional or Rare.

⁴ Holds three separate licences pertaining to bat survey: WML-CL18; WML-CL21; and WML-CL32 and has been a registered bat roost volunteer visitor for Natural England (WML-CL15). Holds class licences in relation to badger (WML-CL35) and great crested newt (WML-CL09 & WML-CL33), hazel dormouse (WML-CL10A), and native crayfish (WML-CL11).

⁵ Collins, J (2016) *Bat Surveys for Professional Ecologists – Good Practice Guidelines (3rd Edition)*. BCT, London



finding evidence of bats (e.g., their droppings) on external surfaces that are unprotected from rainfall may be restricted if undertaken outside the main bat active season (May to September) and/or after periods of wet weather. Bat droppings inside buildings may also quickly disintegrate in damp conditions.

- 3.4 The on-Site buildings/structures were surveyed externally and internally using binoculars and torches, as necessary, to search for evidence of bats. Evidence of bats that was searched for included live and dead bats (e.g., roosting in external building cracks and crevices), bat droppings stuck to walls and other exposed surfaces and staining (caused by bat fur oils and/or urine spots).
- 3.5 The suitability of the buildings for roosting bats was classified according to the categories and descriptions defined by Collins (2016) for roosting habitats, as summarised in **Table 2.1**.

Table 3.1: Guidelines for assessing the potential suitability of proposed development sites for bats, based on the present of habitat features within the landscape, to be applied using professional judgement (after Collins, 2016).

Suitability	Description of roosting habitat
Negligible	Negligible habitat features on site likely to be used by roosting bats.
Low	A tree of sufficient size and age to contain Potential Roost Features (PRFs) but with none seen from the ground or features seen with only very limited roosting potential.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

Bat Roost Emergence Survey

- 3.6 In accordance with Collins 2016, seven separate bat roost emergence surveys of buildings identified by the PRA with bat roost suitability was completed by a team of between four and six bat surveyors led by DP:
 - 12 July 2023 – Old House, East & West Wings, East Annex;
 - 27 July 2023 – East Annex, & West Spur;
 - 2 August 2023 – Teaching Block & Science Block;
 - 3 August 2023 – Science Block, East & West Wings & Belvedere;
 - 21 August 2023 – Barn 2 & Pumping Station
 - 22 August 2023 – Old House, East & West Wings; Teaching Block & Science Block
 - 6 September 2023 – Barn 2 & Pumping Station
- 3.7 The surveys were planned and set-up by DP using the following survey equipment:
 - Hand-held Pettersson D230 electronic bat detectors with ear-phones set in frequency division mode (between 4 and 6 detectors);
 - Time synchronised tripod mounted Anabat Express electronic bat detectors (between 6 and 15 detectors); and
 - Tripod mounted FLIR thermal video camera (between 5 and 6 cameras).



- 3.8 The survey set-up for each survey is as shown in **Appendix A**.
- 3.9 The tripod-mounted Anabat Express electronic bat detectors were set-up around / within the buildings being surveyed to record bat calls from the start to the end of each survey. All bat calls recorded by the detectors were analysed on a PC using Analook software and were identified to the highest practical taxonomic level in accordance with Russ 2012⁶.
- 3.10 The manned thermal cameras were set to record radiometric video data at 30 frames per second, and were used by the surveyors to provide a live view of the building throughout the survey via a laptop computer screen. Camera field of views and bat detection distances are provided in **Appendix A** for each survey. The cameras were set up to record from 15 minutes before sunset to the end for the survey at 90 minutes after sunset. Video footage was checked the following day by DP against bat sightings and bat call recordings using FLIR Tools+ software. The cameras allowed accurate bat roost locations to be identified as 100% visual acuity was possible throughout each survey.
- 3.11 The unmanned thermal cameras were set-up to film MPEG video from 30 minutes before sunset and were checked for bat emergences the following day by DP.

Automated Bat Activity Survey

- 3.12 In order to get a better understanding of bat roosting activity in the roof voids of the West and East Wings, an SM4 full spectrum electronic bat detector was set up to record bat calls from 30 minutes before dusk to 30 minutes after sunrise for 18 consecutive nights in the roof space of the West Wing from 17 July to 3 August 2023. The detector was positioned over an accumulation of bat droppings on the floor of the loft with its microphone oriented towards the ridge. The detector was transferred to a similar location over bat droppings on the floor of the East Wing loft on 3 August and was retrieved on 22 August after 19 consecutive nights of recording.

Tree Roosting Bats

Ground Level Tree Assessment

- 3.13 A ground level tree assessment (GLTA) of all trees within the Site that are scheduled to be removed to enable the development as indicated by the arboricultural impact assessment report for the development issued in June 2024⁷ was completed by DP using a high powered cree torch and binoculars on 4 and 17 June 2024 to look for potential roost features (PRFs) in trees in accordance with current best practice guidelines⁸. Trees were classed as either possessing no obvious PRFs, PRFs that were suitable for individual bats or very small numbers of bats (PRF-I), or trees with PRFs that could support multiple bats and therefore could be used by a maternity colony of bats (PRF-M). Trees that had high level PRF features that could not be seen clearly from ground level to confirm their suitability for bats were assessed as PRF-M trees.
- 3.14 We note that the June 2024 arboricultural impact assessment report is to be updated and will confirm that an additional circa 38 trees/tree groups are to be removed that were not

⁶ Russ, J (2012) *British Bat Calls – A Guide to Species Identification*. Pelagic Publishing

⁷ Sharon Hosegood Associates (June 2024) *Arboricultural Impact Assessment Report – Temple Dinsley, School Lane, Preston, Hertfordshire, SG4 7RT*. Report ref SHA: 1676

⁸ Collins, J (2023) *Bat Surveys for Professional Ecologists – Good Practice Guidelines (4th Edition)*. BCT, London



reported on previously and have not been surveyed by GLTA or tree climbing survey to assess their suitability for roosting bats. It is the intention to complete a follow-up GLTA of these additional trees and tree climbing survey of any that have PRF-M features.

PRF Aerial Inspection Survey

- 3.15 Following the GLTA all trees with identified PRF-M features were subject to a PRF inspection by a team of two independent tree climbers and licenced bat surveyors⁹ on 27 June 2024. Each tree was climbed using ropes, and PRF features closely inspected with an endoscope to verify their suitability for bats and to check for the presence of bats and/or other field signs of bat presence in or closely associated with the PRF.
- 3.16 Two further PRF climbing surveys (each spaced three weeks apart) of all trees with PRF-M features confirmed to be present by the first climbing survey will be subject to a second and third climbing survey in July and August 2024.

Summerhouse Plantation Bat Activity Survey

- 3.17 The development includes the proposed construction of two detached dwelling houses within the west side of broadleaved plantation woodland known as Summerhouse Plantation. In order to get a better understanding of bat use of this woodland area, an automated bat activity survey of the two proposed development areas within the woodland was completed using two SM4 full spectrum electronic bat detectors set up with their microphones oriented towards the canopy 2 m above the ground in each development plot for 13 consecutive nights from 4th to 16th June 2024. Bat calls were downloaded onto a PC and analysed to the highest practical taxonomic level using proprietary bat call analysis software in accordance with Russ 2012.
- 3.18 A follow-up bat activity survey of the eastern side of Summerhouse Plantation away from the proposed building plots was completed using an SM4 detector set-up as described above and left to run for seven consecutive nights 25th June to 1st July 2024.

Survey limitations

- 3.19 The bat roost emergence surveys were all completed during the main 2023 bat activity period at a time when bats were active and weather conditions were suitable for bats to be active throughout each survey¹⁰. The surveys were, therefore, not subject to any obvious limitations.
- 3.20 The automated bat activity surveys of Summerhouse Plantation were also completed during the main 2024 bat activity survey period and were also not subject to any significant

⁹ Jason Walker and Eleanor Sheeham (Bat Tree Surveys) survey licence numbers 2024-11947-CL18-BAT & 2024-11948-CL18-BAT

¹⁰ 12 July 2023: average air temperature 14.8°C (start) 15.0°C (end), still, no rain, 5% cloud cover (start).

27 July 2023: average air temperature 18.3°C (start) 16.5°C (end), light air, no rain, 5% cloud cover (start).

2 August 2023: average air temperature 16.8°C (start) 16.3°C (end), light air, no rain, 65% cloud cover (start).

3 August 2023: average air temperature 19.3°C (start) 16.5°C (end), still/ light air, no rain, 100% cloud cover (start).

21 August 2023: average air temperature 19.8°C (start) 18.3°C (end), light air /moderate breeze, no rain, 80% cloud cover (start).

22 August 2023 average air temperature 20.5°C (start) 18.00°C (end), gentle breeze, no rain, 3% cloud cover (start).

6 September 2023: average air temperature 25.0°C (start) 22.0°C (end), light air, no rain, 3% cloud cover (start).



limitations, with bat activity being limited by rainfall on only one of the 20 survey nights in June.

Great crested newt

- 3.21 All potential waterbodies located within 250m of the Site that were connected to the Site and on publicly accessible land were identified in advance of the Site visit using a combination of OS maps and online aerial photographs. A total of six waterbodies (five on-Site and one off-Site) were identified, as shown by **Figure 3.3**.

Habitat Suitability Index (HSI) assessment

- 3.22 The six waterbodies were inspected and subject to a Habitat Suitability Index (HSI) assessment on 22 June 2023 to determine their suitability for GCN.

Presence / absence survey

- 3.23 Waterbodies assessed as being potentially suitable for GCN, were subject to GCN presence / absence surveys using ADAS eDNA kits. Water samples were collected on 22 June 2023 following the recommended sampling and storage protocol before being returned to ADAS for analysis.





Princess Helena College, Temple Dinsley, Herts

Ponds assessed for GCN suitability

- Site boundary
- ponds (labelled 1-6)

Figure 3.3

Map Scale @ A4: 1:4,500

Surveyed by: RJH

Survey date: 22 June 2023

Drawn by: RJH

Checked by: DP

Status: Final



Survey Findings

Habitats and plants

- 3.24 The Phase 1 habitat map is shown in **Figure 3.1**, and a selection of habitat photographs is provided in **Figure 3.2**.

House and gardens

- 3.25 The Old House is located in the western part of the Site, and comprises a large historic house, with adjoining wings and an annexe built as later extensions. Formal gardens mainly to the west and north, included a rose garden, paved terraces, amenity lawns, shrub beds of various types and character, clipped hedges and a swimming pool. A number of more recent buildings, including teaching blocks and a sport centre, were present close to the Old House.
- 3.26 Two fenced enclosures to the north of the Old House had been planted as orchards with widely spaced young trees over a long a neglected grass sward, and a mix of standard broadleaved and coniferous trees were also present around the gardens.

Parkland

- 3.27 The park which bounds the house and gardens to the east and south was laid to grass, mostly as pasture, with linear boundary woodland blocks and a large woodland block known as Summerhouse Plantation in the north. Most of the woodland was of plantation origin, and included a mix of oak *Quercus robur*, sessile oak *Q. petraea*, ash *Fraxinus excelsior*, beech *Fagus sylvatica*, lime *Tilia* species, and horse chestnut *Aesculus hippocastanum*. However some stands, for instance Summerhouse Plantation, that were probably planted in the early C20 had developed semi-natural character due to management neglect and the natural regeneration and expansion of species such as sycamore *Acer pseudoplatanus* and elm *Ulmus* species. None of the woodland was considered to be ancient woodland, although the occasional presence of plants such as bluebell *Hyacinthoides non-scripta*, dog's mercury *Mercurialis perennis* and spurge-laurel *Daphne laureola* are indicative of long established woodland cover.
- 3.28 Most of the grassland was agriculturally improved being dominated by perennial rye-grass *Lolium perenne* and a mix of other common pasture grasses and herbs, with smaller areas of semi-improved grassland associated with less improved conditions such as neglected sport pitches. The southern half of the park contained some mature specimen trees, with a double mixed species avenue of semi-mature trees along the eastern access drive off St Albans Highway and the remains of an avenue extending south of the house on to School Lane.
- 3.29 Mixed native hedgerows extended along the southern and eastern boundaries, and occasionally along internal field boundaries, and were dominated by hawthorn *Crataegus monogyna* and blackthorn *Prunus spinosa*, together with some dog-rose *Rosa canina*, holly *Ilex aquifolium*, hazel *Corylus avellana* and occasional standard trees of oak and ash.
- 3.30 A few waterbodies and historic and residential buildings were present on the Site, and are described in more detail below.



Animal species

- 3.31 No obvious evidence of protected faunal species was recorded during the survey, but the grounds and particularly the woodland areas had the potential to support badger *Meles meles*.
- 3.32 The neglected semi-improved grassland areas as indicated by **Figure 3.1** had potential to support common reptile species – notably grass snake, slow-worm and common lizard but none were observed during the survey.
- 3.33 Mature trees and woodland habitats had potential to support specialist invertebrate species with high individual levels of nature conservation value – particularly so called saproxylic species that are dependent on dead wood to persist.
- 3.34 The habitats present also had potential to support west European hedgehog – but no evidence of the species was recorded within the Site either during the walkover survey or at night during the bat survey visits.
- 3.35 The range of habitats present had the potential to support a variety of bird species, and during the bat surveys the presence of barn owl was confirmed in the pumping station building and the neighbouring Barn 2. It appears likely that the species is nesting in one of the two buildings.

Bats

Building Roosting Bats

- 3.36 During the PRA evidence of bats was recorded in the form of old crumbling scattered accumulations of brown long-eared bat type droppings in the roof spaces of the East and West Wings of the Old House and individual pipistrelle bat type droppings stuck to a window frame below a hanging tile façade on the east side of the Teaching Block and to a fascia board on the south facing gable end of the Science Block.
- 3.37 The Ice House (which is a non-statutory wildlife site – referred to previously @ para 2.6) possessed an unobscured opening that would allow bats into the chamber. The Ice House has potential to support winter roosting bats, but winter checks of the structure have not been completed to verify its use by hibernating bats.
- 3.38 No other evidence of bats was recorded on/in any of the other buildings and, depending upon the presence of potential bat roost features, the buildings/structures were assigned as possessing either negligible, low, moderate or high bat roost suitability as summarised in **Table 3.2** below.

Table 3.2: Summary of Preliminary Bat Roost Assessment Findings

Structure/ ref no.	Bat evidence / roost features	Bat roost suitability	Subject to bat activity survey
Old House (1)	No bat evidence. Gaps under roof tiles	Moderate	12 July & 22 August
East Wing (2)	Several hundred old long-eared type bat droppings in	High	12 July, 3 August & 22 August



	roof space Gaps under roof tiles and around dormers		
West Wing (3)	Several hundred old long-eared type bat droppings in roof space Gaps under roof tiles and around dormers	High	12 July, 3 August & 22 August
West Spur (4)	No bat evidence. Hanging tiles / roof tile gaps	Low	27 July
East Annex (5)	No bat evidence. Gaps under roof tiles	Low	12 July & 27 July
Teaching Block (6)	One pipistrelle dropping stuck to exterior. Gaps under roof tiles Hanging tile faces, gaps around dormers	Moderate	2 & 22 August
Science Block (7)	Two pipistrelle droppings stuck to exterior. Hanging tile faces, gaps around dormers	Moderate	2, 3 & 22 August
Piggery (8)	No bat evidence. Gaps under ridge tiles – detailed internal inspection completed	Negligible	Not surveyed
Barn 1 (Summerhouse Building) (9)	No bat evidence. No bat roost features.	Negligible	Not surveyed
Pumping station (10)	No bat evidence. Gaps under roof tiles and fascia boards	Low	21 August & 6 September
Barn 2 (11)	No bat evidence. Gaps under roof tiles, fascia boards and behind weather boards	Low	21 August & 6 September
Lodges (12)	No bat evidence. Roof tile and eave gaps	Low	Not surveyed. Excluded from development post PRA
Belvedere (13a)	No bat evidence – gaps under roof tiles	Low	3 August
Pavilion (13b)	No bat evidence – no bat roost features	Negligible	Not surveyed
Ice House (13c)	No bat evidence (only limited internal access)	Moderate	Not surveyed – value lies in its winter hibernation potential.
Park Wall (13d)	Not inspected	-	-
Sports Hall (14)	No bat evidence. No bat roost features	Negligible	Not surveyed



Stables	No bat evidence. No bat roost features	Negligible	Not surveyed
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Bat Activity Survey

- 3.39 The day roosts of small numbers of common bat species were recorded in six buildings within the Site as follows:
- West Wing – one brown long-eared bat day roost in dormer gap;
 - East Annex – one common pipistrelle day roost below ridge tile gap;
 - Science Block – a day roost of five common pipistrelles and one soprano pipistrelle bat behind a fascia board on south facing gable end;
 - Teaching Block – one brown long-eared bat day roost in dormer gap;
 - Barn 2 – two common pipistrelle day roosts under two different roof tiles; and
 - Pumping Station (ancillary Shed) – one natterer's bat day roost and one brown long-eared bat day roost in roof – roost exit via air gaps in brickwork.
- 3.40 Bat roost emergence times and locations recorded during each survey are provided in **Appendix A** and the roost locations referred to above are also shown on **Figure 3.2**. No evidence of an extant maternity roost within the Site was recorded during any of the bat activity survey work, and bat activity recorded by each survey was relatively low level on each survey occasion with very occasional passes of individual bats close to the surveyors with no bat recordings to indicate a more significant or unrecorded roost elsewhere within the Site.
- 3.41 With the exception of a single brown long-eared bat that emerged from a dormer on the north end of the West Wing, no bats emerged from either the West or East Wings or the Old House during the three emergence surveys. Similarly, no bat calls were recorded by the automated bat detector set up to record for 37 nights inside the West and East Wing roof voids. The virtual absence of bat roosting activity associated with the West and East Wings indicates that the bat droppings recorded during the PRA inside the loft spaces of the two wings were evidence of historic bat roosting activity. It is of note that there were a number of large and bright external security flood lights around the exterior of the Old House and its Wings and it is conceivable that bats may have abandoned the building following introduction of this lighting.
- 3.42 An individual foraging barbastelle *Barbastella barbastellus* bat was recorded within the Site close to the Old House and Barn 1 during four of the seven bat activity surveys but there was no evidence to indicate that any of the buildings supported a roost of this species. Barbastelle is a nationally rare bat species.

Tree Roosting Bats

- 3.43 The ground level tree assessment (GLTA) recorded a total of 20 trees with PRF-I or PRF-M features as summarised by **Table 3.3**. Of these trees, 12 had PRF-M features and eight had PRF-I features. A total of 11 trees with PRF-M features were subject to a follow-up climbing survey to verify the presence of PRF-M features and bat roosting evidence associated with



the PRFs. Tree 335 (a massive dead standing veteran oak with PRF-M features identified by the GLTA) was not subject to a climbing survey as it will be retained.

- 3.44 The tree climbing survey confirmed that three of the 11 PRF-M trees identified by the GLTA did not possess PRF-M features or evidence of bat roosting and would therefore not be re-inspected by the second and third tree climbing surveys scheduled for July and August 2024.
- 3.45 With the exception of one tree (T786) that possessed possible bat dropping debris at the bottom of a PRF feature, none of the eight climbed trees with PRF-M features possessed any bats or obvious evidence of bat roosting.
- 3.46 A report of the climbing survey completed on 27 June 2024 is provided in **Appendix B** for reference purposes.

Table 3.3: Summary of GLTA Findings

Tree no. / species	PRF	Signs of bats	Provisional suitability	Next steps
Summerhouse Plantation - South				
T191 / sycamore	Trunk cavity	No	PRF-M	Climb to confirm
T196 / sycamore	Wound on branch	No	PRF-M	Climb to confirm
T253 / sycamore	Wound on trunk	No	PRF-M	Climb to confirm
T806 / sycamore	Wound on trunk	No	PRF-M	Climb to confirm
T784 / oak	Wound on trunk	No	PRF-I	-
T786 / ash	Wound on trunk	No	PRF-M	Climb to confirm
Summerhouse Plantation - North				
T926 / ash	Woodpecker holes	No	PRF-M	Climb to confirm
T933 / ash	Trunk tear out	No	PRF-M	Climb to confirm
T936 / sycamore	Flaky bark	No	PRF-I	-
T938 / sycamore	Trunk wound	No	PRF-M	Climb to confirm
T939 / sycamore	Flaky bark	No	PRF-I	-
T949 / ash	Trunk wound	No	PRF-M	Climb to confirm
T950 / sycamore	Trunk knot hole	No	PRF-M	Climb to confirm
T960 / field maple	Flaking bark	No	PRF-I	-
Two dead standing ash trees between T930 & T938	Flaking bark	No	PRF-I x2	-



Dead standing sycamore in NE tree group to be removed	Large lifted bark plates	No	PRF-I	-
Rest of Site				
T335 – standing dead veteran oak	Multiple features	No	PRF-M	Retain as monolith
T338 - ash	Woodpecker holes	Staining (possibly bats)	PRF-M	Climb to confirm
T499 – standing dead lime	Multiple features	No	PRF-I	Retain as monolith
T641 – horse chestnut	Trunk scars	No	PRF-I	Retain as monolith

Summerhouse Plantation Bat Activity Survey

3.47 The automated bat activity survey completed in the two proposed residential dwelling plots within the Summerhouse Plantation woodland in June 2024 verified the presence of a bat assemblage made up of six bat species:

- Common pipistrelle *Pipistrellus pipistrellus* 54.5% & 60.8% of all recorded calls
- Soprano pipistrelle *P. pygmaeus* 30.9% & 32%
- Barbastelle *Barbastella barbastellus* 9.3% & 5.6%
- Daubenton's *Myotis daubentonii* 2.9% & 0.7%
- *Myotis* species 1.7% & 0.4%
- Brown long-eared *Plecotus auritus* 0 & 0.2%
- Noctule *Nyctalus noctula* 0.7% & 0.2%

3.48 The nationally rare barbastelle bat was recorded within the Summerhouse Plantation development areas on 12 of the 13 recording nights, and at times after sunset to indicate day roosting close to the detectors on nine occasions in the northern plot (first recorded call times 21-37 minutes after sunset), and on six occasions in the southern plot (33-39 minutes after sunset). The total number of barbastelle calls recorded by each detector per night was variable and ranged from zero to 35 calls in the northern development plot, and zero to 12 calls in the southern plot over the 13 consecutive nights.

3.49 The follow-up bat activity survey of the eastern side of Summerhouse Plantation recorded a similar assemblage and bat call numbers to that recorded in the western side of the wood, but also recorded a seventh bat species – serotine *Eptesicus serotinus* – with a total of six calls recorded on four separate nights (0.53% of total call numbers). Barbastelle was recorded on six of the seven nights (28 calls (2.5% of total calls)) but not at times to indicate day roosting close to the detector on the eastern side of Summerhouse Plantation during the survey.

3.50 In overall terms the seven bat species recorded within/over the wood confers Summerhouse Plantation with a total bat assemblage score of 14 out of a possible 28



points (50%) for south-eastern/east Anglia which, in accordance with UK bat mitigation guidelines¹¹, suggest that the bat assemblage of Summerhouse Plantation is of County importance.

¹¹ Reason, P, & Wray, S (2023) *UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats*. CIEEM, Ampfield



Great crested newt

Habitat Suitability Index (HSI) assessment

- 3.52 A description of the six identified waterbodies and the results of the great crested newt (GCN) HSI assessment is provided in **Table 3.3**.

Table 3.3: Ponds descriptions and HSI assessment.

Pond no. and grid ref.	Description	HSI score
1. TL 18242 24799	Large permanent on-Site pond set within small woodland block south of the house. The pond was shaded, with poor water quality and no marginal or aquatic vegetation.	0.50 – poor/ below average suitability
2. TL 18346 24609	Shallow square-sided pond that supported a continuous bed of reed sweet-grass and lacked standing water. The feature may support standing water after period of heavy rain.	0.33 -poor suitability.
3. TL 18367 24674	Shallow depression of dry bare ground with no aquatic or damp ground plant species. It is possible that the depression could support standing water for a short periods after heavy rain, but is very unlikely to be of value to GCN.	N/a - completely unsuitable.
4. TL 18367 24674	Dry defunct stone-built ornamental water feature set within paved terrace.	N/a - completely unsuitable.
5. TL 18150 24763	Covered swimming pool.	N/a - completely unsuitable.
6. TL 18051 24767	Small roadside duck pond with turbid standing water, and evidence of marginal drawdown. The pond lacked aquatic and marginal vegetation except for a few floating leaves of lily.	0.33 -poor suitability.

Presence / absence survey

- 3.53 Waterbodies 3, 4 and 5 were considered completely unsuitable for GCN and were not subject to GCN presence / absence survey using eDNA test kits. Waterbody 2 lacked standing water during the inspection and therefore could not be subject to survey.
- 3.54 Waterbodies 1 and 6 were subject to eDNA testing and both returned a negative result confirming GCN absence from both waterbodies.



Princess Helena College, Temple Dinsley, Herts

Habitat map

- Site boundary
- buildings
- hard-standing
- introduced shrubs
- tall ruderal
- ephemeral / short perennial
- amenity grassland
- improved grassland
- poor semi-improved neutral grassland
- semi-improved neutral grassland
- dense scrub
- broadleaved plantation woodland
- mixed plantation woodland
- broadleaved semi-natural woodland
- bare ground
- flowerbed
- swamp
- orchard
- standing water
- line of trees
- species-poor intact hedge
- species-rich hedge with trees
- individual tree

Figure 3.1

Map Scale @ A4: 1:4,500

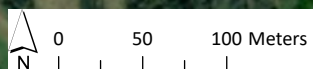
Surveyed by: RJH

Survey date: 22 June 2023

Drawn by: RJH

Checked by: DP

Status: Final



Maxar, Microsoft



Photo 1: Old House & East Wing - north facade



Photo 2 - Old House, West Wing and West Spur.
Roost location Wing Dormer circled



Photo 3 - West Wing west facade



Photo 4 - West Wing (back) and West Spur



Photo 5 - East Wing & East Annex. Bat roost location
on East Annex circled



Photo 6 - Teaching Block - bat roost location circled



Photo 7 - Science Block - roost location circled



Photo 8 - Barn 2 (Summerhouse Building)



Photo 9 - Barn 2 - roost location circled



Photo 10 - Barn 2 roost location circled



Photo 11 - Pumping station. Roost exit point circled



Photo 12 - Lodges



Photo 13 - Stables



Photo 14 - Belvedere



Photo 15 - Pavilion



Photo 16 - Ice House



Photo 17 - Piggery



Photo 18 - Sports Hall



Photo 19 - Lodge 2



Photo 20 - Gazebo



Photo 21 - Pavilion



Photo 22 - Ice House



Photo 23 - Summer House



Photo 24 - Sports Hall

4 Likely Development Impacts and Recommendations

Preliminary Assessment of Likely Development Impacts

Building Roosting Bats

- 4.1 All bats and their places of shelter are legally protected, and the confirmed presence of roosting bats in six of the buildings within the Site is of significance with respect to proposals to remove, renovate or redevelop these buildings. All bat roosts recorded within the Site were, however, of relatively low conservation value and their loss or damage could be relatively easily compensated through the provision of bat boxes
- 4.2 The following actions are considered likely to result in the damage or destruction of bat roosts and would need to be implemented under the auspices of a Natural England bat licence under direction of a licenced bat worker:
- Demolition of Science Block;
 - Repair, and/or refurbishment/enhancement of West Wing, Old House, East Wing Teaching Block including the erection of scaffolding and use of breather roofing felt that is not bat safe as part of re-roofing work;
 - Conversion of Barn 2 and the Pumping Station into residential;

Tree Roosting Bats

- 4.3 To date no definitive evidence of roosting bats has been recorded in any tree that is scheduled for removal to enable the development, but the bat tree assessment survey work is ongoing and impacts of tree removal on tree roosting bats has yet to be confirmed.
- 4.4 If bat roost presence is confirmed in a tree that is to be removed, the tree will be subject to a reassessment to verify whether it can be removed or managed to ensure that the roost feature can be retained. In the event that the roost cannot be retained, the tree would be removed under the auspices of Natural England bat licence with proportionate bat roost mitigation and compensation measures provided as considered necessary and appropriate.

Lighting

- 4.5 The bat activity surveys have verified use of the air space close to existing buildings and within woodland in which development is proposed by the nationally rare barbastelle bat. Given the presence of this and other light averse bat species, the design and use of artificial lighting should be minimised, and all essential external lighting designed to minimise adverse impacts on bats and to keep seminatural habitats close to new and existing buildings in the dark. Currently there are bright security floodlights attached to the exterior of the Old House and its Wings and there is an opportunity to rationalise this lighting and enhance the value of the Site for nocturnal wildlife as part of the Site's redevelopment.



- 4.6 Of particular importance is the need to ensure that Summerhouse Plantation and the Ice House (County Wildlife Site bat hibernation feature) are not subject to excessive illumination.

Other Ecological Receptors

- 4.7 The presence of barn owl, which is suspected of nesting in the Pumping Station and also makes use of Barn 2, is of ecological note as the species is protected by Schedule 1 of the Wildlife & Countryside Act. It will be essential to ensure that nesting barn owl are not disturbed by renovation activity to either building, and that accommodation is made to ensure that barn owl can continue to nest and roost within the Site by the provision of tree and/or building mounted barn owl boxes elsewhere within the Site.

Recommendations

Ecological Mitigation

Bats

- 4.8 Works to buildings and structures of value to bats should be implemented under the auspices of a Natural England bat licence.
- 4.9 The Ice House is protected by a non-statutory wildlife site designation on the basis of its importance for winter roosting bats, and it will be essential to maintain the structure with its current entrance open and accessible to bats and not subject to illumination from new development. Consideration should be given to erecting a lockable grill across the Ice House entrance that maintains access for bats but prevents human occupants of the Site and their pets from accessing the structure. Consideration should also be given to the installation of a post and rail stock/dog proof fence with an interpretation board around the structure to discourage future access and disturbance.
- 4.10 Bat roosting opportunity into the roof voids of the West and East Wing and Old House should be maintained by the use of bat safe roofing felt membranes and the provision of bat access roof tiles in select locations as part of building restoration proposals.
- 4.11 Given the presence of light averse bat species within the Site, care should be given to minimising the use of lighting at night, and all essential external lighting designed to minimise adverse impacts on bats.

Nesting birds

- 4.12 The removal of scrub, trees, and other areas of dense vegetation to facilitate development should be undertaken outside of the bird breeding period between September – February, or immediately following an inspection of these areas by an experienced ecologist that confirms nesting bird absence.
- 4.13 Works to the Pumping Station and Barn 2 should also take place outside of the bird nesting season given the potential value of these buildings to nesting barn owl.



Other species

- 4.14 A watching brief for badger setts and hedgehog should be maintained during any habitat clearance and construction, and an ecologist contacted in the event that any issues or concerns arise while works are ongoing.

Survey

- 4.15 Once full details of construction related grassland, tree and woodland habitat loss are confirmed, select follow-up survey for protected species – notably tree roosting bats and reptiles should be completed to enable a more comprehensive assessment of the potential impact of the proposal on protected species to be made.

Biodiversity Enhancement

- 4.16 Opportunities for biodiversity enhancement should be explored as part of the development. Consideration could be given to:
- Restoration of non-residential buildings or structures to enhance their value for wildlife e.g. enhanced bat roosting opportunities associated with the Ice House, Piggery and Belvedere;
 - Incorporation of enclosed bat boxes into converted buildings – notably Barn 2 and the Pumping Station – and new buildings in Summerhouse Plantation;
 - Installation of bat boxes suitable for barbastelle on trees in the east side of Summerhouse Plantation, and the exclusion of deer from this part of the wood to improve its structural integrity;
 - Restoration of wetland habitats;
 - Creation of wildflower meadows and the adoption of a traditional hay meadow management in perpetuity;
 - Provision of tree mounted bat and bird boxes around the Site along and monitoring their use;
 - Provision of barn owl nest boxes on suitable trees and monitoring their use.
 - Retention of dead wood resulting from development related habitat clearance as habitat piles.



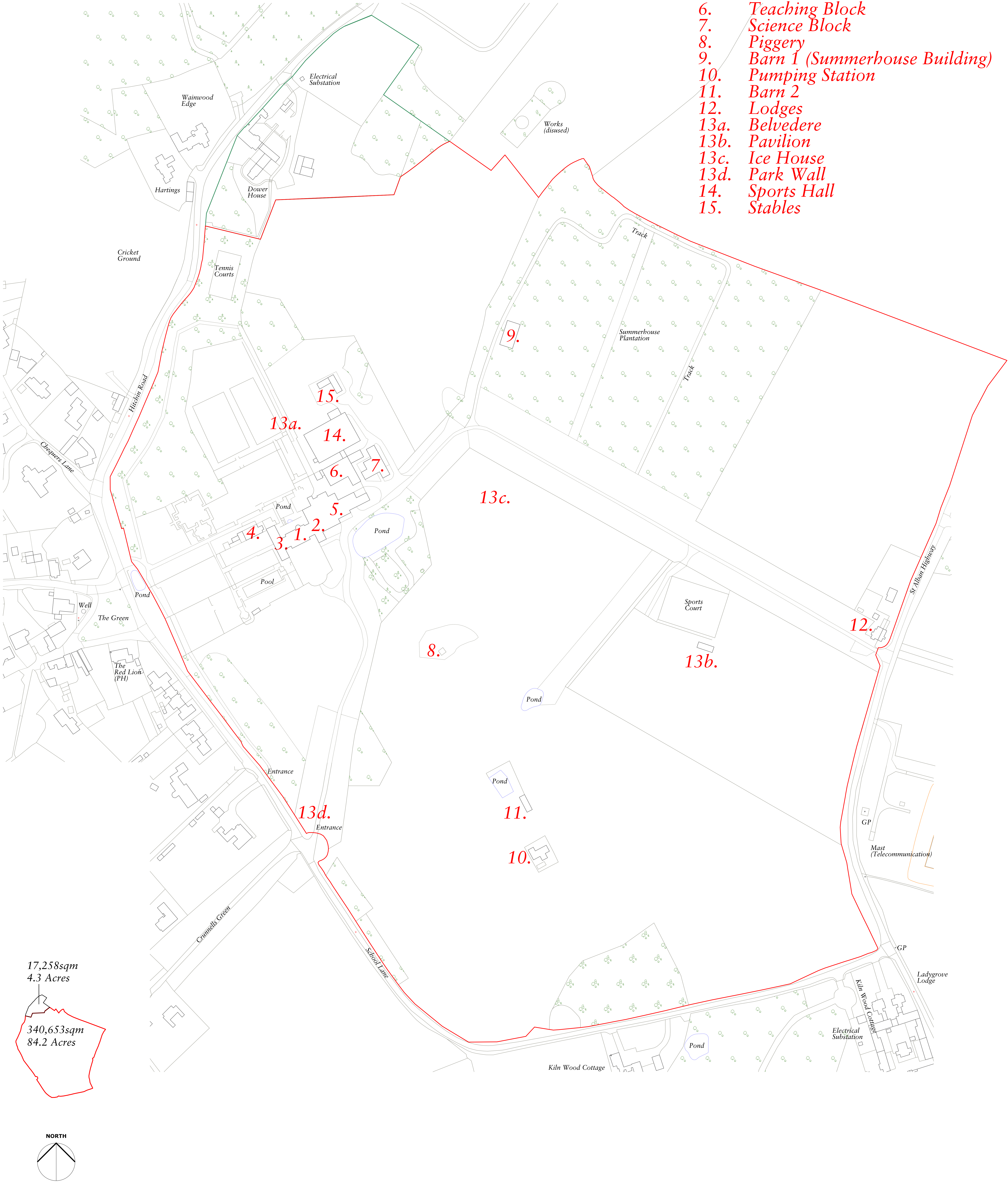
Appendix A

Building Bat Roost Survey Information



Buildings and Structures on site:

- 1. Old House
- 2. East Wing
- 3. West Wing
- 4. West Spur
- 5. East Annexe
- 6. Teaching Block
- 7. Science Block
- 8. Piggery
- 9. Barn 1 (Summerhouse Building)
- 10. Pumping Station
- 11. Barn 2
- 12. Lodges
- 13a. Belvedere
- 13b. Pavilion
- 13c. Ice House
- 13d. Park Wall
- 14. Sports Hall
- 15. Stables



17,258sqm
4.3 Acres

340,653sqm
84.2 Acres

NORTH

Project

Temple Dinsley
Preston, Hitchin, SG4 7RT

Site Plan ~ Existing

Project Number Drawing Number Scale @ A0 Status Revision Date Revision Notes

641

0001

1:1000

1:2000

Information

/

16.08.23

DRAFT

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All dimensions to be checked on site prior to commencement of work. Discrepancies between drawings and information to be referred to CA without delay

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Key



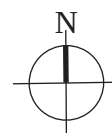
Tripod mounted time synchronised Anabat Express electronic bat detector - arrow shows direction of microphone

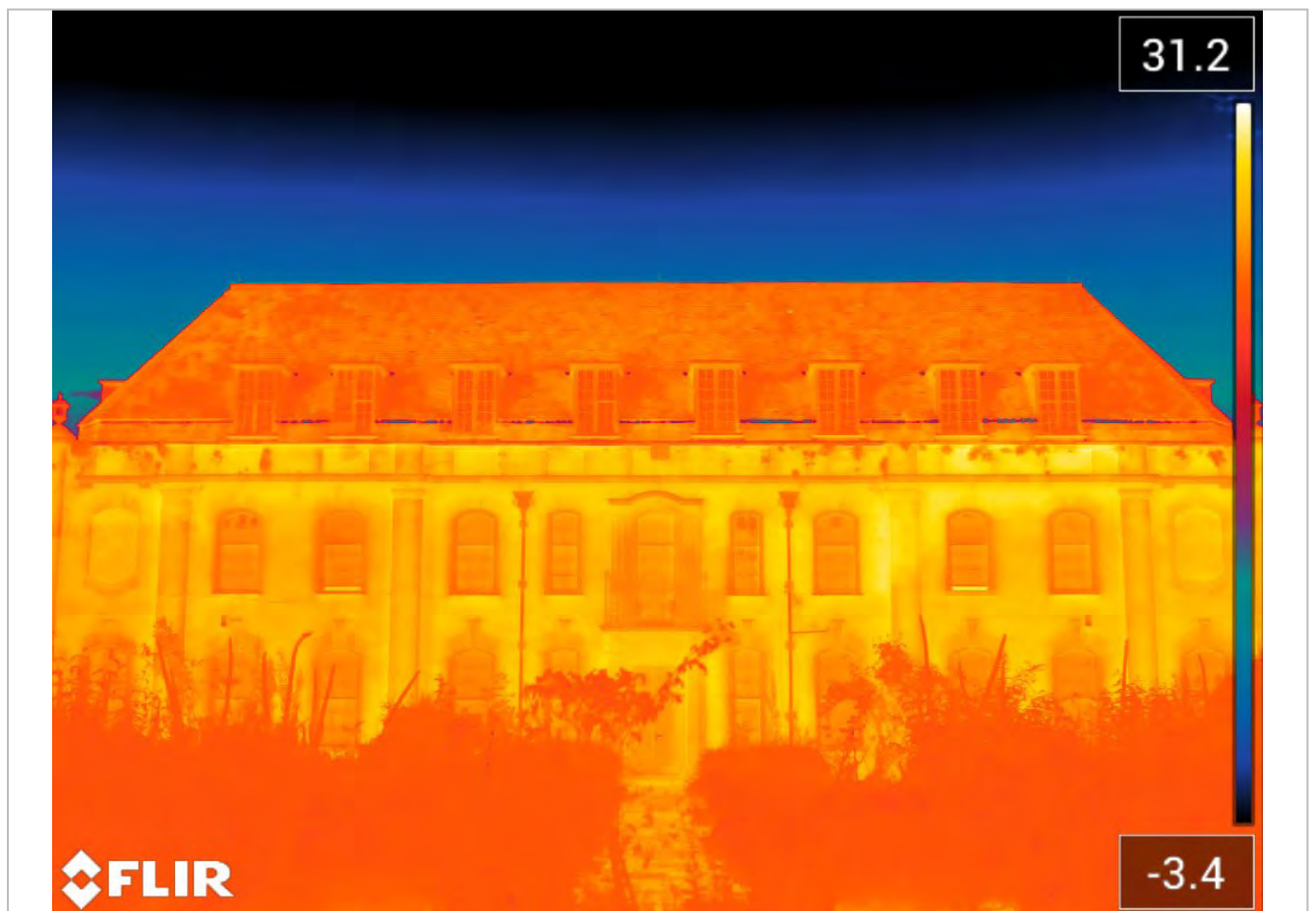


Bat surveyor equipped with hand-held Pettersson D230 electronic bat detector with ear phones



Tripod mounted FLIR thermal camera - camera fields of view and bat in flight detection distances reported separately





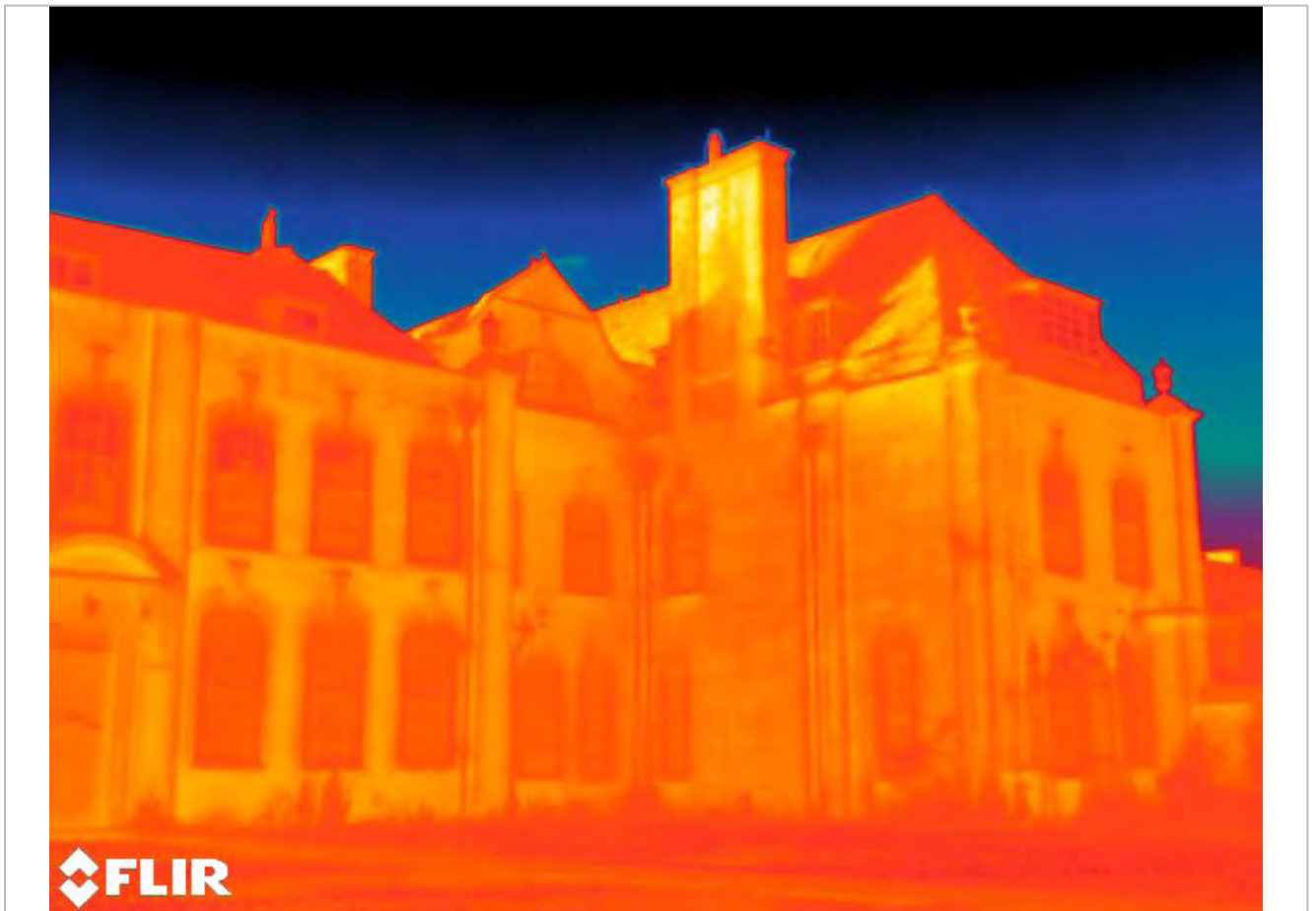
FLIR T1020 (1024 x 768 pixel resolution) with 45 degree lens = bat in flight detection distance of 104 m.
Camera located 42 m from furthest point of building

Princess Helena College, Temple Dinsley

FLIR T1020 field of view 1

12 July 2023





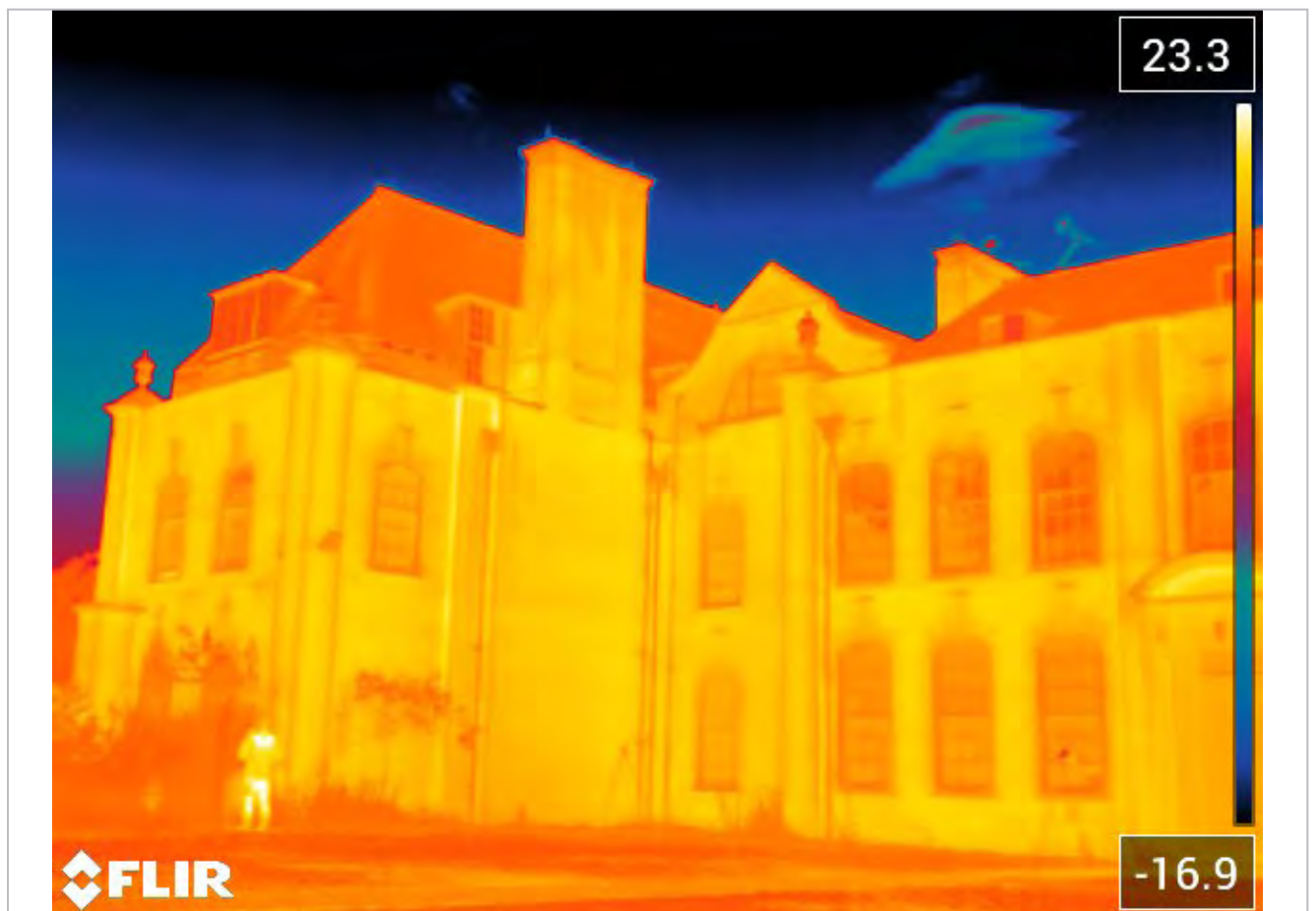
FLIR T540 (464 x 348 pixel resolution) with 42 degree lens = bat in flight detection distance of 51 m.
Camera located 32 m from furthest point of building

Princess Helena College, Temple Dinsley

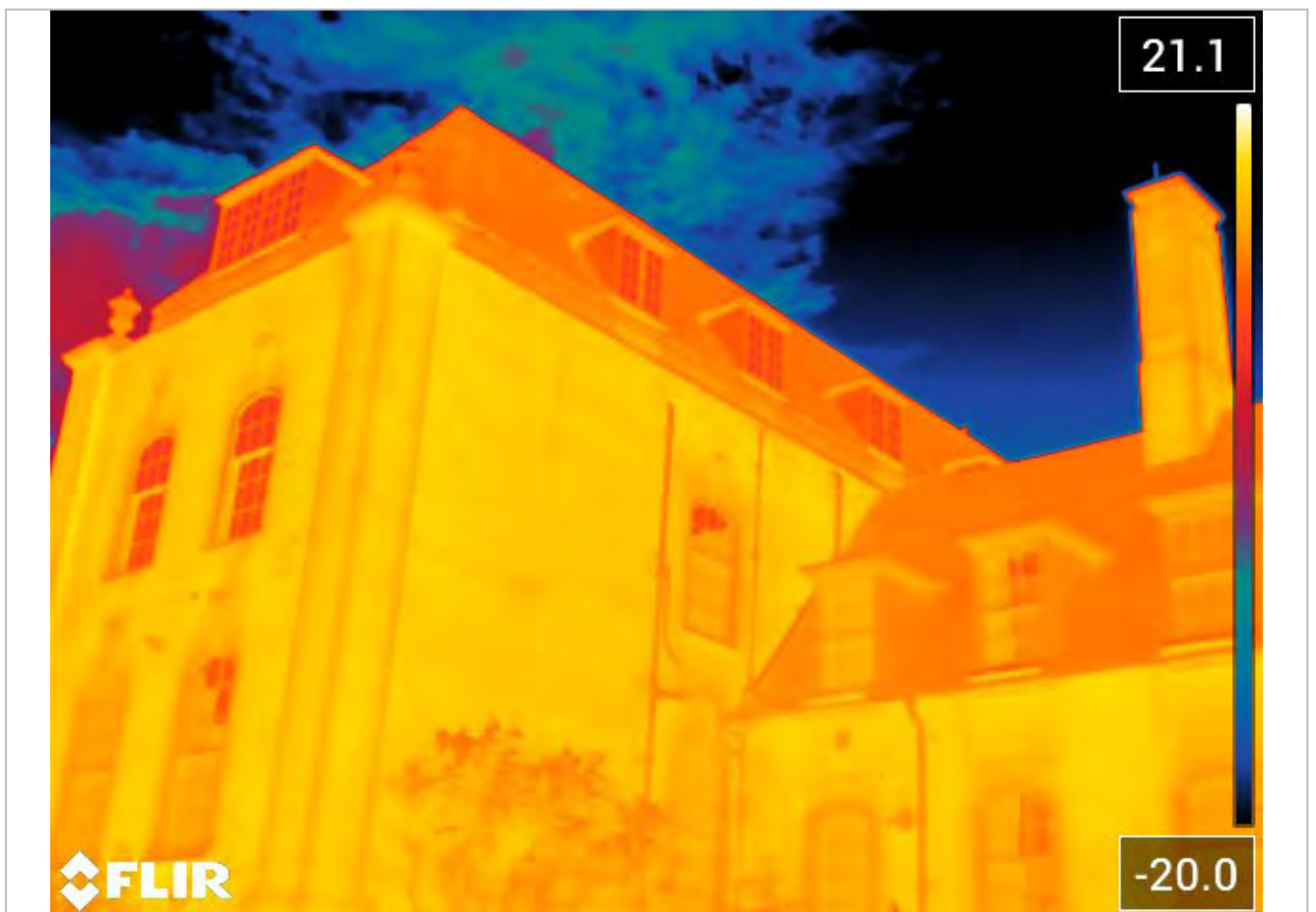
FLIR T540 field of view 2

12 July 2023





FLIR T540 (464 x 348 pixel resolution) with 42 degree lens = bat in flight detection distance of 51 m.
Camera located 32 m from furthest point of building



FLIR T860 (640 x 480 pixel resolution) with 42 degree lens = bat in flight detection distance of 66 m.
Camera located 26 m from furthest point of building

Princess Helena College, Temple Dinsley

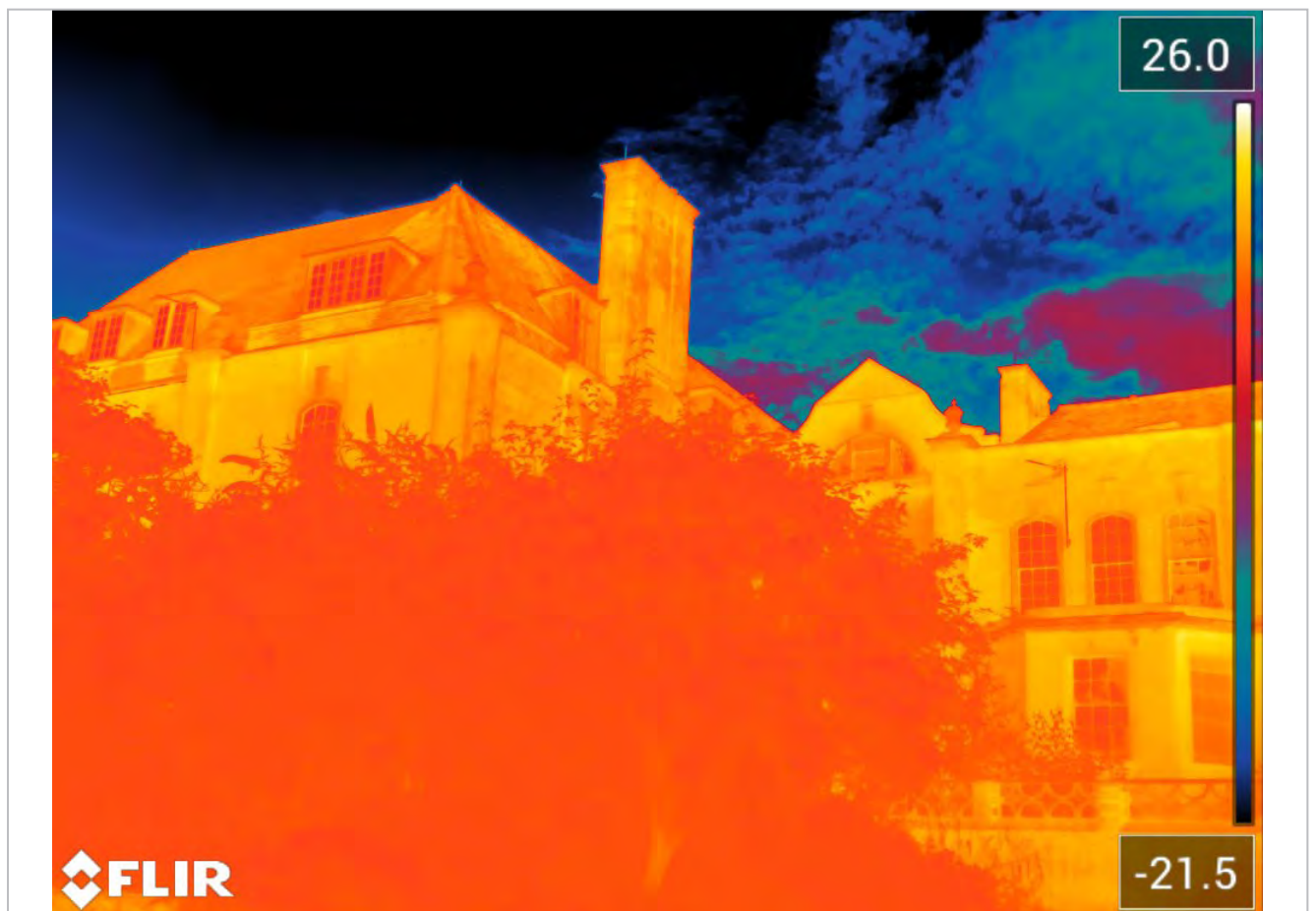
FLIR T860 field of view 4

12 July 2023





FLIR T540 (464 x 348 pixel resolution) with 42 degree lens = bat in flight detection distance of 51 m.
Camera located 32 m from furthest point of building



FLIR T1020 (1024 x 768 pixel resolution) with 45 degree lens = bat in flight detection distance of 104 m.
Camera located 47 m from furthest point of building

Princess Helena College, Temple Dinsley

FLIR T1020 field of view 6

12 July 2023





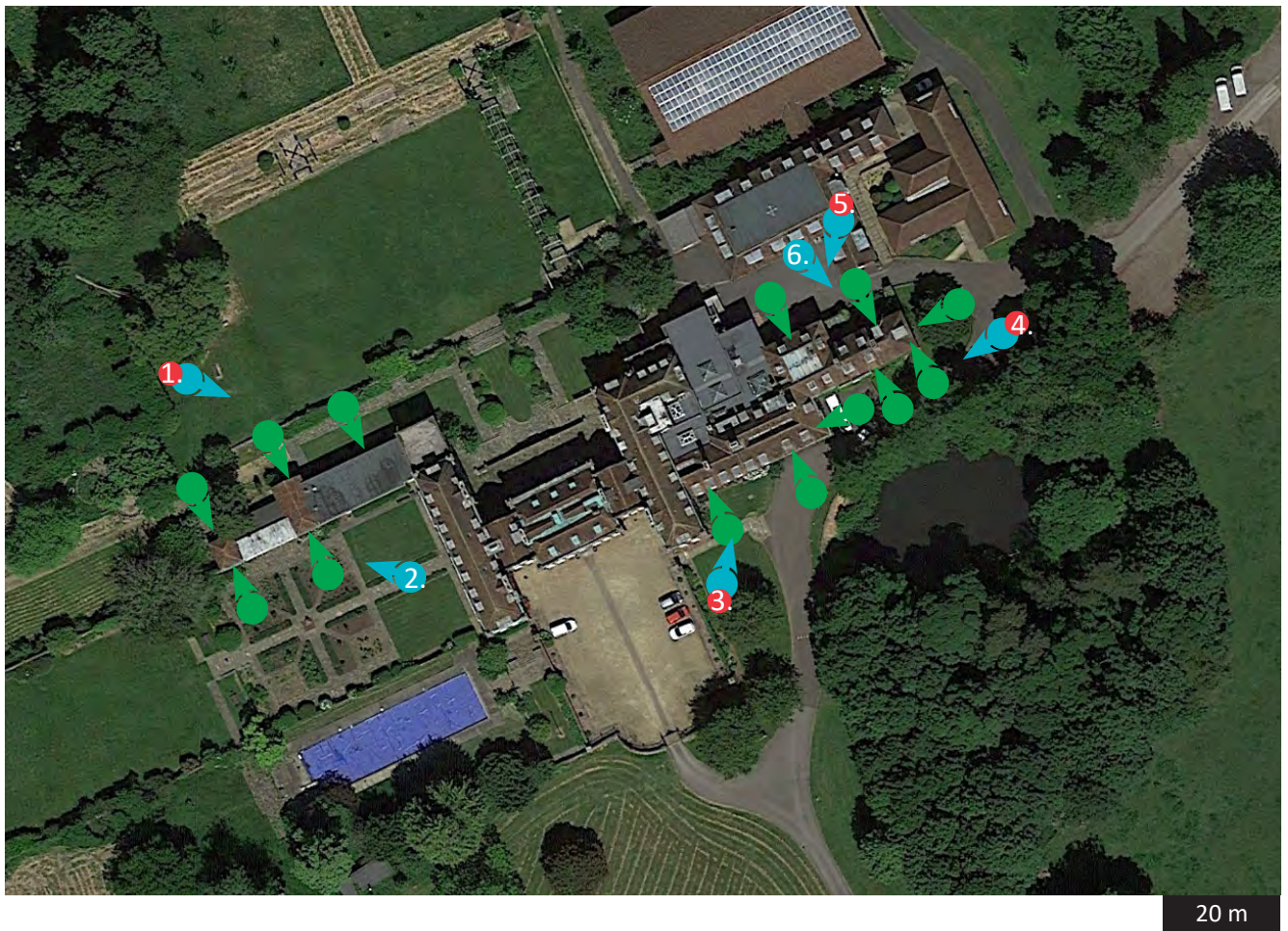
Bat Roost Emergence Survey Findings

1. Common pipistrelle bat (x1) emerged from just below ridge @ 21.34
2. Bat (x1) no audible or recorded calls, assumed brown long-eared, emerged from dormer roof edge @ 21.46

Occasional passes of common and soprano pipistrelle within the site during the survey, no other bat species recorded.

Sunset was at 21.17

Cloud cover (5%), average air temp 14.8°C (start), 15.0°C (end); variable wind still-light breeze; no rain



Key



Tripod mounted time synchronised Anabat Express electronic bat detector - arrow shows direction of microphone

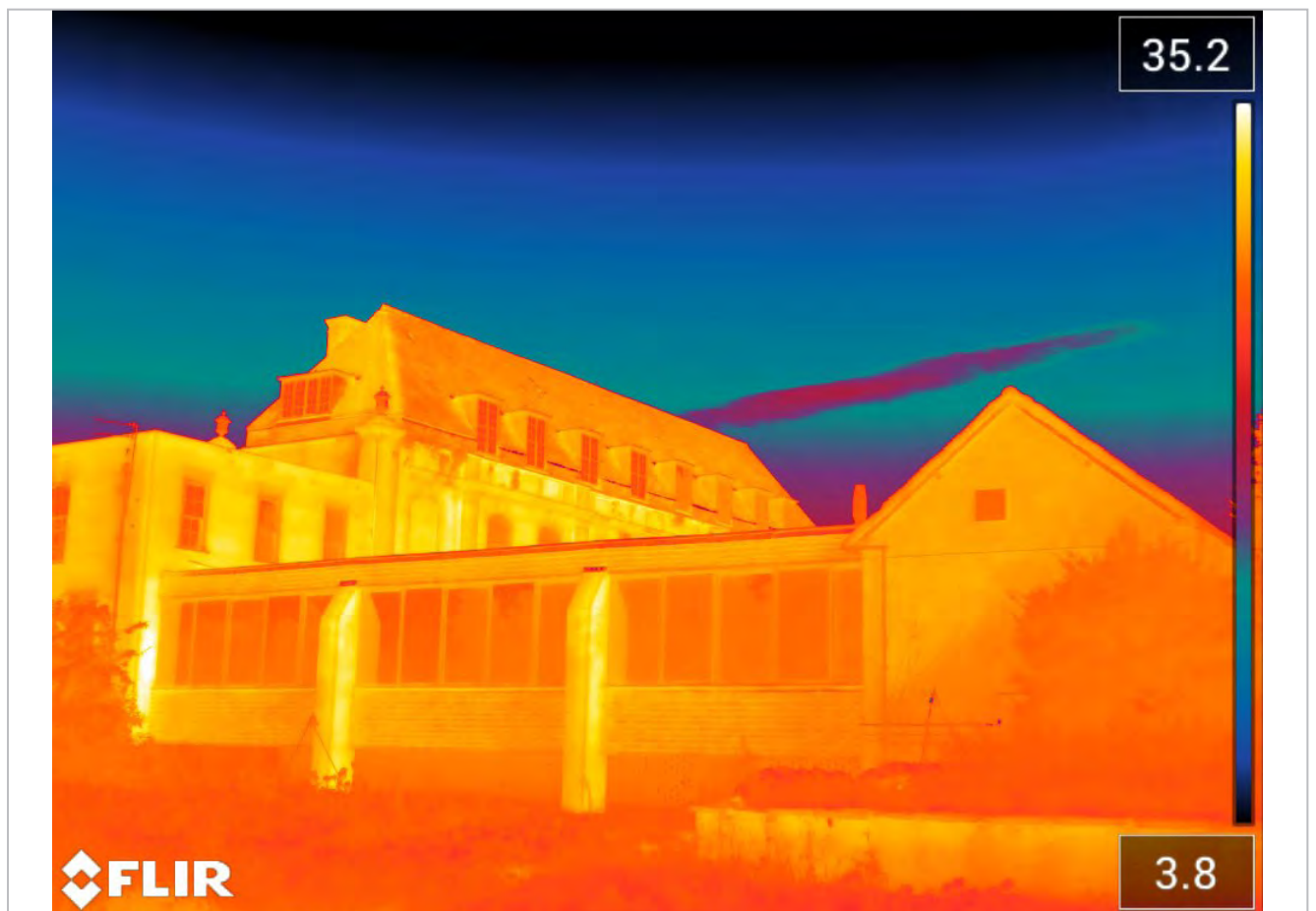


Bat surveyor equipped with hand-held Pettersson D230 electronic bat detector with ear phones

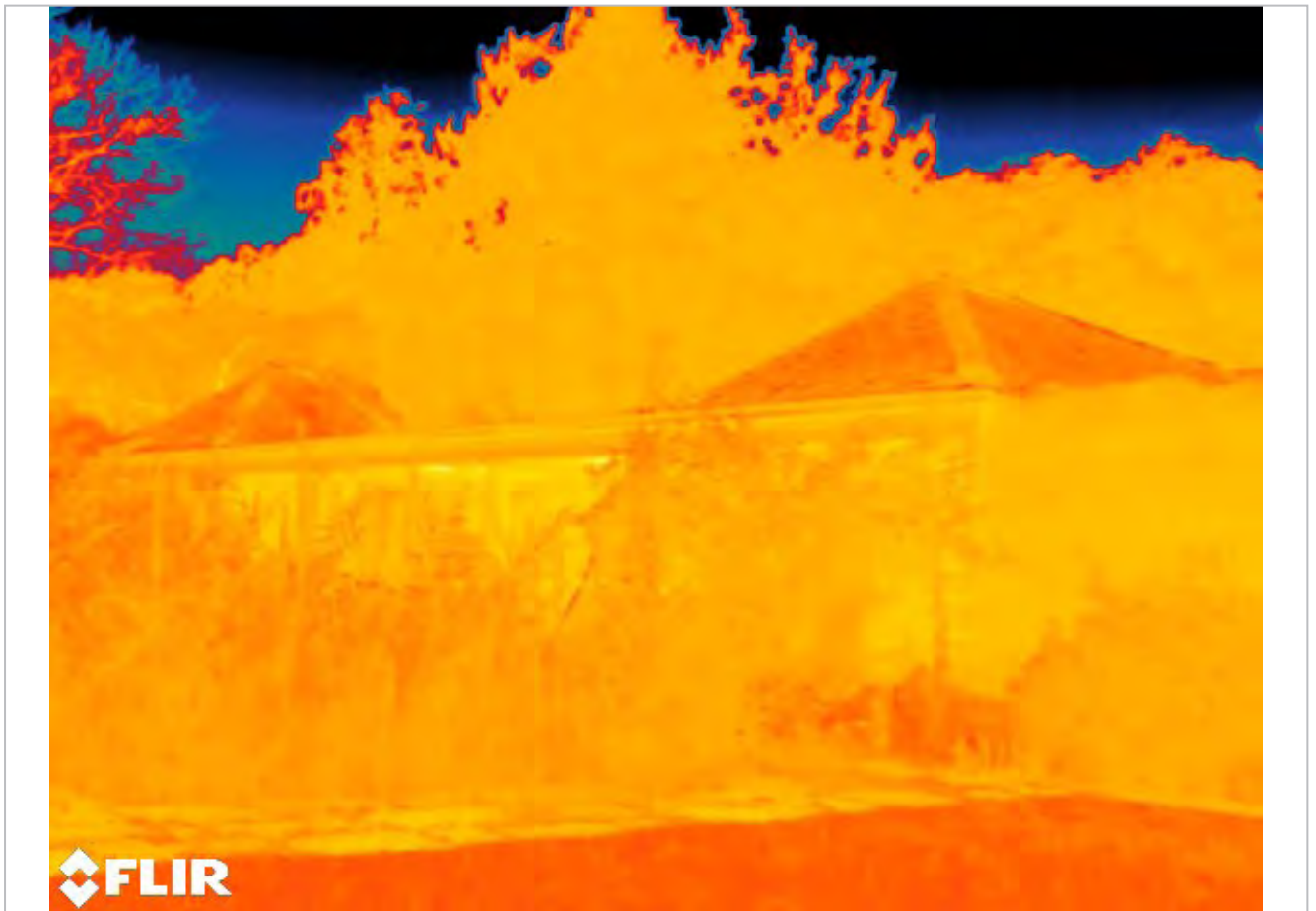


Tripod mounted FLIR thermal camera - camera fields of view and bat in flight detection distances reported separately





FLIR T1020 (1024 x 768 pixel resolution) with 45 degree lens = bat in flight detection distance of 104 m.
Camera located 50 m from furthest point of building



FLIR T540 (464 x 348 pixel resolution) with 42 degree lens = bat in flight detection distance of 51 m.
Camera located 30 m from furthest point of building



FLIR T860 (640 x 480 pixel resolution) with 42 degree lens = bat in flight detection distance of 66 m.
Camera located 25 m from furthest point of building

Princess Helena College, Temple Dinsley

FLIR T860 field of view 3

27 July 2023



Image not taken

FLIR T1020 (1024 x 768 pixel resolution) with 45 degree lens = bat in flight detection distance of 104 m.
Camera located 40 m from furthest point of building

Princess Helena College, Temple Dinsley

FLIR T1020 field of view 4

27 July 2023





FLIR T540 (464 x 348 pixel resolution) with 42 degree lens = bat in flight detection distance of 51 m.
Camera located 22 m from furthest point of building



FLIR T540 (464 x 348 pixel resolution) with 42 degree lens = bat in flight detection distance of 51 m.
Camera located 21 m from furthest point of building



Bat Roost Emergence Survey Findings

1. Common pipistrelle bats (x3) flew past surveyor at vantage point 4 between 21.13-21.16 suggesting a nearby roost

No bats emerged from buildings being watched. Occasional passes of individual common and soprano pipistrelles recorded from 21.38 to end of survey. Barbastelle foraging recorded at survey location 1 between 21.52-22.04. Brown long-eared bat also recorded at location 1 @ 22.03

Sunset was at 20.59

Cloud cover (30%), average air temp 18.3°C (start), 16.5°C (end); variable still-gentle breeze; no rain



Key



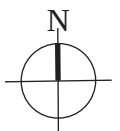
Tripod mounted time synchronised Anabat Express electronic bat detector - arrow shows direction of microphone



Bat surveyor equipped with hand-held Pettersson D230 electronic bat detector with ear phones



Tripod mounted FLIR thermal camera - camera fields of view and bat in flight detection distances reported separately





FLIR T1020 (1024 x 768 pixel resolution) with 45 degree lens = bat in flight detection distance of 104 m.
Camera located 18 m from furthest point of building



FLIR T1020 (1024 x 768 pixel resolution) with 45 degree lens = bat in flight detection distance of 104 m.
Camera located 25m from furthest point of building



FLIR T540 (464 x 348 pixel resolution) with 42 degree lens = bat in flight detection distance of 51 m.
Camera located 10 m from furthest point of building



FLIR T540 (464 x 348 pixel resolution) with 42 degree lens = bat in flight detection distance of 51 m.
Camera located 20 m from furthest point of building



FLIR T860 (640 x 480 pixel resolution) with 42 degree lens = bat in flight detection distance of 66 m.
Camera located 21 m from furthest point of building

Princess Helena College, Temple Dinsley

FLIR T860 field of view 5

2 August 2023





FLIR T540 (464 x 348 pixel resolution) with 42 degree lens = bat in flight detection distance of 51 m.
Camera located 20 m from furthest point of building



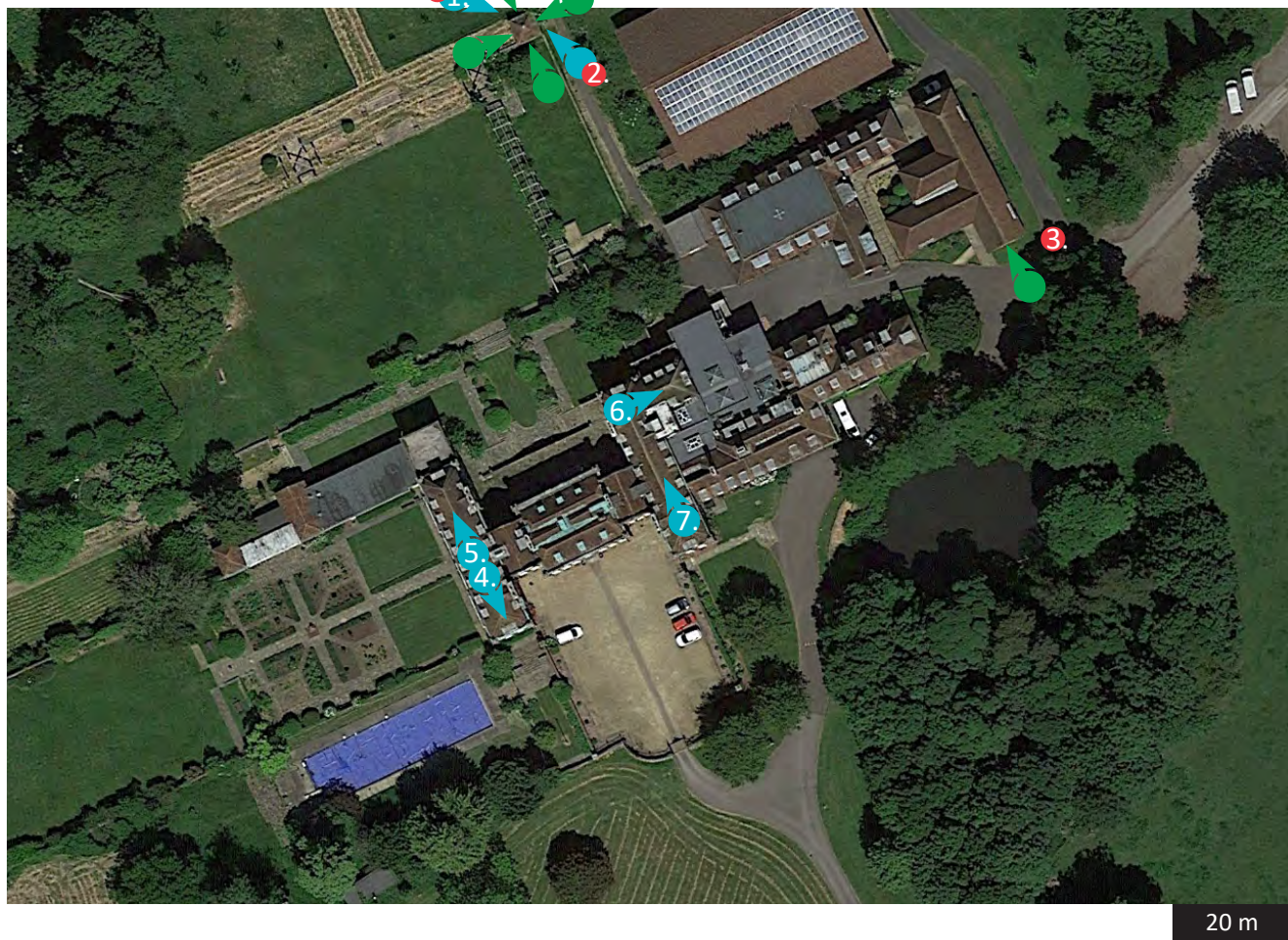
Bat Roost Emergence Survey Findings

1. Common pipistrelle bats (x5) emerged from fascia gap between 20.57-21.17
Soprano pipistrelle (x1) emerged from same fascia gap @ 21.02
2. Bat (x1) no audible or recorded calls, assumed brown long-eared, emerged from dormer roof edge @ 21.05

Occasional passes of common and soprano pipistrelle recorded within the Site from 20.57. Barbastelle bat recorded by detectors east of Science Block at 21.38

Sunset was at 20.50

Cloud cover (100%), average air temp 16.8°C (start), 16.3°C (end); variable wind still-moderate breeze; no rain



Key



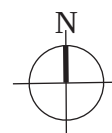
Tripod mounted time synchronised Anabat Express electronic bat detector - arrow shows direction of microphone

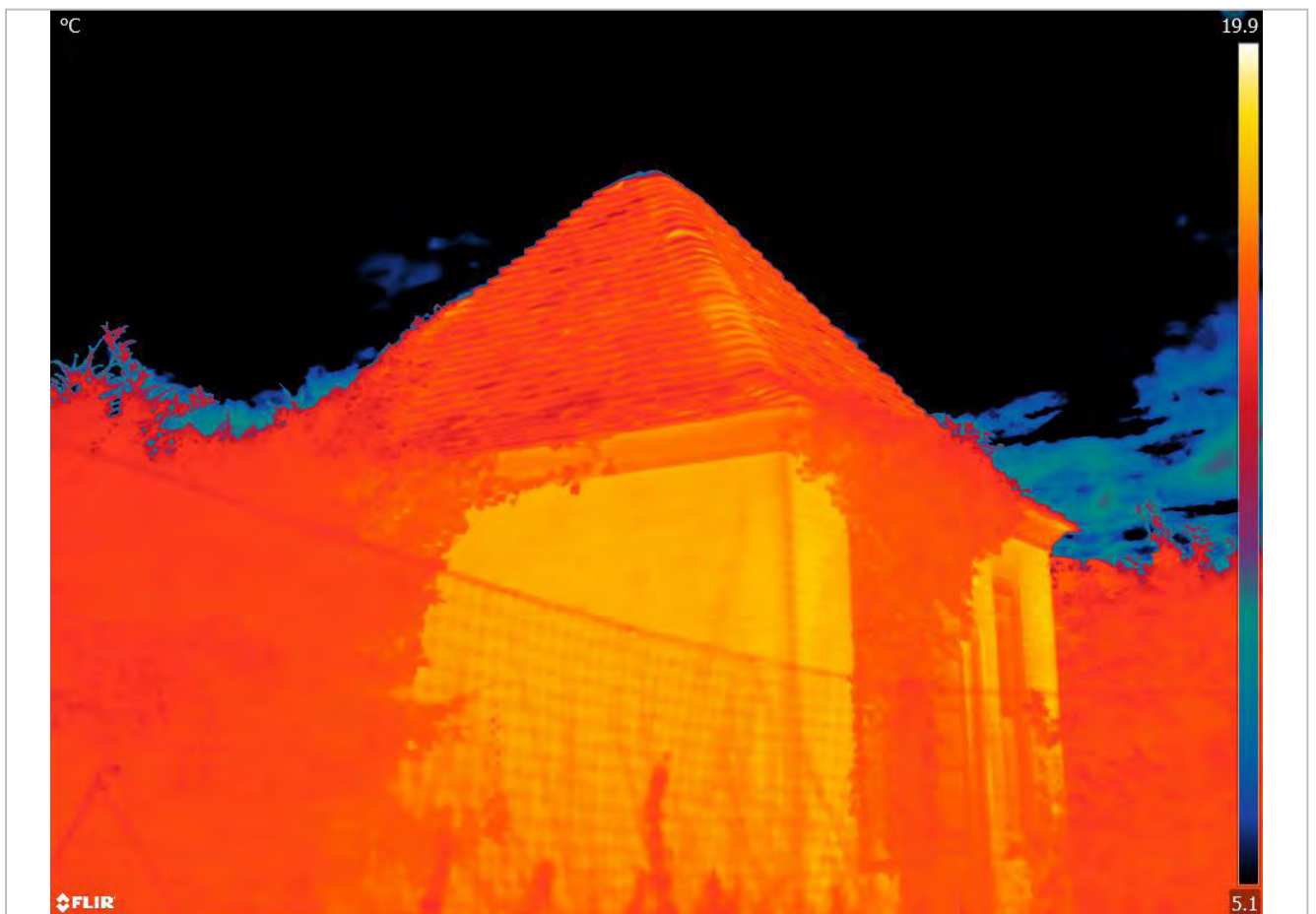


Bat surveyor equipped with hand-held Pettersson D230 electronic bat detector with ear phones



Tripod mounted FLIR thermal camera - camera fields of view and bat in flight detection distances reported separately





FLIR T1020 (1024 x 768 pixel resolution) with 45 degree lens = bat in flight detection distance of 104 m.
Camera located 12 m from furthest point of building

Princess Helena College, Temple Dinsley

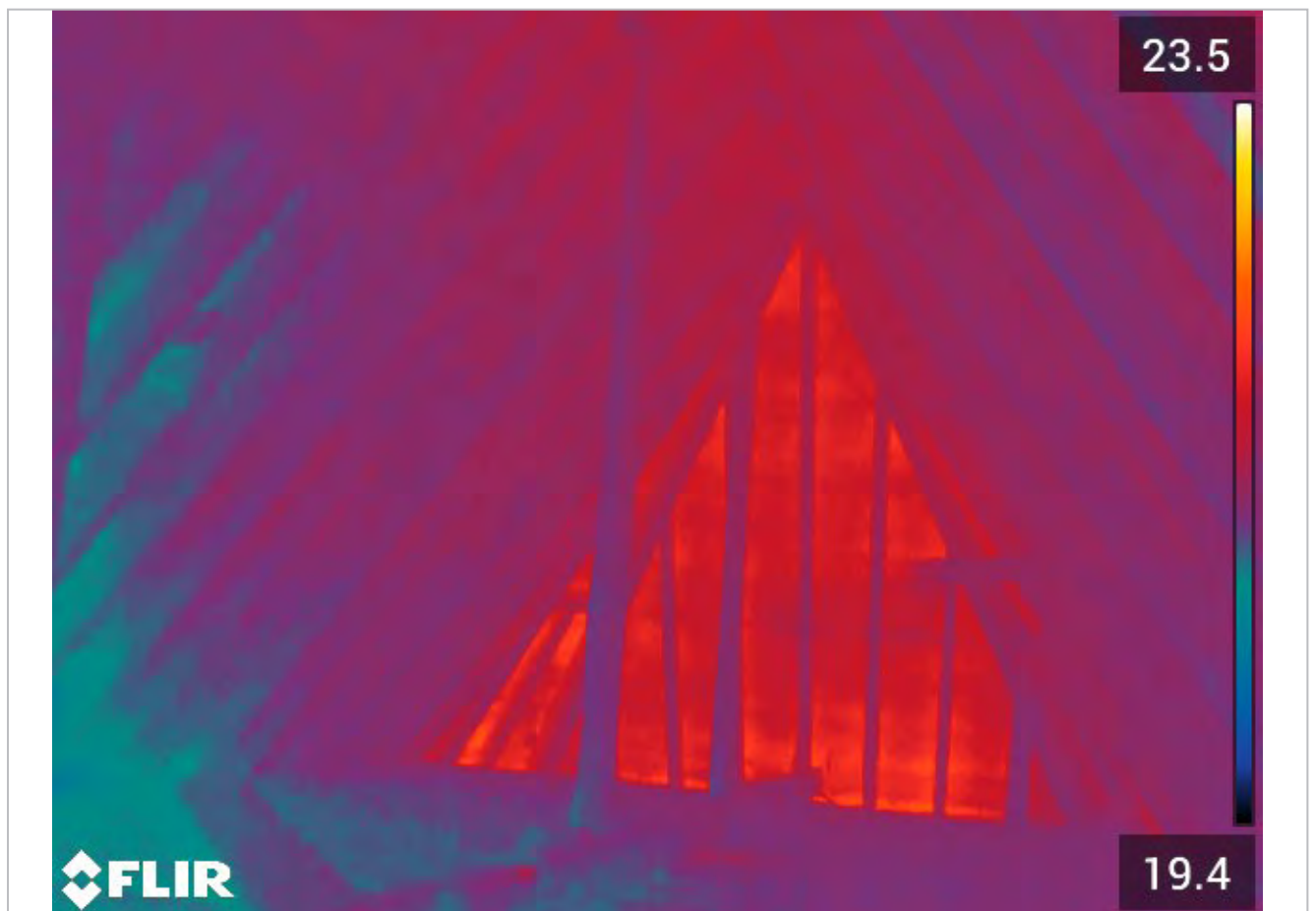
FLIR T1020 field of view 1

3 August 2023





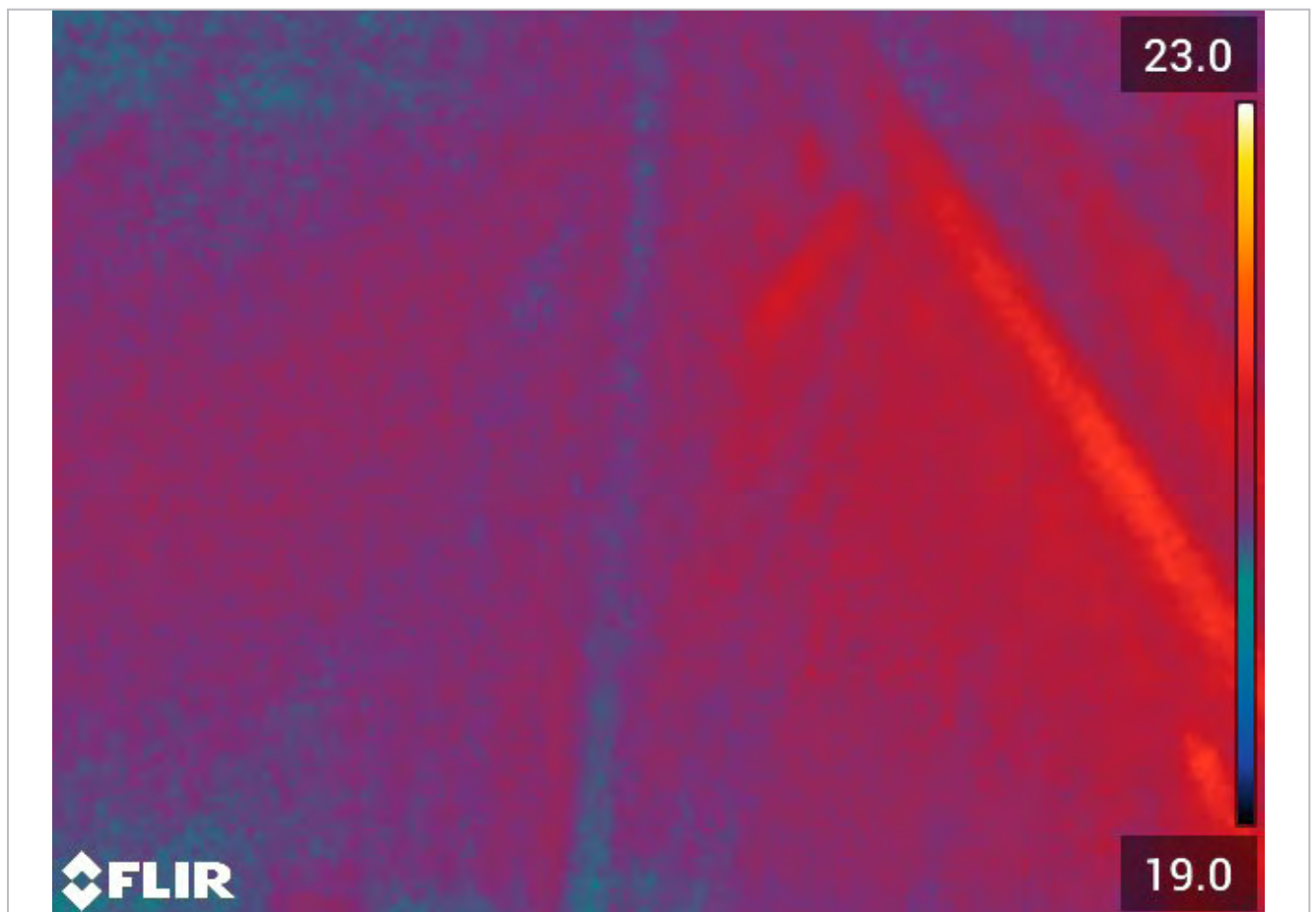
FLIR T1020 (1024 x 768 pixel resolution) with 45 degree lens = bat in flight detection distance of 104 m.
Camera located 13 m from furthest point of building



FLIR T540 (464 x 348 pixel resolution) with 42 degree lens = bat in flight detection distance of 51 m.
Camera located 12 m from furthest point of building



FLIR T540 (464 x 348 pixel resolution) with 42 degree lens = bat in flight detection distance of 51 m.
Camera located 12 m from furthest point of building



FLIR T860 (640 x 480 pixel resolution) with 42 degree lens = bat in flight detection distance of 66 m.
Camera located 13 m from furthest point of building



FLIR T540 (464 x 348 pixel resolution) with 42 degree lens = bat in flight detection distance of 51 m.
Camera located 20 m from furthest point of building

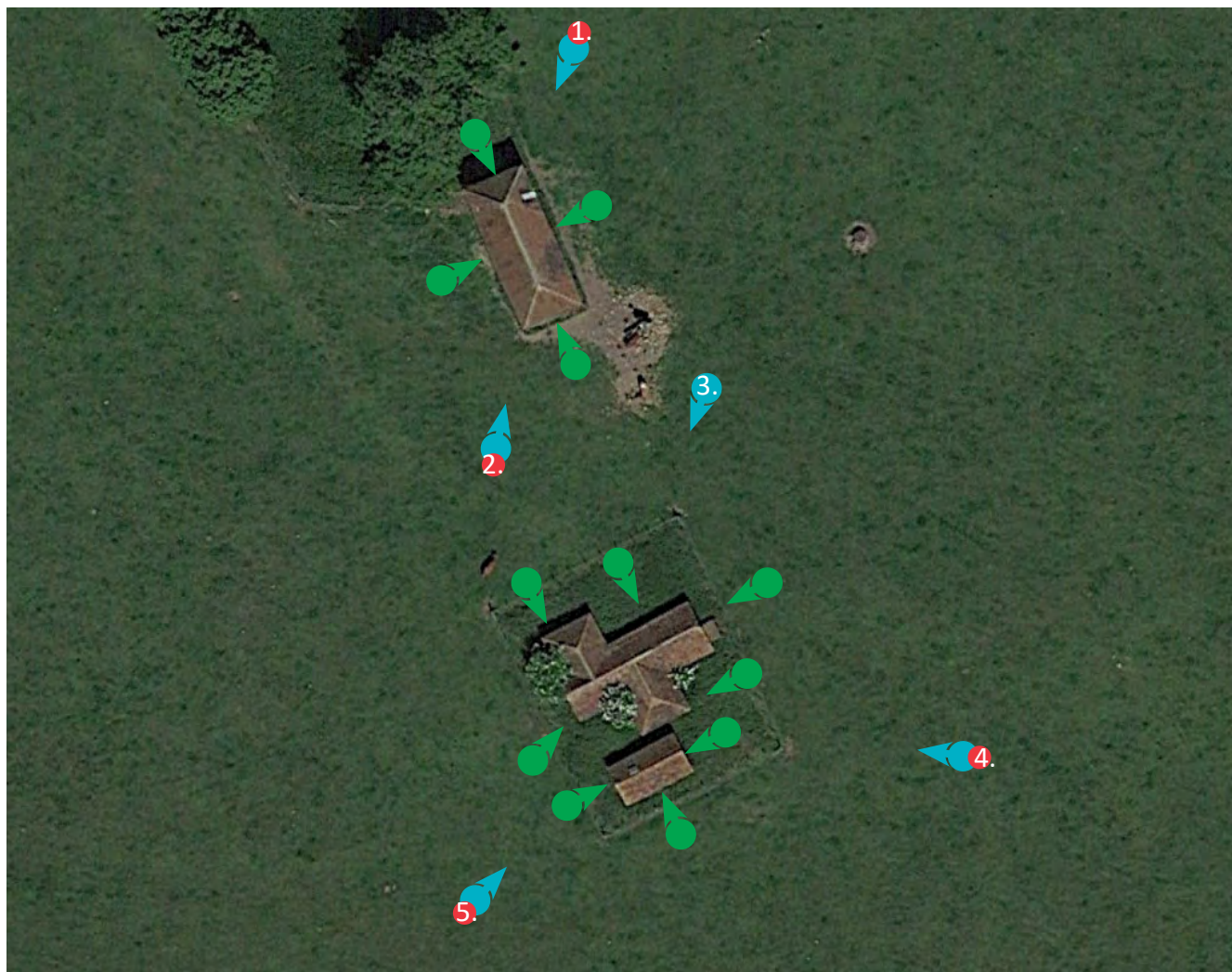


Bat Roost Emergence Survey Findings

1. Common pipistrelle bats (x4) emerged from fascia gap between 20.44-21.05
Soprano pipistrelle (x1) emerged from same fascia gap @ 21.08
2. No bats emerged from Gazebo - occasional passes of common pipistrelle from 21.14, barbastelle bat foraging 21.52-21.55
3. No bat activity filmed within West Wing roof void
4. No bat activity filmed within East Wing roof void

Sunset was at 20.48

Cloud cover (100%), average air temp 17.8°C (start), 16.5°C (end); variable wind still-gentle breeze; no rain



20 m

Key



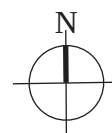
Tripod mounted time synchronised Anabat Express electronic bat detector - arrow shows direction of microphone

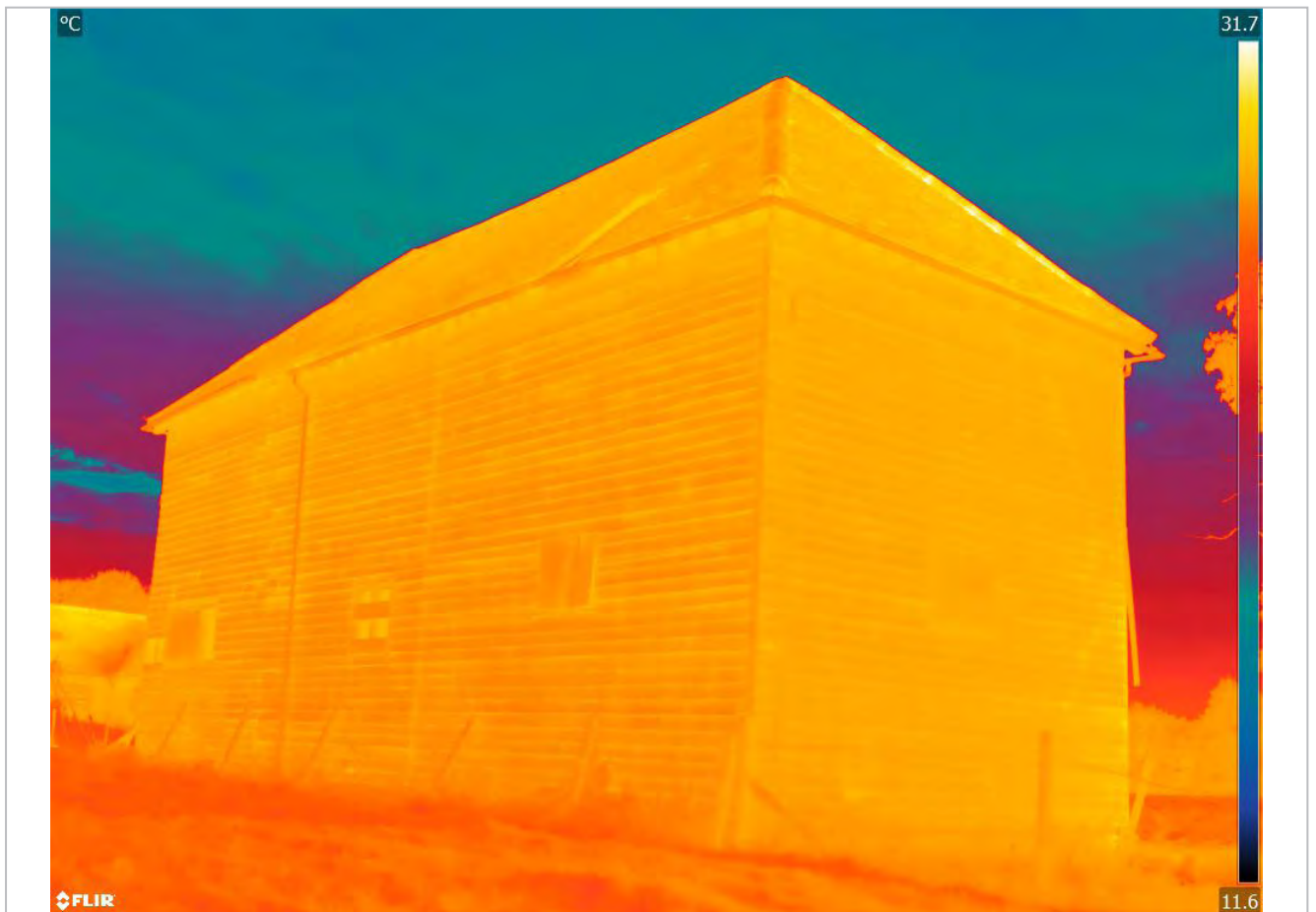


Bat surveyor equipped with hand-held Petterson D230 electronic bat detector with ear phones

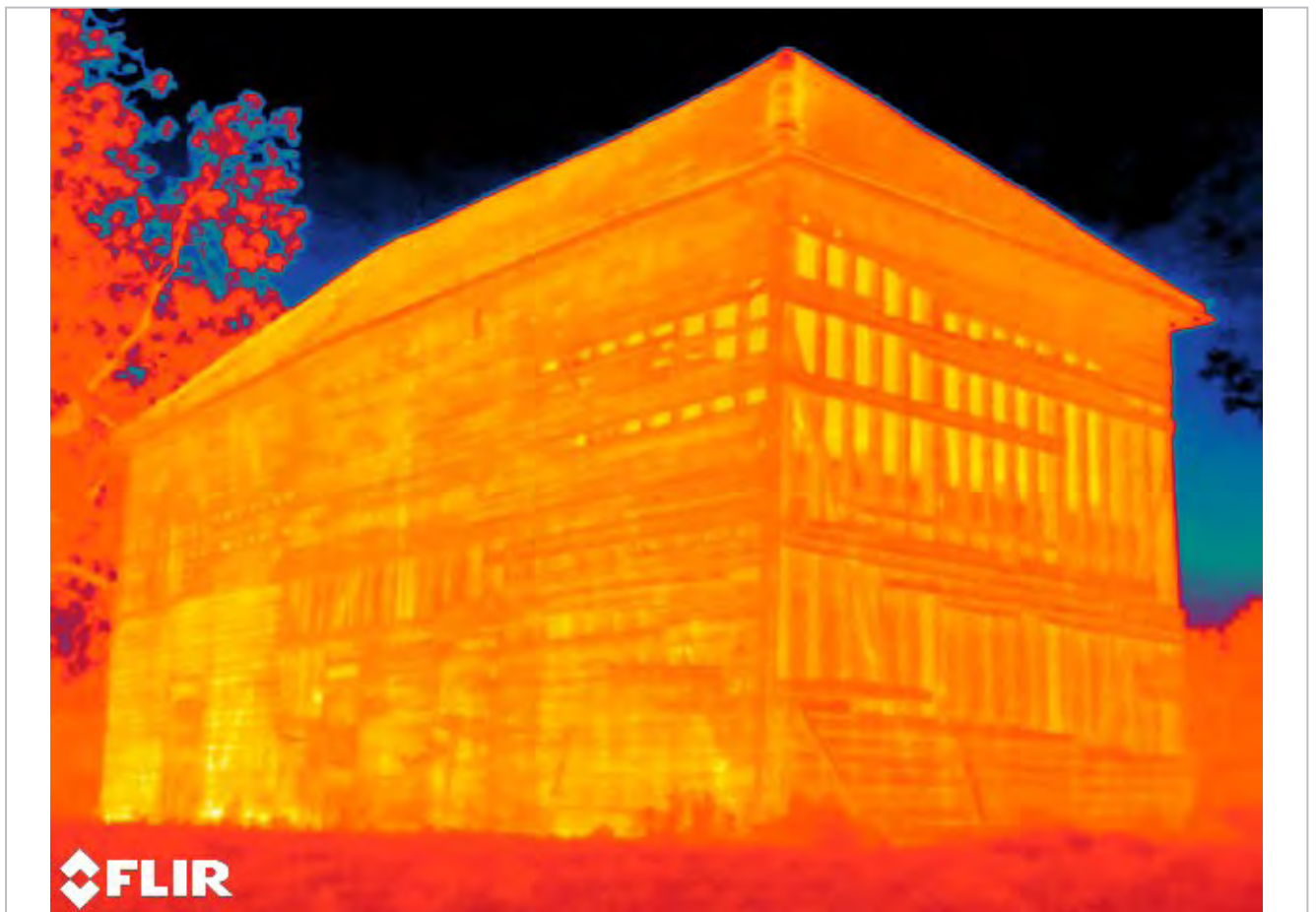


Tripod mounted FLIR thermal camera - camera fields of view and bat in flight detection distances reported separately

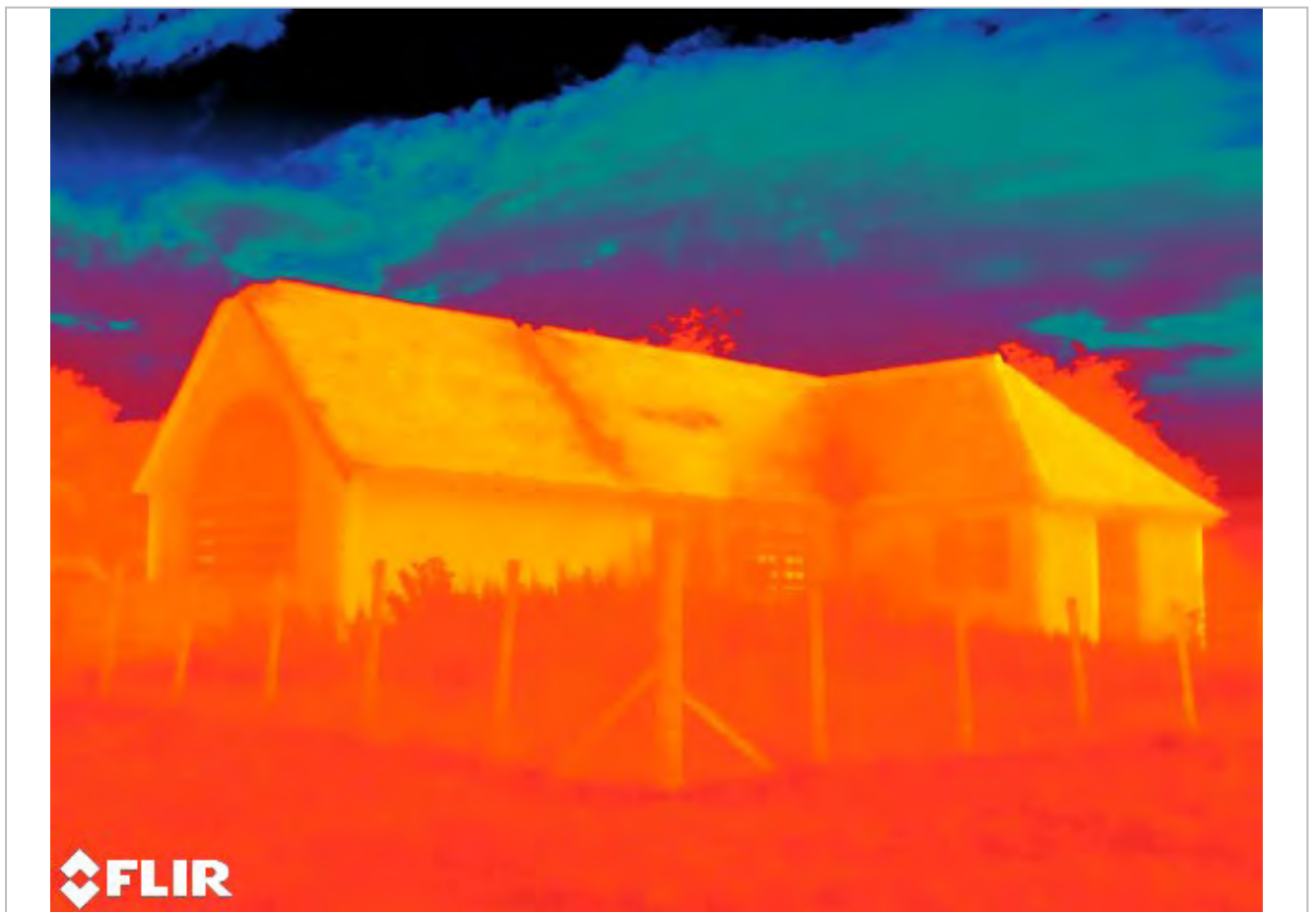




FLIR T1020 (1024 x 768 pixel resolution) with 45 degree lens = bat in flight detection distance of 104 m.
Camera located 25 m from furthest point of building



FLIR T540 (464 x 348 pixel resolution) with 42 degree lens = bat in flight detection distance of 51 m.
Camera located 30 m from furthest point of building



FLIR T540 (464 x 348 pixel resolution) with 42 degree lens = bat in flight detection distance of 51 m.
Camera located 32 m from furthest point of building

Image not taken

FLIR T1020 (1024 x 768 pixel resolution) with 45 degree lens = bat in flight detection distance of 104 m.
Camera located 25 m from furthest point of building

Princess Helena College, Temple Dinsley

FLIR T1020 field of view 4

21 August 2023





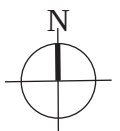
FLIR T860 (640 x 480 pixel resolution) with 42 degree lens = bat in flight detection distance of 66 m.
Camera located 23 m from furthest point of building



20 m

Bat Roost Emergence Survey Findings

1. Common pipistrelle bat (x1) emerged from roof tile near ridge @ 21.32
2. Common pipistrelle bat (x1) emerged from roof tile near ridge @ 21.34
3. Brown long-eared bat (x1) emerged from ventilation brick gap @ 20.59
4. Natterers bat (x1) emerged from ventilation brick gap @ 21.02



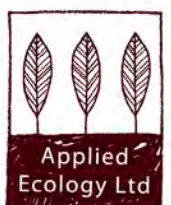
Sunset was at 20.13

Cloud cover (80%), average air temperature 19.8°C (start) 18.3°C (end), variable wind - light air-moderate breeze, no rain

Single common pipistrelle bat foraging constantly around northern building from 20.37

Natterers bat foraging repeatedly around southern building between 20.02-21.08

Barbastelle bat recorded near both buildings @ 21.22





Key



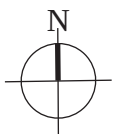
Tripod mounted time synchronised Anabat Express electronic bat detector - arrow shows direction of microphone



Bat surveyor equipped with hand-held Pettersson D230 electronic bat detector with ear phones



Tripod mounted FLIR thermal camera - camera fields of view and bat in flight detection distances reported separately

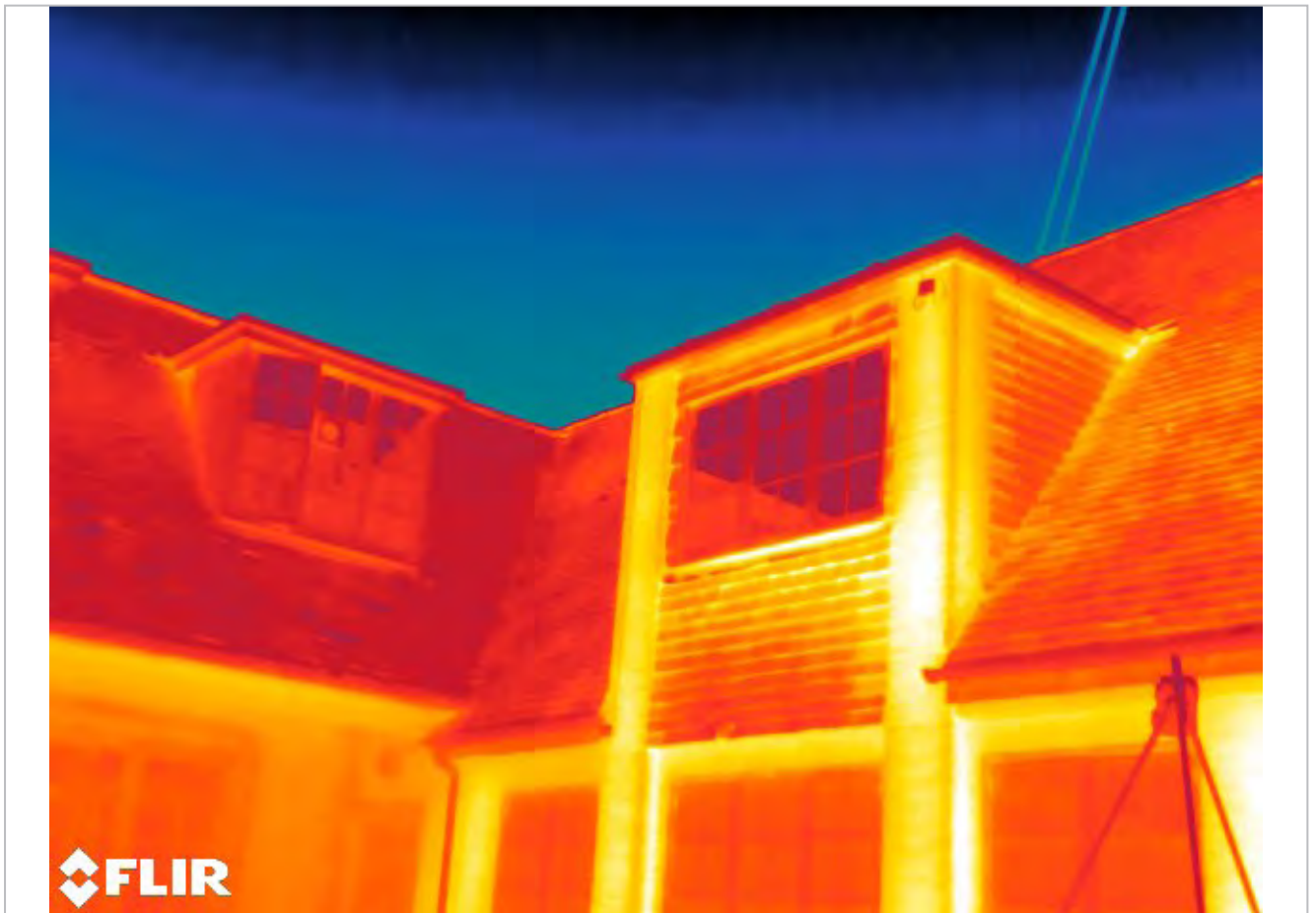




FLIR T1020 (1024 x 768 pixel resolution) with 45 degree lens = bat in flight detection distance of 104 m.
Camera located 18 m from furthest point of building



FLIR T540 (464 x 348 pixel resolution) with 42 degree lens = bat in flight detection distance of 51 m.
Camera located 20 m from furthest point of building



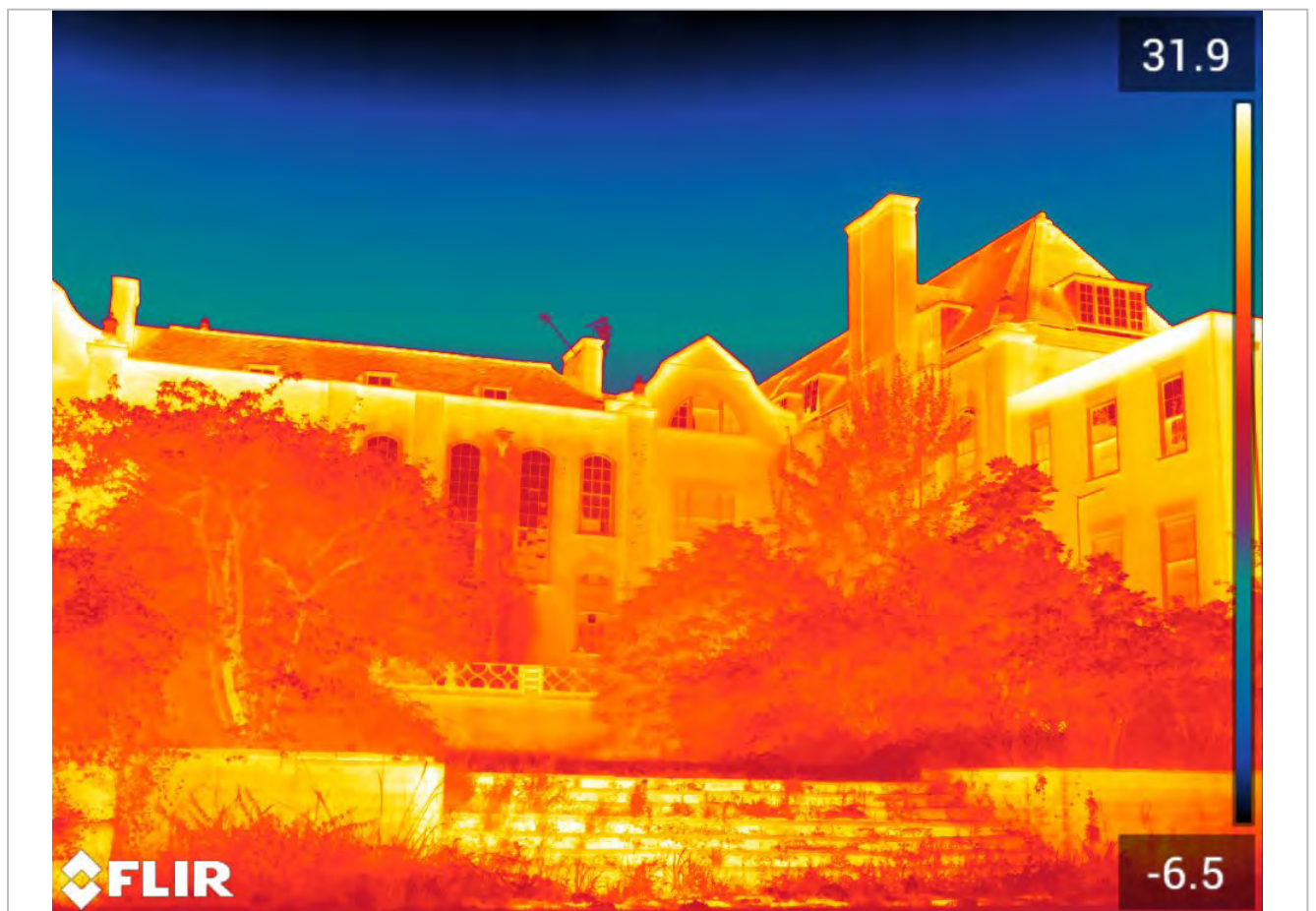
FLIR T860 (640 x 480 pixel resolution) with 42 degree lens = bat in flight detection distance of 66 m.
Camera located 19 m from furthest point of building

Princess Helena College, Temple Dinsley

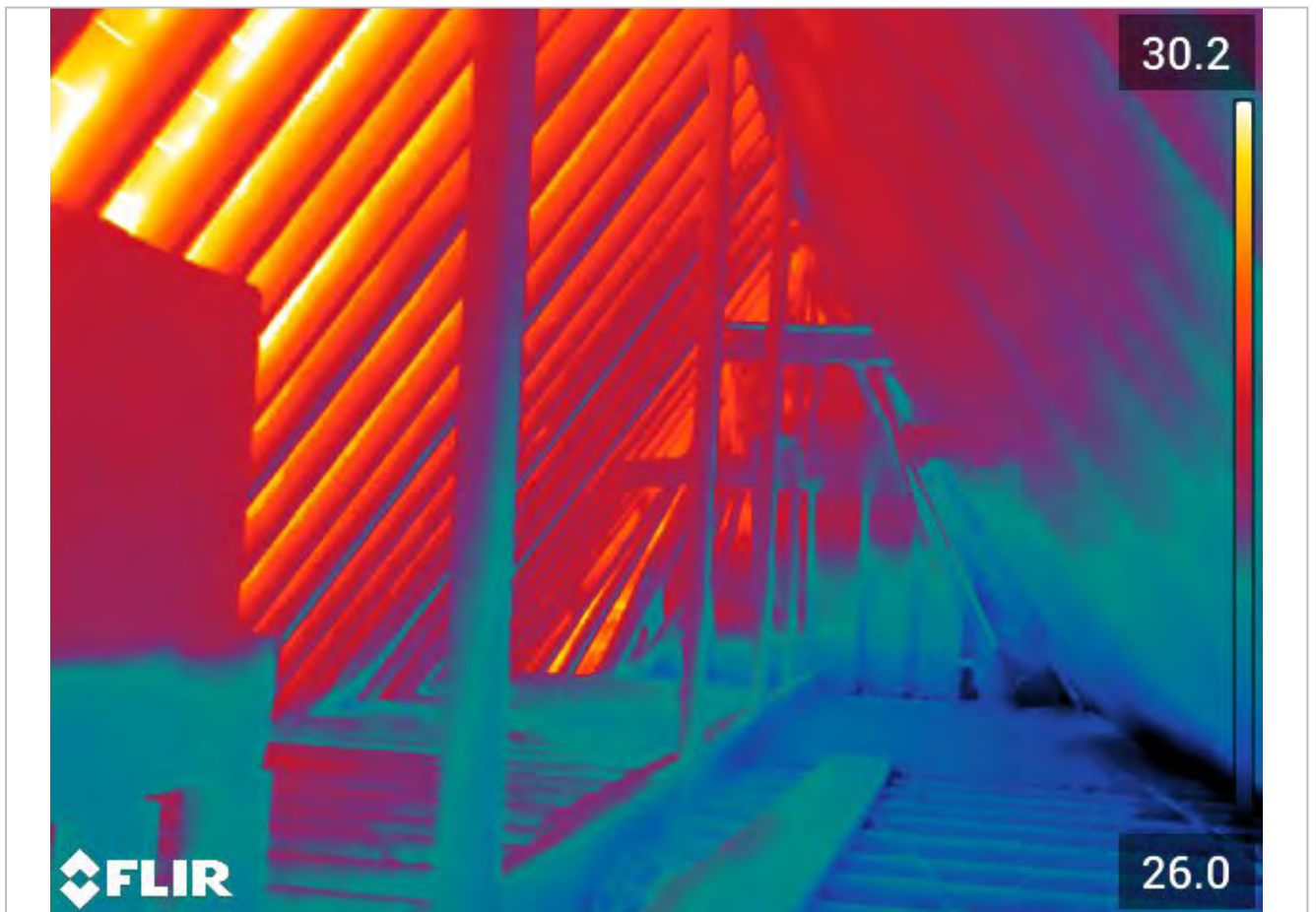
FLIR T860 field of view 3

22 August 2023

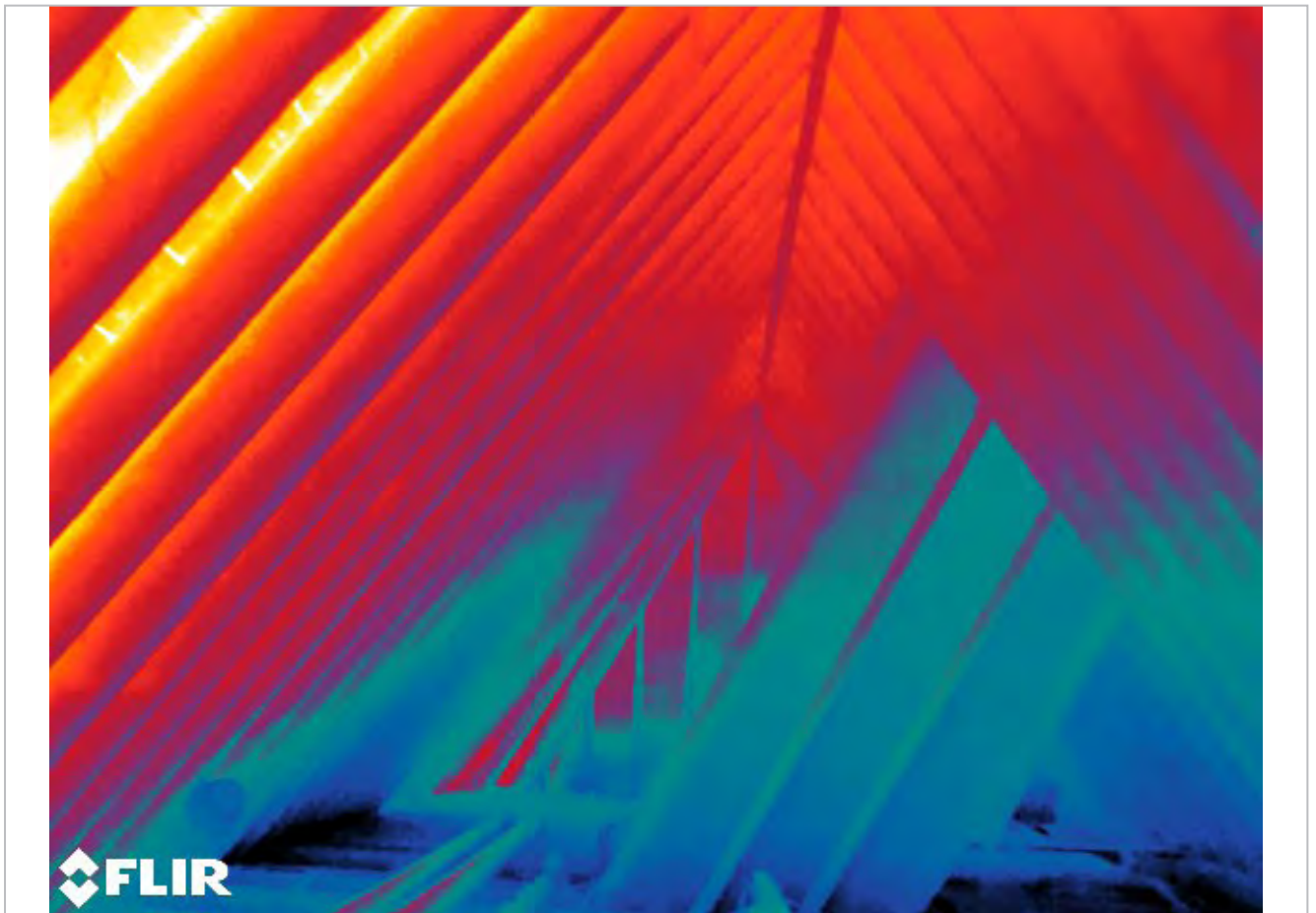




FLIR T1020 (1024 x 768 pixel resolution) with 45 degree lens = bat in flight detection distance of 104 m.
Camera located 45 m from furthest point of building



FLIR T540 (464 x 348 pixel resolution) with 42 degree lens = bat in flight detection distance of 51 m.
Camera located 22 m from furthest point of building



FLIR T540 (464 x 348 pixel resolution) with 42 degree lens = bat in flight detection distance of 51 m.
Camera located 16 m from furthest point of building



Bat Roost Emergence Survey Findings

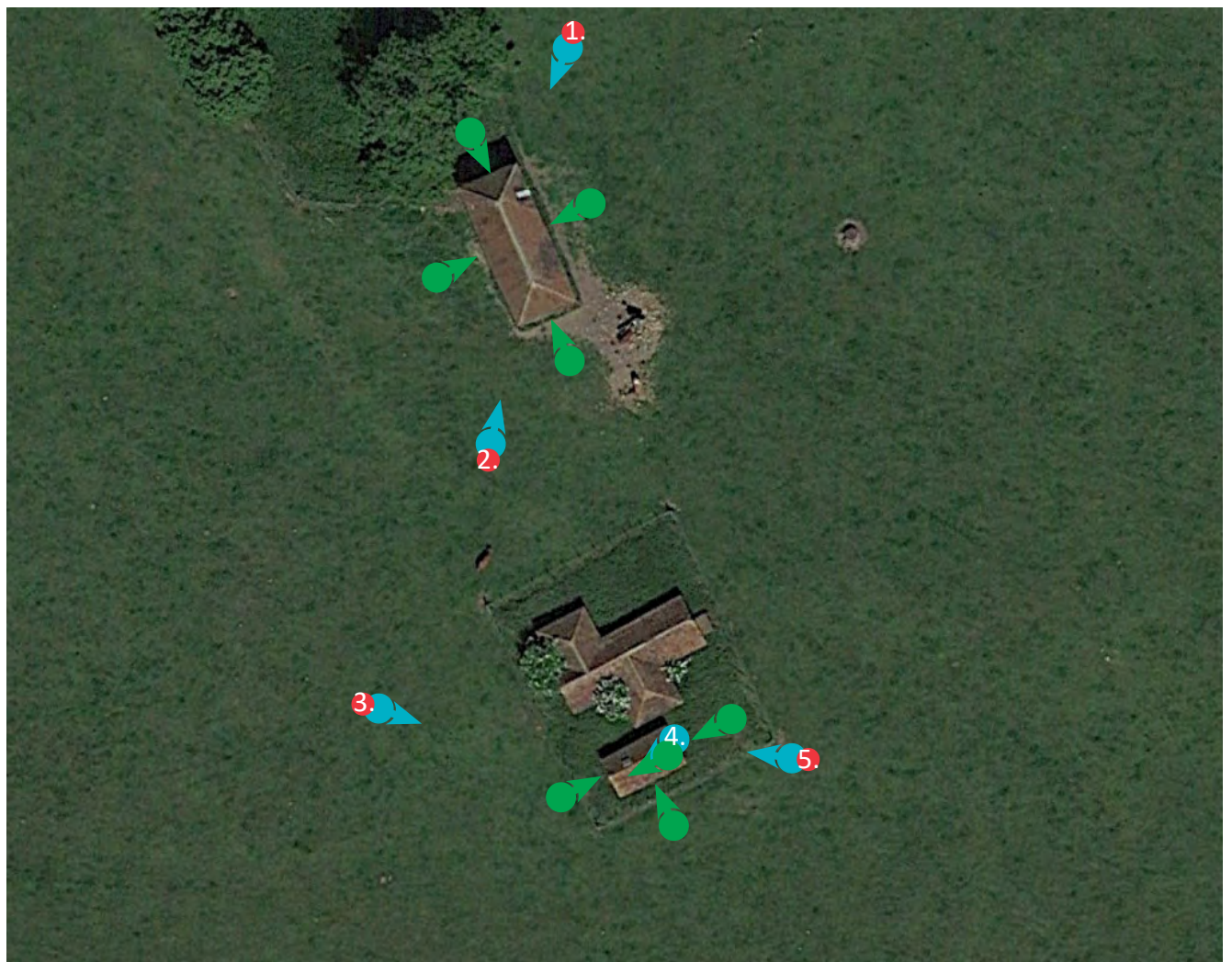
1. Common pipistrelle bat (x1) off a broken hanging tile at base of dormer @ 20.19
2. Common pipistrelle bat (x1) off a hanging tile at top of dormer @ 20.29
3. Common pipistrelle bat (x1) flyby @ 20.29 - roost location not seen
4. Common pipistrelle bat (x1) flyby @ 20.35 - roost location not seen
5. No bat activity recorded inside the West Wing roof void
6. No bat activity recorded inside the East Wing roof void



Single common pipistrelle foraging in garden to north of the main building from 20.40
 Barbastelle bat recorded at 4 locations @ 20.58, 21.01, 21.06 and 21.13

Sunset was at 20.11

Cloud cover (3%), average air temperature 20.5°C (start), 18.0°C (end), gentle breeze, no rain



20 m

Key



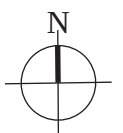
Tripod mounted time synchronised Anabat Express electronic bat detector - arrow shows direction of microphone

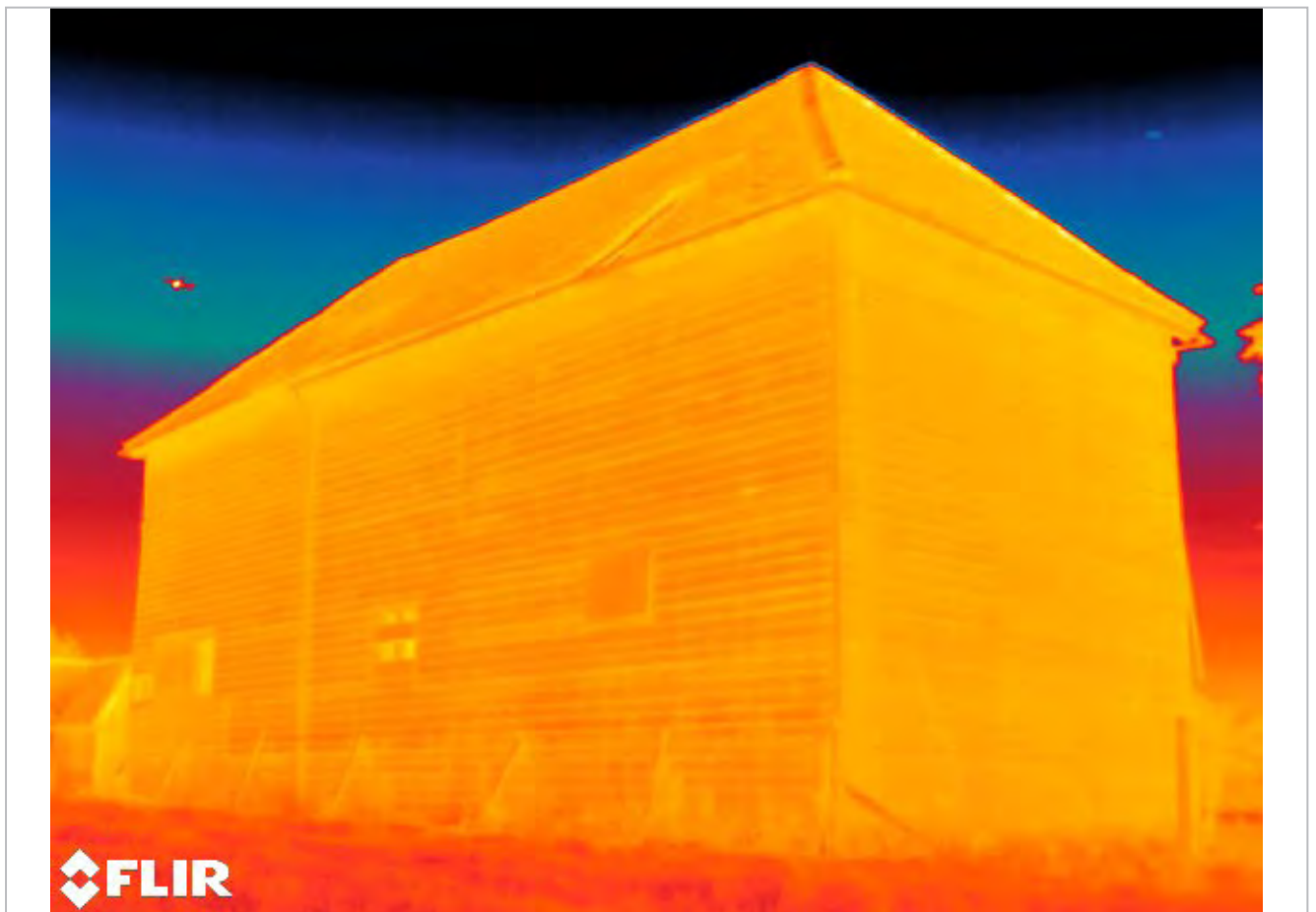


Bat surveyor equipped with hand-held Pettersson D230 electronic bat detector with ear phones

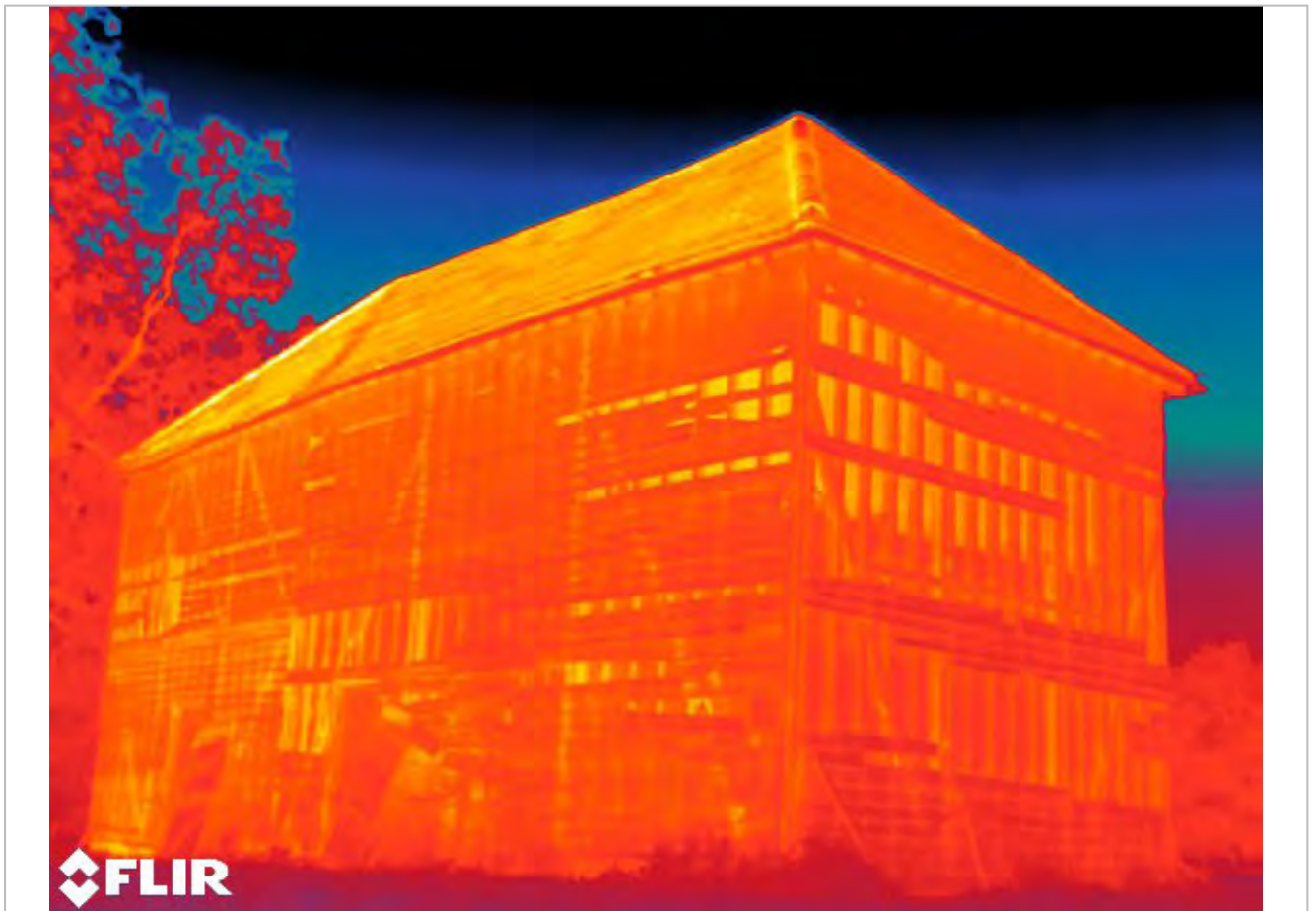


Tripod mounted FLIR thermal camera - camera fields of view and bat in flight detection distances reported separately





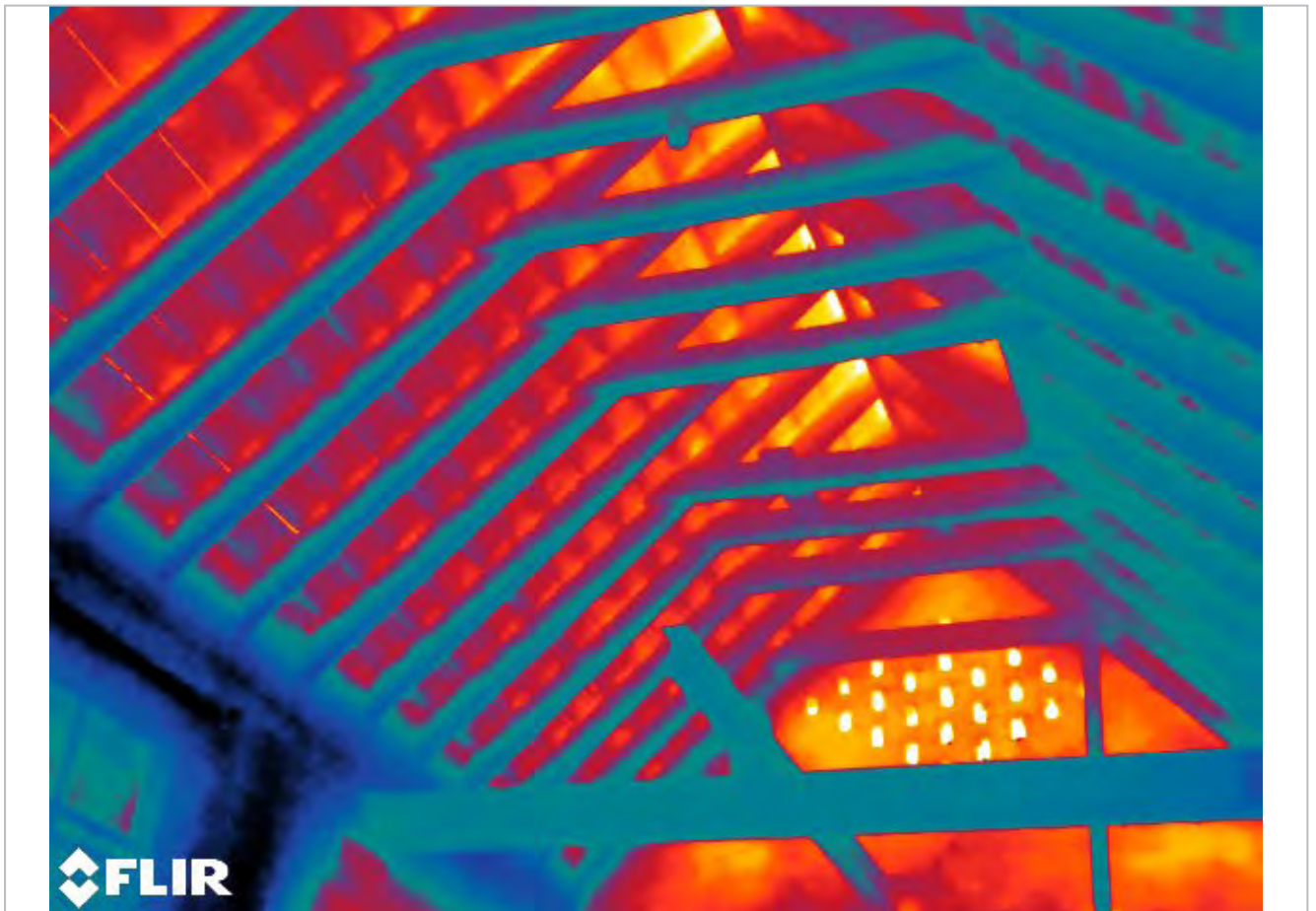
FLIR T540 (464 x 348 pixel resolution) with 42 degree lens = bat in flight detection distance of 51 m.
Camera located 30 m from furthest point of building



FLIR T540 (464 x 348 pixel resolution) with 42 degree lens = bat in flight detection distance of 51 m.
Camera located 30 m from furthest point of building



FLIR T1020 (1024 x 768 pixel resolution) with 45 degree lens = bat in flight detection distance of 104 m.
Camera located 20 m from furthest point of building



FLIR T540 (464 x 348 pixel resolution) with 42 degree lens = bat in flight detection distance of 51 m.
Camera located 5 m from furthest point of building



FLIR T860 (640 x 480 pixel resolution) with 42 degree lens = bat in flight detection distance of 66 m.
Camera located 18 m from furthest point of building



20 m

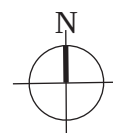
Bat Roost Emergence Survey Findings

No bats emerged from either building.

Occasional passes of common pipistrelle from 20.00. Barbastelle bat recorded at 20.30-31

Sunset was at 19.38

Cloud cover (3%), average air temp 25.0°C (start), 22.0°C (end); gentle breeze; no rain



Appendix B

Tree Climbing Bat Roost Survey Report



Climbed Inspections Report:

Temple Dinsley, School Lane, Preston, Herts, SG4 7RT

Inspection Conducted by 2 Class 2 licenced surveyors:
Jason Walker - Protected species licence number 2024-11947-CL18-BAT
Eleanor Sheehan - Protected species licence number 2024-11948-BAT

Location: Temple Dinsley, School Lane, Preston, Herts, SG4 7RT

Location pin: <https://maps.app.goo.gl/YdF6LyGbNBwTwYin7>

For: Applied Ecology, Cambridge

EXECUTIVE SUMMARY

1. A climbed tree Bat Assessment of selected trees at Temple Dinsley, School Lane, Preston, Herts, SG4 7RT (hereafter referred to as the 'site') (see Appendix A for aerial view). This took place in June 2024.
2. This aerial bat assessment was required due to the planned tree works at the stated site. This study would therefore investigate whether there was any evidence of roosting bats within the PRFs observed from ground level.
3. Possible bat roost evidence (droppings) was found in one of the trees (T786) searched during the initial assessment. 8 trees identified as PRF-M are to be investigated again after a 3-week interval.
4. The trees needing further investigation will be reported on after future inspections.
5. It is recommended that a precautionary approach be taken when undertaking any pollarding, coppicing, felling, ivy stripping, deadwood removal, and pruning on any moderate to high quality trees.

1. INTRODUCTION

A Bat Assessment of selected trees at the site was undertaken during June 2024, for Applied Ecology.

This bat assessment was required due to the planned tree works at the stated site. This study would therefore investigate bat roost potential of selected trees.

The main method used for this bat assessment, as well as the full results and the best practice-based recommendations proposed can be found within this report.

2. METHODOLOGY

Climbed Bat assessment method.

- Trees at the site were searched by two surveyors using a ladder, climbing equipment, ropes, harnesses, binoculars and an endoscope for actual bat presence, bat evidence such as droppings, and for investigating cavity size in trees where present. BCT guidelines of best practice were adhered to. The two surveyors held Class 2 bat licences and CS38 Tree climbing and aerial rescue qualifications.

3. SURVEY RESULTS

Please see Appendix B for the full tree assessment results, presented using the Bat Tree Habitat Key (BTHK) roost report form.

4. CONCLUSIONS

Significance of bat assessment results.

From the tree assessment results, it is clear that 8 trees to be worked on at the site have high bat roost potential. There were no confirmed bat roosts found, but potential evidence of bat droppings were found in a single tree.

Targeted follow-up bat survey work must now be undertaken on selected trees with higher roost potential before any tree works can begin.

Strict precautions must apply to working on high and moderate graded trees, especially as there will be a higher risk of finding a hidden bat roost due to the niches present.

There is no reason why those trees found to have low or negligible bat roost potential cannot be worked on now, as long as all precautions are strictly followed.

Potential impacts of tree works

In the absence of any mitigation measures, the following impacts from the proposed tree works at the site on bats would be currently predicted as:

The tree related works proposed at the site could adversely impact on bats if no follow-up survey or the recommended precautions were used during the works by tree surgeons, since an unexpected new bat tree roost could always be present.

Without any caution during the works or adhering to current best practice guidelines, bats can be injured or killed accidentally, and roosts damaged or destroyed. Impact magnitude predicted: moderate in regard to the trees graded as having moderate or high roost potential.

5. THE LEGAL PROTECTION OF BATS IN ENGLAND AND WALES

Legal protection of bats in the UK (simplified current summary only of the legislation – please see other texts for full details)

Introduction

All species of bats in England and Wales are protected by law. Their legal protection derives from two sources:

- The strict species protection provisions of the EU Habitats Directive as implemented in England and Wales by Part 3 of the Conservation of Habitats and Species Regulations 2010 (the "2010 Regulations"); and
- Part 1 of the Wildlife and Countryside Act 1981 (as amended). Conservation of Habitats and Species Regulations 2010 ("2010 Regulations"). The 2010 Regulations came into force on 1 April 2010. They replace the previously applicable regulations (Conservation (Natural Habitats, &c) Regulations 1994) in relation to England and Wales. The 2010 Regulations are the principal means by which the EU Habitats Directive is transposed in England and Wales.

The Regulations contain a number of parts, but Part 3 sets out the protection to be afforded to "European Protected Species" ("EPS"), which includes all species of British bats. The list also includes other species which are rare on a European scale, such as great crested newts, otters, and dormice.

Under Part 3 of the 2010 Regulations both bats themselves and their "breeding sites and resting places" (most commonly their roosts) are protected.

Part 3 states that it is a criminal offence to do the following (note that this is not an exhaustive list of all offences but rather a list of offences which will be of most relevance to developers):

- a) To damage or destroy a breeding site or resting place of a bat (Reg 41(1)(d));
- b) To deliberately capture, injure or kill any bat (Reg 41(1)(a));
- c) To deliberately disturb bats [note, wherever they are occurring] (Reg 41(1)(b)), in particular:
 - i. Any disturbance of bats which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young (Reg 41(2)(a)(i)); or
 - ii. Any disturbance of bats which is likely to impair their ability to hibernate or migrate (Reg 41(2)(a)(ii)); or
 - iii. Any disturbance of bats which is likely to affect significantly the local distribution or abundance of the species to which they belong (Reg 41(2)(b));
- d) To have in one's possession or to control or to transport or to sell or exchange or offer to sell or exchange any live or dead bat or part of a bat which has been taken from the wild; or any part of, or anything derived from, a bat or any part of a bat (Reg 41(3) and (4)); and
- e) To attempt any of the above (Reg 116(1)).

The maximum penalty that can be imposed for the above offences is (as of May 2010) a fine of up to £5,000, and/or up to six months imprisonment. The offences can be committed by individuals or by bodies corporate. Where a body corporate has committed the offence, the directors or officers of the company may also be prosecuted if the offence has been committed with their consent or connivance, or is attributable to their neglect (Reg 124)

6. Best practice regarding works on trees – FOR CLIENT AND TREE CONTRACTORS TO READ

During all tree related works at site, great care is needed in regard to the pollarding, coppicing, felling and any pruning on the existing trees. Best practice guidelines will always need to be followed at all times without exception, so to comply with current bat related legislation.

- A licensed bat consultant should be allowed to re-check any specific trees with moderate to high quality niches (if this is the case), to be pollarded/coppiced/felled/pruned prior or on the day of the tree works and before the works begin. This would allow examination of the interior of features such as woodpecker holes, rot holes, splits, fissures, cracks and behind large loose bark plates for hidden bats.
- It is recommended that a precautionary approach be taken when undertaking any pollarding, coppicing, felling, ivy stripping, deadwood removal and pruning on any moderate to high quality trees. Contractors undertaking work on the trees should undertake a climbing inspection and look for bats and their field signs such as black streaks below a hole, crack or split in the tree, droppings in the entrance of any hole or crack, urine stains, smooth edged entrance holes with dark fur staining as well as actual scratch marks on entrance holes. A toolbox talk by the bat ecologist should be undertaken with the tree surgeons before the tree works begin.

- A licensed bat consultant should be present on-site during any pollarding/ felling/ pruning/ coppicing of the moderate and high graded trees. They should also be present during any particularly sensitive tree related works.
- The tree contractors should avoid cutting through any cavities in a trunk section or in a tree branch, and instead cut well above and below the cavity.
- Wherever possible, branches and trunk sections with any cavities or splits, as well as dense ivy-covered trees should be lowered carefully to the ground, so to avoid injuring or killing any hidden bats. These trees should then be left for 24 hours and most certainly overnight, so any potentially hidden bats can leave.
- Bark plates, especially large sized plates, on any trees which have bat roost potential should be removed by hand where this is possible. This will allow the inspection for any bats hiding behind these plates. This is especially important in regard to some rare bat species in the UK which do show a preference for roosting behind large bark plates (e.g. *Barbastella barbastellus*).
- Trees with low to moderate ivy cover can have the ivy stripped by hand if time allows this. This may not be possible with large trees with substantial ivy cover.
- Any new cavities or crevices behind stripped ivy cover will need to be checked and assessed for bat presence.
- Where any moderate graded trees must be felled, then Schwegler Woodcrete bat boxes should be installed on nearby trees as compensation. Up to three suitable bat boxes can be installed at height per tree or one per tree is fine too. Bat boxes can face N, SE, SW, and should be clutter free plus away from any artificial light sources. If bat box models that are maintenance free are chosen, this would be ideal and do not need cleaning out. Advice can be given on this aspect and the bat boxes that could be chosen.
- If there is ever any future evidence that there are tree-based bat roosts in any of the trees to be felled or managed at the two sites, then a Bats European Protected Species (EPS) Licence in respect to “development” will be required to avoid triggering various offences. If bats or bat evidence are found during any tree check by tree surgeons, then work should stop immediately, and a licensed bat consultant urgently sought.

7. REFERENCES

- (1) Altringham, J.D. (2003) British Bats. Harper Collins Publishers, London.
- (2) ArborEcology (2006) Assessment of Trees with Consideration of their Value for use by Bats.
- (3) Bat Conservation Trust (2007) Bat Surveys – Good Practice Guidelines. Bat Conservation Trust, London.
- (4) Bat Conservation Trust (2008) Bats and lighting in the UK – Bats and the Built Environment Series. Version 2. BCT, London.
- (5) Entwistle, A.C. et al (2001) Habitat Management for Bats. JNCC, UK.
- (6) Fure, A. (2006) Bats and lighting. The London Naturalist. Number 85. LNHS, London.
- (7) Mitchell-Jones, A.J. (2004) Bat Mitigation Guidelines. English Nature.
- (8) Mitchell-Jones, A.J. and McLeish, A.P. (2004) The Bat Workers’ Manual. 3rd Ed. JNC

Appendix A – Location of climbed trees



Figure 1: Location of climbed trees (red dots signify PRF-M trees, white dots signify trees with no roost potential).

Appendix B – Climbed inspection results

i) T191

GROUNDSMAN*	SITE NAME		Temple Dinsley, School Lane, Preston			
	DATE		27/06/24			
	HABITAT (Phase 1 where known)		A1			
	O.S. GRID REFERENCE		TL 18305 24967			
	Tag number		T191			
	TREE SPECIES		Sycamore (<i>Platanus occidentalis</i>)			
	TREE ALIVE/DEAD		Alive			
	DBH (Diameter at Breast Height)		40cm			
	TREE HEIGHT		12m			
	PRF on STEM/LIMB		Stem			
	PRF TYPE		Fluting			
	DIRECTION PRF FACES		E			
	CLIMBER	MEASUREMENTS	PRF HEIGHT (m)		2.5	
DPH (Diameter at PRF Height)			40cm			
ENTRANCE			Height (cm)	2		
			Width (cm)	4		
INTERNAL			Height (cm)	40		
			Width (cm)	5		
		Depth (cm)	0			
ROOSTING EVIDENCE 		Droppings: yes or no? (look in base)			No	
		Bats (look in cavity)	Species		N/A	
			Number of bats		N/A	
			Torpid or awake		N/A	
			Above/below/to side of entrance		N/A	
			Distance from entrance (cm)		N/A	
INTERNAL CONDITIONS: (Circle as many of the following as are applicable and cross-out those that are not)		SMELL	None	Pleasant	Not unpleasant	Unpleasant
		SUBSTRATE	Smooth	Bobbly	Bumpy	Rough
			Clean** =	Waxy	Blackened	Polished
			Dirty** =	Dusty	Debris	Sludgy
		HUMIDITY	Dry	Damp	Wet	Mildew
		APEX SHAPE	Dome	Spire (C & D)	Peak/wedge	Flat (A & B)
			Chambered		Tube	
	COMPETITORS (invertebrates, birds, mammals?)		Woodlice (<i>Porcellio scaber</i>), tree slugs (<i>Lehmannia marginata</i>)			
	*	PHOTOS	1. Photo of this form so you know which photos go with which tree			✓
			2. Contextual photo showing tree in habitat; tick box when done			✓
3. Close-up photo of the PRF; tick box when done			✓			
FORM		Check the form to ensure every box has a value			✓	

ii) T196

PRF 1

GROUNDSMAN*	SITE NAME		Temple Dinsley, School Lane, Preston			
	DATE		27/06/24			
	HABITAT (Phase 1 where known)		A1			
	O.S. GRID REFERENCE		TL 18327 24975			
	Tag number		T196			
	TREE SPECIES		Sycamore (<i>Platanus occidentalis</i>)			
	TREE ALIVE/DEAD		Alive			
	DBH (Diameter at Breast Height)		40cm x 1, 42cm x 1, 60cm x 1			
	TREE HEIGHT		12m			
	PRF on STEM/LIMB		Stem			
	PRF TYPE		Tear out			
	DIRECTION PRF FACES		Northwest			
	CLIMBER	MEASUREMENTS	PRF HEIGHT (m)		6	
DPH (Diameter at PRF Height)			40cm			
ENTRANCE			Height (cm)	8		
			Width (cm)	6		
INTERNAL			Height (cm)	200		
			Width (cm)	8		
			Depth (cm)	0		
ROOSTING EVIDENCE 		Droppings: yes or no? (look in base)			No	
		Bats (look in cavity)	Species		N/A	
			Number of bats		N/A	
			Torpid or awake		N/A	
			Above/below/to side of entrance		N/A	
			Distance from entrance (cm)		N/A	
INTERNAL CONDITIONS: (Circle as many of the following as are applicable and cross-out those that are not)		SMELL	None	Pleasant	Not unpleasant	Unpleasant
		SUBSTRATE	Smooth	Bobbly	Bumpy	Rough
			Clean** =	Waxy	Blackened	Polished
			Dirty** =	Dusty	Debris	Sludgy
		HUMIDITY	Dry	Damp	Wet	Mildew
		APEX SHAPE	Dome	Spire (C & D)	Peak/wedge	Flat (A & B)
			Chambered		Tube	
	COMPETITORS (invertebrates, birds, mammals?)		None seen			
*	PHOTOS	1. Photo of this form so you know which photos go with which tree			✓	
		2. Contextual photo showing tree in habitat; tick box when done			✓	
		3. Close-up photo of the PRF; tick box when done			✓	
	FORM	Check the form to ensure every box has a value			✓	

PRF 2

GROUNDSMAN*	SITE NAME		Temple Dinsley, School Lane, Preston			
	DATE		27/06/24			
	HABITAT (Phase 1 where known)		A1			
	O.S. GRID REFERENCE		TL 18327 24975			
	Tag number		T196			
	TREE SPECIES		Sycamore (<i>Platanus occidentalis</i>)			
	TREE ALIVE/DEAD		Alive			
	DBH (Diameter at Breast Height)		40cm x 1, 42cm x 1, 60cm x 1			
	TREE HEIGHT		12m			
	PRF on STEM/LIMB		Limbs			
	PRF TYPE		Fluting			
	DIRECTION PRF FACES		Entrance points face NE, SE, W			
	CLIMBER	MEASUREMENTS (of one fluring)	PRF HEIGHT (m)		7-8	
DPH (Diameter at PRF Height)			25cm			
ENTRANCE			Height (cm)	100		
			Width (cm)	6		
INTERNAL			Height (cm)	0		
			Width (cm)	8		
			Depth (cm)	0		
ROOSTING EVIDENCE 		Droppings: yes or no? (look in base)			No	
		Bats (look in cavity)	Species		N/A	
			Number of bats		N/A	
			Torpid or awake		N/A	
			Above/below/to side of entrance	N/A		
			Distance from entrance (cm)	N/A		
INTERNAL CONDITIONS: (Circle as many of the following as are applicable and cross-out those that are not)		SMELL	None	Pleasant	Not unpleasant	Unpleasant
		SUBSTRATE	Smooth	Bobbly	Bumpy	Rough
			Clean** =	Waxy	Blackened	Polished
			Dirty** =	Dusty	Debris	Sludgy
		HUMIDITY	Dry	Damp	Wet	Mildew
		APEX SHAPE	Dome	Spire (C & D)	Peak/wedge	Flat (A & B)
			Chambered		Tube	
		COMPETITORS (invertebrates, birds, mammals?)		None seen		
*		PHOTOS	1. Photo of this form so you know which photos go with which tree			✓
			2. Contextual photo showing tree in habitat; tick box when done			✓
	3. Close-up photo of the PRF; tick box when done			✓		
	FORM	Check the form to ensure every box has a value			✓	

iii) T338

PRF 1

GROUNDSMAN*	SITE NAME		Temple Dinsley, School Lane, Preston			
	DATE		27/06/24			
	HABITAT (Phase 1 where known)		A3			
	O.S. GRID REFERENCE		TL 18380 24676			
	Tag number		T338			
	TREE SPECIES		Ash (<i>Fraxinus excelsior</i>)			
	TREE ALIVE/DEAD		Alive			
	DBH (Diameter at Breast Height)		47cm			
	TREE HEIGHT		10m			
	PRF on STEM/LIMB		Stem			
	PRF TYPE		Rot cavity			
	DIRECTION PRF FACES		Entrance points face N/W/S			
	CLIMBER	MEASUREMENTS (of largest entry point)	PRF HEIGHT (m)		5	
DPH (Diameter at PRF Height)			45cm			
ENTRANCE			Height (cm)	25		
			Width (cm)	30		
INTERNAL			Height (cm)	105		
			Width (cm)	35		
			Depth (cm)	10		
ROOSTING EVIDENCE 		Droppings: yes or no? (look in base)			No	
		Bats (look in cavity)	Species		N/A	
			Number of bats		N/A	
			Torpid or awake		N/A	
			Above/below/to side of entrance		N/A	
			Distance from entrance (cm)		N/A	
INTERNAL CONDITIONS: (Circle as many of the following as are applicable and cross-out those that are not)		SMELL	None	Pleasant	Not unpleasant	Unpleasant
		SUBSTRATE	Smooth	Bobbly	Bumpy	Rough
			Clean** =	Waxy	Blackened	Polished
			Dirty** =	Dusty	Debris	Sludgy
		HUMIDITY	Dry	Damp	Wet	Mildew
		APEX SHAPE	Dome	Spire (C & D)	Peak/wedge	Flat (A & B)
			Chambered		Tube	
		COMPETITORS (invertebrates, birds, mammals?)		Bird nest at base of cavity.		
*	PHOTOS	1. Photo of this form so you know which photos go with which tree			✓	
		2. Contextual photo showing tree in habitat; tick box when done			✓	
		3. Close-up photo of the PRF; tick box when done			✓	
	FORM	Check the form to ensure every box has a value			✓	

PRF 2

GROUNDSMAN*	SITE NAME		Temple Dinsley, School Lane, Preston			
	DATE		27/06/24			
	HABITAT (Phase 1 where known)		A3			
	O.S. GRID REFERENCE		TL 18380 24676			
	Tag number		T338			
	TREE SPECIES		Ash (<i>Fraxinus excelsior</i>)			
	TREE ALIVE/DEAD		Alive			
	DBH (Diameter at Breast Height)		47cm			
	TREE HEIGHT		10m			
	PRF on STEM/LIMB		Limb			
	PRF TYPE		Rot cavity			
	DIRECTION PRF FACES		North			
	CLIMBER	MEASUREMENTS (of largest entry point)	PRF HEIGHT (m)		5	
DPH (Diameter at PRF Height)			25cm			
ENTRANCE			Height (cm)	35		
			Width (cm)	20		
INTERNAL			Height (cm)	0		
			Width (cm)	15		
			Depth (cm)	10		
ROOSTING EVIDENCE 		Droppings: yes or no? (look in base)			No	
		Bats (look in cavity)	Species		N/A	
			Number of bats		N/A	
			Torpid or awake		N/A	
			Above/below/to side of entrance	N/A		
			Distance from entrance (cm)	N/A		
INTERNAL CONDITIONS: (Circle as many of the following as are applicable and cross-out those that are not)		SMELL	None	Pleasant	Not unpleasant	Unpleasant
		SUBSTRATE	Smooth	Bobbly	Bumpy	Rough
			Clean** =	Waxy	Blackened	Polished
			Dirty** =	Dusty	Debris	Sludgy
		HUMIDITY	Dry	Damp	Wet	Mildew
		APEX SHAPE	Dome	Spire (C & D)	Peak/wedge	Flat (A & B)
			Chambered		Tube	
	COMPETITORS (invertebrates, birds, mammals?)		None seen			
*	PHOTOS	1. Photo of this form so you know which photos go with which tree			✓	
		2. Contextual photo showing tree in habitat; tick box when done			✓	
		3. Close-up photo of the PRF; tick box when done			✓	
	FORM	Check the form to ensure every box has a value			✓	

iv) T786

GROUNDSMAN*	SITE NAME		Temple Dinsley, School Lane, Preston			
	DATE		27/06/24			
	HABITAT (Phase 1 where known)		A1			
	O.S. GRID REFERENCE		TL 18365 25006			
	Tag number		T786			
	TREE SPECIES		Ash (<i>Fraxinus excelsior</i>)			
	TREE ALIVE/DEAD		Alive			
	DBH (Diameter at Breast Height)		80cm			
	TREE HEIGHT		18m			
	PRF on STEM/LIMB		Stem			
	PRF TYPE		Wound on trunk			
	DIRECTION PRF FACES		Northeast			
	CLIMBER	MEASUREMENTS	PRF HEIGHT (m)		7	
DPH (Diameter at PRF Height)			60cm			
ENTRANCE			Height (cm)	10		
			Width (cm)	10		
INTERNAL			Height (cm)	40		
			Width (cm)	20		
			Depth (cm)	0		
ROOSTING EVIDENCE 		Droppings: yes or no? (look in base)			Possibly	
		Bats (look in cavity)	Species		N/A	
			Number of bats		N/A	
			Torpid or awake		N/A	
			Above/below/to side of entrance	N/A		
			Distance from entrance (cm)		N/A	
INTERNAL CONDITIONS: (Circle as many of the following as are applicable and cross-out those that are not)		SMELL	None	Pleasant	Not unpleasant	Unpleasant
		SUBSTRATE	Smooth	Bobbly	Bumpy	Rough
			Clean** =	Waxy	Blackened	Polished
			Dirty** =	Dusty	Debris	Sludgy
		HUMIDITY	Dry	Damp	Wet	Mildew
		APEX SHAPE	Dome	Spire (C & D)	Peak/wedge	Flat (A & B)
			Chambered		Tube	
	COMPETITORS (invertebrates, birds, mammals?)		Woodlice (<i>Porcellio scaber</i>)			
	*	PHOTOS	1. Photo of this form so you know which photos go with which tree			✓
			2. Contextual photo showing tree in habitat; tick box when done			✓
3. Close-up photo of the PRF; tick box when done			✓			
FORM		Check the form to ensure every box has a value			✓	

v) T806

GROUNDSMAN*	SITE NAME		Temple Dinsley, School Lane, Preston			
	DATE		27/06/24			
	HABITAT (Phase 1 where known)		A1			
	O.S. GRID REFERENCE		TL 18354 24959			
	Tag number		T806			
	TREE SPECIES		Sycamore (<i>Platanus occidentalis</i>)			
	TREE ALIVE/DEAD		Alive			
	DBH (Diameter at Breast Height)		35cm			
	TREE HEIGHT		15m			
	PRF on STEM/LIMB		Stem			
	PRF TYPE		Fluting			
	DIRECTION PRF FACES		East			
CLIMBER	MEASUREMENTS	PRF HEIGHT (m)		2.5		
		DPH (Diameter at PRF Height)		30cm		
		ENTRANCE	Height (cm)	3		
			Width (cm)	2		
		INTERNAL	Height (cm)	150		
			Width (cm)	10		
			Depth (cm)	0		
	ROOSTING EVIDENCE 	Droppings: yes or no? (look in base)			No	
		Bats (look in cavity)	Species		N/A	
			Number of bats		N/A	
			Torpid or awake		N/A	
			Above/below/to side of entrance	N/A		
			Distance from entrance (cm)	N/A		
	INTERNAL CONDITIONS: (Circle as many of the following as are applicable and cross-out those that are not)	SMELL	None	Pleasant	Not unpleasant	Unpleasant
		SUBSTRATE	Smooth	Bobbly	Bumpy	Rough
			Clean** =	Waxy	Blackened	Polished
			Dirty** =	Dusty	Debris	Sludgy
		HUMIDITY	Dry	Damp	Wet	Mildew
		APEX SHAPE	Dome	Spire (C & D)	Peak/wedge	Flat (A & B)
			Chambered		Tube	
COMPETITORS (invertebrates, birds, mammals?)		Woodlice (<i>Porcellio scaber</i>), tree slugs (<i>Lehmannia marginata</i>)				
*		PHOTOS	1. Photo of this form so you know which photos go with which tree			✓
	2. Contextual photo showing tree in habitat; tick box when done			✓		
	3. Close-up photo of the PRF; tick box when done			✓		
	FORM	Check the form to ensure every box has a value			✓	

vi) T933

GROUNDSMAN*	SITE NAME		Temple Dinsley, School Lane, Preston				
	DATE		27/06/24				
	HABITAT (Phase 1 where known)		A1				
	O.S. GRID REFERENCE		TL 18398 25058				
	Tag number		T933				
	TREE SPECIES		Ash (<i>Fraxinus excelsior</i>)				
	TREE ALIVE/DEAD		Alive				
	DBH (Diameter at Breast Height)		44cm x 1, 50cm x 1				
	TREE HEIGHT		16m				
	PRF on STEM/LIMB		Stem				
	PRF TYPE		Tear out				
	DIRECTION PRF FACES		East				
	CLIMBER	MEASUREMENTS	PRF HEIGHT (m)		7		
DPH (Diameter at PRF Height)			60cm				
ENTRANCE			Height (cm)	6			
			Width (cm)	5			
INTERNAL			Height (cm)	35			
			Width (cm)	10			
			Depth (cm)	0			
ROOSTING EVIDENCE 		Droppings: yes or no? (look in base)			No		
		Bats (look in cavity)	Species			N/A	
			Number of bats			N/A	
			Torpid or awake			N/A	
			Above/below/to side of entrance			N/A	
			Distance from entrance (cm)			N/A	
INTERNAL CONDITIONS: (Circle as many of the following as are applicable and cross-out those that are not)		SMELL	None	Pleasant	Not unpleasant	Unpleasant	
		SUBSTRATE	Smooth	Bobbly	Bumpy	Rough	
			Clean** =	Waxy	Blackened	Polished	
			Dirty** =	Dusty	Debris	Sludgy	
		HUMIDITY	Dry	Damp	Wet	Mildew	
		APEX SHAPE	Dome	Spire (C & D)	Peak/wedge	Flat (A & B)	
			Chambered		Tube		
	COMPETITORS (invertebrates, birds, mammals?)		Woodlice (<i>Porcellio scaber</i>), grey squirrel (<i>Sciurus carolinesis</i>) drey below entry				
	*	PHOTOS	1. Photo of this form so you know which photos go with which tree			✓	
			2. Contextual photo showing tree in habitat; tick box when done			✓	
3. Close-up photo of the PRF; tick box when done			✓				
FORM		Check the form to ensure every box has a value			✓		

vii) T938

GROUNDSMAN*	SITE NAME		Temple Dinsley, School Lane, Preston			
	DATE		27/06/24			
	HABITAT (Phase 1 where known)		A1			
	O.S. GRID REFERENCE		TL 18416 25045			
	Tag number		T938			
	TREE SPECIES		Sycamore (<i>Platanus occidentalis</i>)			
	TREE ALIVE/DEAD		Alive			
	DBH (Diameter at Breast Height)		38cm			
	TREE HEIGHT		12m			
	PRF on STEM/LIMB		Stem			
	PRF TYPE		Fluting			
	DIRECTION PRF FACES		South			
	CLIMBER	MEASUREMENTS	PRF HEIGHT (m)		1.2	
DPH (Diameter at PRF Height)			39cm			
ENTRANCE			Height (cm)	2		
			Width (cm)	14		
INTERNAL			Height (cm)	60		
			Width (cm)	14		
			Depth (cm)	0		
ROOSTING EVIDENCE 		Droppings: yes or no? (look in base)			No	
		Bats (look in cavity)	Species		N/A	
			Number of bats		N/A	
			Torpid or awake		N/A	
			Above/below/to side of entrance		N/A	
			Distance from entrance (cm)		N/A	
INTERNAL CONDITIONS: (Circle as many of the following as are applicable and cross-out those that are not)		SMELL	None	Pleasant	Not unpleasant	Unpleasant
		SUBSTRATE	Smooth	Bobbly	Bumpy	Rough
			Clean** =	Waxy	Blackened	Polished
			Dirty** =	Dusty	Debris	Sludgy
		HUMIDITY	Dry	Damp	Wet	Mildew
		APEX SHAPE	Dome	Spire (C & D)	Peak/wedge	Flat (A & B)
			Chambered		Tube	
		COMPETITORS (invertebrates, birds, mammals?)		Tree slugs (<i>Lehmannia marginata</i>)		
	*	PHOTOS	1. Photo of this form so you know which photos go with which tree			✓
			2. Contextual photo showing tree in habitat; tick box when done			✓
3. Close-up photo of the PRF; tick box when done			✓			
FORM		Check the form to ensure every box has a value			✓	

viii) T949

GROUNDSMAN*	SITE NAME		Temple Dinsley, School Lane, Preston			
	DATE		27/06/24			
	HABITAT (Phase 1 where known)		A1			
	O.S. GRID REFERENCE		TL 18395 25074			
	Tag number		T949			
	TREE SPECIES		Ash (<i>Fraxinus excelsior</i>)			
	TREE ALIVE/DEAD		Alive			
	DBH (Diameter at Breast Height)		80cm			
	TREE HEIGHT		17m			
	PRF on STEM/LIMB		Stem			
	PRF TYPE		Trunk wound			
	DIRECTION PRF FACES		East/South			
CLIMBER	MEASUREMENTS	PRF HEIGHT (m)		4-6.5m		
		DPH (Diameter at PRF Height)		N/A		
		ENTRANCE	Height (cm)	N/A		
			Width (cm)	N/A		
		INTERNAL	Height (cm)	N/A		
			Width (cm)	N/A		
			Depth (cm)	N/A		
	ROOSTING EVIDENCE 	Droppings: yes or no? (look in base)			No	
		Bats (look in cavity)	Species		N/A	
			Number of bats		N/A	
			Torpid or awake		N/A	
			Above/below/to side of entrance		N/A	
			Distance from entrance (cm)		N/A	
	INTERNAL CONDITIONS: (Circle as many of the following as are applicable and cross-out those that are not)	SMELL	None	Pleasant	Not unpleasant	Unpleasant
		SUBSTRATE	Smooth	Bobbly	Bumpy	Rough
			Clean** =	Waxy	Blackened	Polished
			Dirty** =	Dusty	Debris	Sludgy
		HUMIDITY	Dry	Damp	Wet	Mildew
		APEX SHAPE	Dome	Spire (C & D)	Peak/wedge	Flat (A & B)
			Chambered		Tube	
COMPETITORS (invertebrates, birds, mammals?)		Grey squirrel (<i>Sciurus carolinesis</i>) drey at base of cavity				
*	PHOTOS	1. Photo of this form so you know which photos go with which tree			✓	
		2. Contextual photo showing tree in habitat; tick box when done			✓	
		3. Close-up photo of the PRF; tick box when done			✓	
	FORM	Check the form to ensure every box has a value			✓	

Table 1: Trees inspected at the site and their roosting potential

Tree number	Figure	Roost potential
T191	Figure 2: T191 Sycamore (<i>Platanus occidentalis</i>) (taken June 2024)  Figure 3: PRF in trunk wound	PRF-M

		
T196	Figure 3: T196 Sycamore (<i>Platanus occidentalis</i>) (taken June 2024)  Figure 4: Tear out leading to fluting in limbs (PRF 1)	PRF-M Fluting features found on multiple stems of varying sizes



Figure 5: Fluting in limb (PRF 2)



Figure 6: Fluting in limb

		
T253	Figure 7: T253 Sycamore (<i>Platanus occidentalis</i>) (taken June 2024) 	No roost potential on closer inspection

T338

Figure 8: T338 Ash (*Fraxinus excelsior*) (taken June 2024)



Figure 9: Cavity on north face of tree (PRF 1)



PRF-M

Large hole in trunk and woodpecker holes lead into same cavity

Figure 10: Woodpecker holes leading into same cavity



Figure 11: Cavity in limb (PRF 2)

		
T786	Figure 12: T786 Sycamore (<i>Platanus occidentalis</i>) (taken June 2024)  Figure 13: Trunk wound with cavity opening to right	PRF-M Cavity extends into multiple honeycomb-like structures. Potential degraded droppings at the base of the PRF but unable to confirm amongst other detritus



Figure 14: Potential droppings at base of cavity



T806	Figure 15: T806 Sycamore (<i>Platanus occidentalis</i>) (taken June 2024) 	PRF-M
T926	Figure 16: T926 Ash (<i>Fraxinus excelsior</i>) (taken June 2024) 	No roost potential on closer inspection

T933

Figure 17: T933 Ash (*Fraxinus excelsior*) (taken June 2024)



Figure 18: Tear out with gap to right leading up to cavity



PRF-M

Cavity extends into multiple honeycomb-like structures

T938

Figure 19: T938 Sycamore (*Platanus occidentalis*) (taken June 2024)

PRF-M



Figure 20: Fluting in trunk



T949	Figure 21: T949 Ash (<i>Fraxinus excelsior</i>) (taken June 2024)  Figure 22: Large opening into cavity on south face	PRF-M Multiple entry points on the trunk leading to a single large cavity with further chambers and niches inside
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Figure 23: Split in trunk leading
into cavity

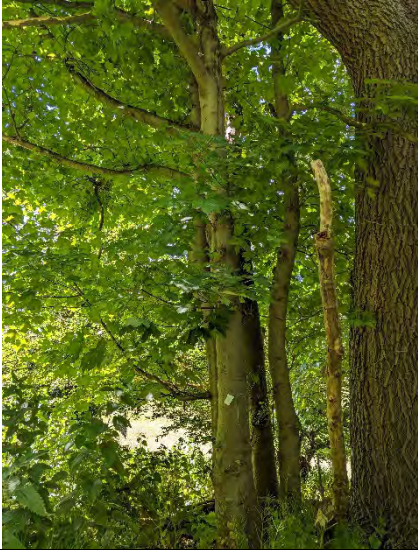


Figure 24: Knot hole leading into cavity



Figure 25: Additional opening into hollow trunk



T950	Figure 26: T950 Sycamore (<i>Platanus occidentalis</i>) (taken June 2024) 	No roost potential on closer inspection
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Conclusion

Of the 11 trees inspected for bat roosts, 8 were classified as PRF-M due to their capacity to be used by multiple bats. The remaining 3 trees climbed had no roost potential when inspected closely or via endoscope. The 8 PRF-M trees will require a further two climbed inspections, spaced 3 weeks apart, to again assess for evidence of roosting bats.

