

**BAT ROOST POTENTIAL
SURVEY REPORT**

**at
Harefield Hall Farm
Chadwick Lane
Heywood
Lancashire
OL10 1RN**

**Client:
Collop Gate Properties**

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14/04/2023**



Quality Assurance

Version	Desktop Survey Completed:		Site Surveyed:		Report Completed:		Reviewed:	
	Date	Name	Date	Name	Date	Name	Date	Name
Planning	11/04/23	Eve Goodwin	30/03/23	Eve Goodwin James Foster James Robinson	14/04/23	Eve Goodwin	18/04/23	Adam West

This report has been prepared and provided in accordance with the *British Standard 42020: Biodiversity – Code of practice for planning and development 2018* and the *CIEEM's Code of Professional Conduct*.

Risk Assessment Completed	
Bio-security Procedure Completed	
Lone Worker Procedure Completed	

Summary

JCA Ltd was commissioned by **Collop Gate Properties** to provide ecological advice to inform works at **Harefield Hall Farm**, hereafter referred to as 'the site'. The site is located at **Chadwick Lane, Heywood, Lancashire, OL10 1RN**, Ordnance Survey (OS) National Grid Reference **SD 86662 10842**.

The purpose of this report is to present the findings of the survey, an interpretation of the findings and to provide recommendations for undertaking the proposed works in accordance with relevant legislation.

Bats and their roosts are protected under UK law. Development works that are likely to affect bats or their roost sites must be completed under licence from the statutory conservation body, in this case Natural England (NE).

The field survey was undertaken on 30/03/23 to identify any bat roost potential of the buildings and structures. The surveys found all of the buildings and structures on site to hold bat roosting potential, identified by numerous types of potential roosting feature including missing and cracked mortar, missing bricks, missing roof tiles and areas of roof collapse.

An evaluation of the site likely impacts of the scheme upon bats and recommendations for proceeding with works in compliance with legislation are presented in Chapters 4, 5 and 6 of this report.



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1. Introduction

1.1 Background

1.1.1 In March 2023, JCA Ltd was commissioned by **Collop Gate Properties** to undertake a Bat Roost Potential (BRP) survey of a site located at **Chadwick Lane, Heywood, Lancashire, OL10 1RN** hereafter referred to as 'the site'.

1.1.2 A BRP survey is required where development proposals include demolition of a structure or where a structure will be modified in such a way that bats or their roosts could be directly impacted if present. This survey type may also be needed where bats roosting in a structure could be indirectly impacted by development activities outside the roost.

1.2 Details of Proposed Development

1.2.1 The scheme is the amendment of the existing buildings on site, through means of installing new roof structures, and reconfiguring the structures to allow for change of use into domestic properties.

1.3 Site Location

1.3.1 The site is located at Ordnance Survey (OS) National Grid Reference **SD 86662 10842**, with nearby postcode **OL10 1RN**. The site is bordered to the north and west by residential properties, and to the south and east by agricultural fields.

1.4 Scope of Works

1.4.1 The following elements of work were included in the bat survey programme:

- Desktop study – a review of historical records of bats in the surrounding area, including the results of recent ecological surveys in the area.
- Field surveys – a field survey in daylight hours to assess whether features are present within the buildings/trees on site which bats may roost in.



- Ecological report – detailing the survey results, implications for the disturbance of the buildings/trees and recommendations.

1.5 Survey and Report Aims

1.5.1 The main aim of the BRP survey was to locate and map features which bats could use for entry/exit and roosting and to search for signs of bats.

1.5.2 The BRP survey aims to:

- Identify if actual or potential roosts are present (and if so, where).
- Locate bat roost access points
- Identify where bat roost are located and how bats get to them from the access points.
- Identify the species and numbers of bats potentially present.
- Determine the type of roost (e.g. maternity roost, transitional roost, hibernation site, etc).
- Gain sufficient information to allow the potential impacts on bats of the proposed works to be assessed and for appropriate avoidance, mitigation and/or compensation measures to be designed.

1.5.3 The aims of the report presented are to:

- Outline the legislative protection given to bats.
- Report on the findings of a desk-based study undertaken to identify any existing records for bats which are relevant to the site.
- Summarise the findings of the BRP survey and provide an assessment of the potential ecological constraints to the proposed works at the site.
- Provide recommendations for further survey, avoidance, mitigation and/or enhancement where appropriate.

1.6 Legislative Context

1.6.1 In the UK all species of bat and their roosts are fully protected under Schedule 2 of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, with additional protection offered under Schedule 5 of the Wildlife and Countryside (WCA) Act 1981 (as amended). This makes it an offence to:

- Deliberately or recklessly capture, injure or kill a bat;

- Deliberately or recklessly disturb in a way that would affect their local distribution or abundance, or affect their ability to survive, breed or rear young;
- Damage or destroy a bat roost (this is an 'absolute' offence);
- Intentionally or recklessly obstruct access to a bat roost; and/or
- Possess, control, transport, sell, exchange or offer for sale/exchange any live or dead bat or any part of a bat.

1.6.2 Under this legislation a roost is determined as any structure or place used for shelter. As bats tend to re-use the same roosts, the roost is protected whether the bats are present at the time or not.

1.6.3 Please see Appendix 1 for a more detailed overview of the UK legislation protecting bats.



2. Methodology

2.1 Desktop Study

- 2.1.1 A desktop study has been undertaken in order to obtain any relevant records of bats from Greater Manchester Local Records Centre (GMLRC) within a 2km radius of the site.

2.2 Field Surveys

- 2.2.1 The field survey was planned and conducted with reference to Bat Surveys: Good Practice Guidelines 3rd Edition (Collins, 2016). The survey was conducted in March 2023.
- 2.2.2 The site was surveyed by Eve Goodwin (Graduate Ecologist, JCA Ltd), James Foster (Assistant Ecologist, JCA Ltd) and James Robinson (Graduate Ecologist, JCA Ltd) under the guidance of Adam West (Principal Ecologist, JCA Ltd; NE Level 2 bat survey class licence registration number 2016-24724-CLS-CLS) for foraging, commuting and roosting potential. A detailed search of the buildings and trees on site was conducted during daylight hours in order to identify potential bat roosting sites and look for evidence of bat activity and photographic evidence was taken (please refer to **Appendix 4**).
- 2.2.3 The survey was conducted by an experienced surveyor using the following equipment to ensure an accurate assessment; a printed site map, camera, a 1 million candlelight torch, binoculars, and ladders.
- 2.2.4 Signs that bats have previously or are currently using a potential roost site include:
- Scratch marks, urine and oil stains around holes in buildings or trees.
 - Droppings, carcasses and/or food remains found around the site.
 - Bats observed flying in/out of a hole in a building or tree.
 - Bats heard 'chattering' within a potential roost site, especially on warm summer days.
- 2.2.5 During the bat scoping survey, the building on site was subject to an external and internal survey to establish the suitability of the structure

to support roosting bats in accordance with Collins (2016). The criteria for assigning a roost suitability category are presented in Table 1 below:

Table 1: Guidelines used for assessing the bat roosting suitability of a site (taken from Collins, 2016)

Roosting Suitability	Potential Roosting Features (PRFs) Present
Negligible	No visible features on the site likely to be used by roosting bats. No signs of bats found during the initial assessment.
Low	A structure with one or more potential roosting opportunities that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough shelter, protection, surrounding habitats, or the appropriate conditions to be used on a regular basis by larger numbers of bats e.g. unlikely to support hibernation or maternity roosts. A tree of sufficient size and age to contain features suitable for bat roosting, but with no features seen from the ground. No signs of bat use found during the initial assessment.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to the size of the potential roosting feature which is sufficient to provide: shelter, protection, optimal conditions and surrounding habitats. The feature(s) are unlikely to support a roost of high conservation status. Signs (potential signs) of bat use found during the initial assessment.
High	A structure or tree with one or more potential roost sites that could be used by bats due to the size of the potential roosting feature which is sufficient to provide: shelter, protection, optimal conditions and surrounding habitats. The features have the potential to support large colonies of bats (e.g. maternity or hibernation) for long periods of time. Signs of bat use present.

2.2.6 The category of roosting suitability assigned to a feature is used to determine what further survey effort is required to ascertain the presence/likely absence of bats within that feature, as shown in Table 2 below:

Table 2: Recommended minimum number of survey visits for presence/likely absence surveys (taken from Collins, 2016).

Negligible roost suitability	Low roost suitability	Moderate roost suitability	High roost suitability
No further survey required	One survey visit. One dusk emergence or dawn	Two separate survey visits. One dusk emergence	Three separate survey visits. At least one dusk emergence



	re-entry survey (structures). No further surveys required (trees).	and a separate dawn re-entry survey.	and a separate dawn re-entry survey. The third visit could be either dusk or dawn.
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2.3 Survey Constraints

- 2.3.1 It must be highlighted that the absence of any signs of bat presence (droppings, feeding remains, etc.) is not proof that the site is not being used by bats. Weathering and other factors will often remove any signs of bat activity, especially when present on the exterior of a building or a tree. Many bat species will have several roost sites which they regularly move between and therefore an absence during a survey visit does not exclude their presence at a later date.
- 2.3.2 The site was surveyed in overcast and slightly rainy weather, the days leading up to the survey had been similar, which had little effect on visible field signs.
- 2.3.3 There were areas within the buildings and structures on site that were not surveyed due to safety limitations. This does not pose a significant constraint to the findings of this report as reasonable assumptions can be made based on what was visible.
- 2.3.4 There were no perceived limitations that would significantly impact on the conclusions and recommendations given within this report.
- 2.3.5 The details of this report will remain valid for 18 months. Beyond this period, if the proposed works have not commenced, a new review of the ecological conditions must be undertaken.

3 Results

3.1 Desktop study results

3.1.1 Local Data Centre Records: GMLRC has been commissioned to provide the records held for bat species within a 2km radius of the survey site. The results have been summarised below. It should be noted that the absence of records should not be taken as confirmation bat species are absent from the search area. Please see **Table 3** below for a summary of the bat records from the last ten years obtained from GMLRC. **Table 4** summarises all bat roost records within 2km of the site received from GMLRC.

Table 3 Summary of bat records from the last ten years held by GMLRC within 2km of the site.

Common Name	Scientific Name	On site	Within 500m	500-1000m	1001-2000m	Notes
Unidentified bat of the genus <i>Myotis</i>	<i>Myotis</i> sp.	x	x	✓	x	Single field record from 2020.
Whiskered bat	<i>Myotis mystacinus</i>	x	x	x	✓	Single field record from 2017.
Daubenton's bat	<i>Myotis daubentonii</i>	x	x	✓	x	Three field records from 2020.
Noctule	<i>Nyctalus noctula</i>	x	x	✓	✓	Five records from 2019 and 2020.
Pipistrelle bat	<i>Pipistrellus</i> spp.	x	✓	x	✓	Six field records from 2013 to 2015.
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	x	x	✓	✓	43 records between 2014 and 2020.
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	x	x	✓	✓	Three field records between 2014 and 2020.
Brown long-eared bat	<i>Plecotus auratus</i>	x	x	x	✓	One record from 2019 of single bat foraging.

Table 4 Summary of bat roost records held by GMLRC within 2km of the site.

Common Name	Scientific Name	On site	Within 500m	500-1000m	1001-2000m	Notes
Pipistrelle bat	<i>Pipistrellus</i> spp.	x	✓	✓	✓	39 roosts recorded between 1985 and 2021.
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	x	✓	✓	✓	35 roosts recorded between 1985 and 2020.
Brown long-eared bat	<i>Plecotus auratus</i>	x	x	x	✓	One roost recorded in 1998, in lime tree.



3.2 Field Survey Results

3.2.1 Habitats Present

The site contains four buildings, which are connected at points, with four small trees located to the west of buildings two, three and four. Due to the complexity of the buildings and structures on site, internal and external maps of potential roosting features are provided (**Appendix 2 & 3**).

3.2.2 Building Assessment

There are four buildings/structures on site (**See Appendix 2 & 3, Potential Roosting Features Map Internal & External**). Building descriptions and potential roosting features (PRFs) and bat roost potential (BRP) are described in Table 5 below.

Table 5: Descriptions of buildings/structures and PRFs on site.

Building No.	Location/Building Description	PRF Description	BRP
1	The building is the existing farm outbuilding, it is a single storey structure constructed with a mix of red brick and breeze block patched repairs. The roof structure has four pitches, with three pitches running from east to west which intersect with the one that runs from north to south. The building on the whole is in a poor state of repair with large areas of brick and roof tiles missing, with vegetation and dense ivy growing through the roof structure and walls. There is a cavity wall present. It is located on the western boundary, adjacent to the existing site entrance.	External - On the south west corner of the building there is a large patch of dense ivy, which runs towards the north at the western elevation, obscuring potential roosting features (Appendix 4, Photo 2). - On the southern elevation there is a gap under the soffit (Appendix 4, Photo 2). - On the eastern elevation, towards the northern corner of building one there is a major hole in the wooden cladding (Appendix 4, Photo 3). - Located on the western side of the central pitch that runs from east to west there is an area of major roof collapse (Appendix 4, Photo 4). - Running along the northern elevation there are numerous lifted and slipped roof tiles, with a few located on the southern elevation (Appendix 4, Photo 5). - On the northern elevation there is extensive areas of	High

		missing and cracked mortar, with one or two areas noted on the southern elevation (Appendix 4, Photo 5). - Located on the southern elevation there are several missing bricks. Internal - On the western wall there is a hole in the wall leading to a cavity (Appendix 4, Photo 6). - Centrally on the middle pitch there is a section of major roof collapse, allowing a large amount of light into the room (Appendix 4, Photo 5).	
2	The building is the existing farmhouse, it has a structurally varied roof with two pitches sections, one running from east to west which is intersected by the pitch of building three and a smaller pitch running from north to south. There is a dormer on the western elevation, with three sections of roof which have a gentle pitch attached by means of abutment, located at the south west, south east and north eastern sections of the building. The building is located centrally, to the south east of building one.	External - At the south eastern corner of building two there are two ventilation grilles present (Appendix 4, Photo 7). - On all elevations of building two there are numerous lifted and slipped roof tiles (Appendix 4, Photo 8). - Towards the south western corner of the building there is an area of major roof collapse (Appendix 4, Photo 9). - On the southern elevation there is a large patch of dense ivy (Appendix 4, Photo 10). - There is an extensive area of missing mortar located on the eastern elevation towards the northern aspect (Appendix 4, Photo 11). - There are numerous areas of lifted flashing around the building (Appendix 4, Photo 11). Internal - At the north eastern side of the building there is a major hole in the ceiling leading to the upper floor (Appendix 4, Photo 12).	High



		- There are numerous holes in the walls internally leading to cavity walls.	
3	The building is the stable block, it is in a u-shape which forms the courtyard to the centre of the site. The building is located on the north eastern boundary and runs down the eastern boundary, leading to building four.	External - There are seven areas of major roof collapse located around building three, on the western and eastern elevations (Appendix 4, Photo 13). - There are three gaps in the ridge tiles located on the western and northern pitches (Appendix 4, Photo 14). - Located on the northern elevation and the western elevation of building three there are dormers present, with areas of lifted flashing concentrated around them (Appendix 4, Photo 14). - There are seven areas of lifted and slipped roof tiles located on the northern, western and eastern pitches (Appendix 4, Photo 15). - On the eastern pitch there are three areas dense ivy which obscured potential roosting features (Appendix 4, Photo 16). - There are numerous areas of missing mortar on building three with prevalence on the eastern and western elevations (Appendix 4, Photo 17). - On the northern elevation at the centre of the courtyard there is a dovecote present (Appendix 4, Photo 18). Internal - On the western side of the building there are several gaps around the beams leading to cavity under roof (Appendix 4, Photo 19). - There are numerous missing bricks internally leading to cavity walls (Appendix 4, Photo 20).	High

		- There are innumerable areas of missing mortar, leading to cavity walls (Appendix 4, Photo 21). - There are three major holes in the ceiling on the north and east of the building leading to the upper floor (Appendix 4, Photo 21). - On the north eastern corner, there is a major hole in the plaster wall leading to a cavity (Appendix 4, Photo 22).	
4	The building is the cowshed, located at the south eastern corner of the site. It is in current use as a cow shed, the structure is open to the west. It has a gently pitched roof, made out of corrugated metal roof. The structure is open to the west, and enclosed on all other sides, to the north and east by brick walls and to the south by corrugated metal siding.	External - No external PRFs were identified. Internal - Along the eastern and northern walls internally in the cowshed, there are innumerable areas of missing mortar (Appendix 4, Photo 23). - There is a large patch of dense ivy on the eastern wall (Appendix 4, Photo 24). - There are numerous missing bricks on the northern and eastern walls (Appendix 4, Photo 24). - There is a major hole in the wall on the northern elevation leading to the upper floor of building three (Appendix 4, Photo 24).	Moderate

3.2.3 Tree Assessment

Tree One (T1)

The tree is a medium willow *Salix* spp., located at the south west corner of the cow shed. The tree was almost entirely covered in dense ivy, obscuring any potential roosting features from view (**Appendix 4, Photo 25**).

Tree Two (T2)



Tree two is a small holly, located south west of the farm house. No potential roosting features were identified; however a portion of the tree is covered in dense ivy which could obscure potential roosting features.

Tree Three (T3)

Tree three is a small holly, located on the western side of the farm house. No potential roosting features were identified (**Appendix 4, Photo 26**).

Tree Four (T4)

Tree four is a medium semi-mature elder located on the west of the stable building at the northern boundary of the site. There was a crack present on this tree, however it did not appear to lead to a cavity (**Appendix 4, Photo 27**).

3.2.4 Incidental Findings

Within building three a large deposit of barn owl pellets was identified, suggesting that barn owls are active in the local vicinity. Furthermore, two birds' nests were identified on site, within tree four and building one (**Appendix 4, Photo 28**). Several pigeons were identified roosting within building three, European robin, Eurasian jackdaw and great tit were all identified foraging and commuting around the site.

4 Interpretation of Survey Results

4.1 Bat Records

- 4.1.1 Eight species of bat have been recorded within 2km of the site, three within 500m, suggesting that bats are roosting, foraging and commuting in the local vicinity.

4.2 BRP Survey

- 4.1.2 A number of features were identified on site in which bats may roost. Please refer to Section 3.2 and Appendix 2 and three for further details.
- 4.1.3 Based on the proximity of roost records, the type of PRFs present and the proximity of high quality bat foraging habitat, this site is considered to have **high** potential for supporting roosting bat species during their active period between May and September. Please see **Tables 1 and 2** above for the guidelines used for assessing the roosting potential of a site. Please note these guidelines are applied using the professional judgement of the licenced bat worker undertaking the assessment.

4.3 Impacts of the Proposed Development

- 4.3.1 A number of features were identified on site in which bats may roost. Please refer to **Section 3.2 and Appendix 1** for further details.
- 4.3.2 No development plans have yet been provided; however it has been explained by the client that the development involves the reconfiguration of the existing buildings and structures on site. Which would reduce the number of roosting opportunities for bats locally.
- 4.3.3 Based on the number and type of PRFs present, the proposed works have the potential to cause injury and/or death to bats, and to damage/destroy bat roosts.
- 4.3.4 Due to the presence of barn owl pellets, it is likely that barn owls are utilising the site, and therefore the proposed works have the potential to cause injury and/or death to barn owls.



5 Recommendations

5.1.1 The following must be undertaken:

5.1.2 Three bat surveys are required for buildings one, two and three, consisting of three dusk emergence surveys augmented with night vision aids (NVAs). The surveys must be carried out between 1st May to 31st August in suitable weather conditions.

5.1.3 Two bat surveys are required for building four, consisting of two dusk emergence surveys augmented with night vision aids (NVAs). The surveys must be carried out between 1st May to 31st August in suitable weather conditions.

5.1.4 If roosting bats are found during the survey and will be impacted by the proposed works, a Mitigation Licence must be obtained from NE before works proceed.

5.1.5 If no roosting is identified during the surveys, alternative roosting provision must be provided as compensation for the loss of potential roosting features.

5.1.6 The lighting design of the proposed scheme should follow guidance from the Bat Conservation Trust and Institute of Lighting Professionals (2018). A key point is the avoidance of internal and external light spill. Where possible, lighting should be timed, or on sensors and avoid the hours between sunset and sunrise, when bats are out foraging.

It is important to avoid:

- Uniform levels of luminance across the site.
- Metal halide and florescent lighting.
- Upward tilting lighting that increases skyline luminance.

Instead, the following should be installed:

- Dark buffer zones.
- Screening in the form of vegetation, fences and structures.
- Appropriately designated darkened areas.
- Luminaries absent of UV elements.
- LED luminaries with a sharp cut-off, low intensity and good rendition.
- A warm white spectrum (<2700 kelvin) to reduce blue light.

- Peak luminaire wavelength at a minimum of 550nm.
- Downward directional luminaires with upward light ratios of 0%.
- Lower light columns to limit light spill.
- Recessed internal light fixtures.
- Window glazing treatments or automated blind systems.

5.1.7 Prior to any building works, a **nesting bird check** is required to avoid destruction of bird nests or disturbing active bird nests. Following this, if nesting birds or a nest is found, works must halt, and a suitably qualified ecologist contacted.



6 References

Bat Conservation Trust and Institute of Lighting Professionals (2018) *Guidance Note 08/18: Bats and artificial lighting in the UK*. ILP, Rugby

Mitchell-Jones, A.J. (2004) *Bat Mitigation Guidelines*. English Nature, Peterborough

Mitchell-Jones, A.J. & McLeish, A.P. (2012) *The Bat Workers' Manual*. Pelagic Publishing, Exeter.

Collins (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* 3rd edition, Bat Conservation Trust, written 2016

Relevant Legislation:

Wildlife and Countryside Act 1981 <http://jncc.defra.gov.uk/page-3614>

The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.
<https://www.legislation.gov.uk/ukdsi/2019/9780111176573>

Countryside and Rights of Way Act 2000
http://www.legislation.gov.uk/ukpga/2000/37/pdfs/ukpga_20000037_en.pdf?view=interweave

Appendices

Appendix 1: Legislation Pertaining to the Protection of Bats

All bat species have, for some time, been protected under schedule 5 of the Wildlife & Countryside Act 1981. However, the effective protection for bats now comes from Schedule 2 of the Conservation of Habitats and Species Regulations (Amendment) (EU Exit) Regulations 2019, which defines "European protected species of animals". Changes to legislation, and devolution, mean the law is difficult to summarise succinctly across the UK, but the strong legal protection for bats and roosts remains.

It is an offence across the UK to:

- deliberately or recklessly capture, injure or kill a bat
- deliberately or recklessly disturb in a way that would affect their local distribution or abundance, or affect their ability to survive, breed or rear young
- damage or destroy a bat roost (this is an 'absolute' offence)
- intentionally or recklessly obstruct access to a bat roost
- possess, control, transport, sell, exchange or offer for sale/exchange any live or dead bat or any part of a bat

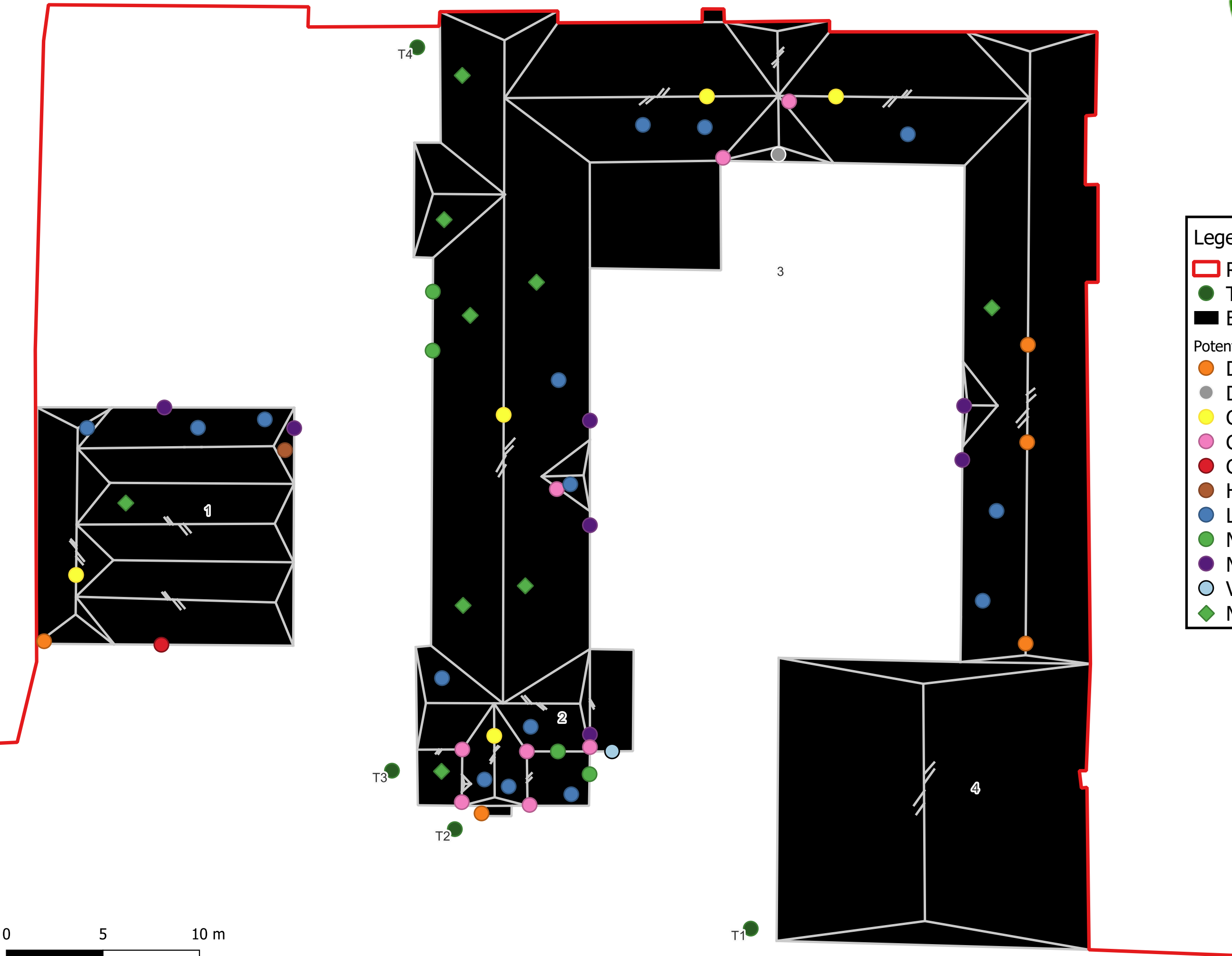
'Deliberately' in this context may be interpreted as someone who, although not intending to capture/injure or kill a bat, performed the relevant action, being sufficiently informed and aware of the consequence his/her action will most likely have.

In this interpretation, a bat roost is "any structure or place which any wild [bat]...uses for shelter or protection". Because bats tend to reuse the same roosts, legal opinion is that the roost is protected whether or not the bats are present at the time.

Appendix 2: Site Plan Showing Bat Roost Potential (External)



Potential Roosting Features; Harefield Hall Farm, Heywood - External



Legend

- Red line boundary
- Trees 1-4
- Buildings 1-4

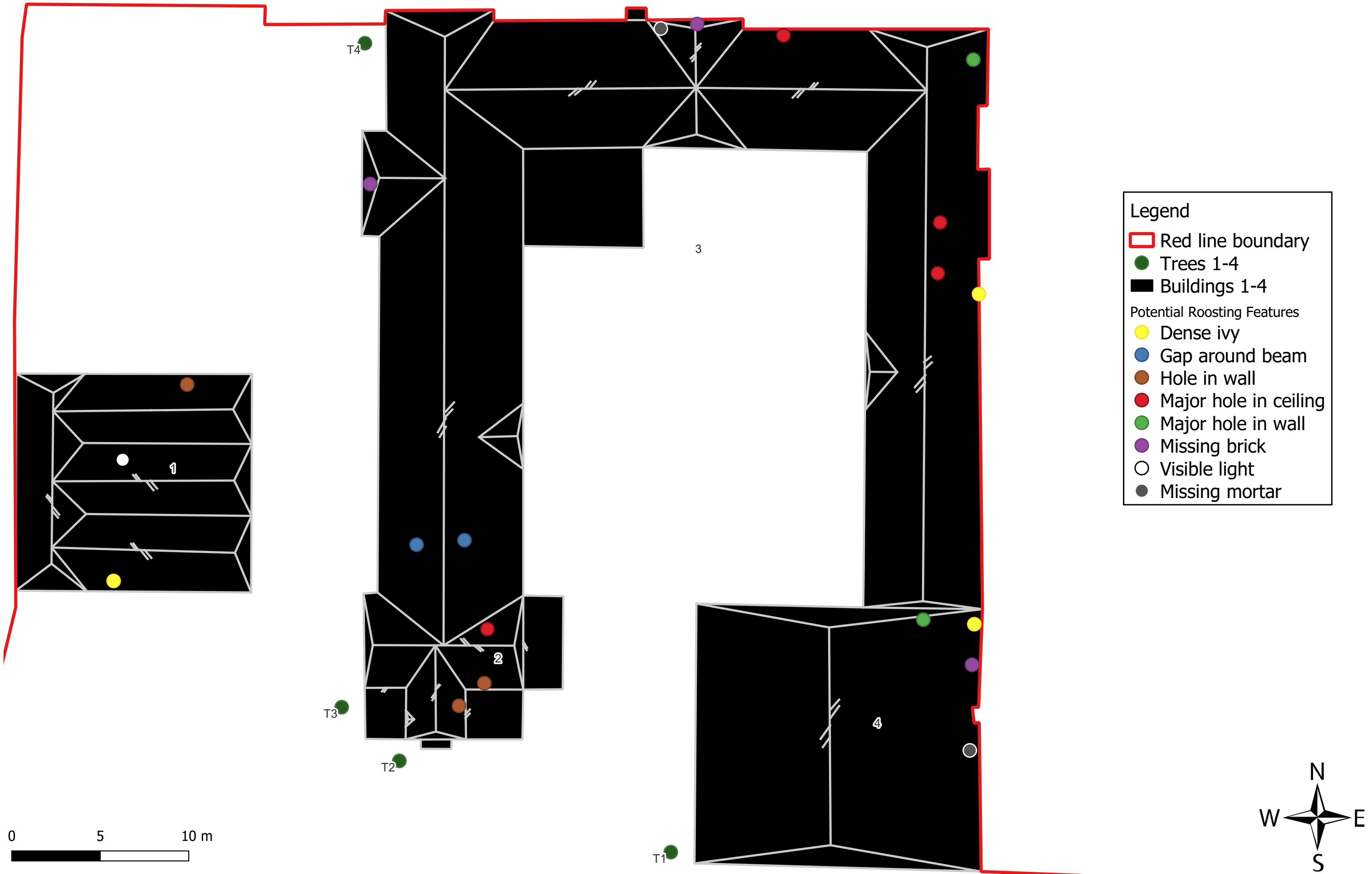
Potential Roosting Features

- Dense ivy
- Dove cote
- Gap in ridge tile
- Gap in/lifted flashing
- Gap under soffit
- Hole in cladding (major)
- Lifted/slipped roof tiles
- Missing brick
- Missing mortar
- Ventilation grille
- Major roof collapse

Appendix 3: Site Plan Showing Bat Roost Potential (Internal)



Potential Roosting Features Map; Harefield Hall, Heywood - Internal



Appendix 4: Photographic Evidence



Photo 1: View of building two, showing general dilapidated nature of construction around the site.



Photo 2: View of building one showing dense ivy at south western corner and gap under soffit.



Photo 3: View of building one showing major gap in cladding, numerous areas of missing mortar, slipped roof tiles and extensive vegetation growth.



Photo 4: Major roof collapse on the central pitch of building one with numerous missing bricks and mortars.



Photo 5: View of northern elevation of building one with innumerable areas of missing mortar and many slipped roof tiles.



Photo 6: View of hole in the internal wall of building one leading to cavity wall, with birds nest also present.





Photo 7: View of the ventilation grilles present at the south eastern corner of building two.



Photo 8: View from the south of building two showing numerous missing, lifted and slipped roof tiles.



Photo 9: View from the west of building two showing areas of major roof collapse.



Photo 10: Area of dense ivy on the southern elevation of building two.



Photo 11: View of the eastern elevation of building two with missing mortar and damaged flashing.



Photo 12: View of major hole in ceiling in building two leading to upper floor.



Photo 13: Internal view of major roof collapse on the western wing of building three.



Photo 14: View of gap in ridge tile and lifted flashing on central dormer of the northern wing of building three.



Photo 15: View of the eastern wing of building three with numerous lifted, slipped and missing roof tiles.



Photo 16: View of the dormer on the eastern wing showing dense ivy encroaching from the east.



Photo 17: View of the north eastern corner of building three showing several areas of missing mortar.



Photo 18: View of the northern elevation of building two showing dovecote.



Photo 19: View internally of gaps around the beams located in the western wing of building two.



Photo 20: Missing brick within building two leading to cavity wall.



Photo 21: View of one of the stable bays located on the northern section of building two with innumerable areas of missing mortar and major hole in ceiling leading to upper floor.



Photo 22: View of the major hole in plaster at north eastern corner of building two at high level.





Photo 23: Close up of the eastern wall of building four showing extensive area of missing mortar.



Photo 24: View of north eastern corner of building four showing dense ivy, missing bricks and major hole leading to building three.



Photo 25: View of tree one, densely covered to west of building four.



Photo 26: View of building two showing small holly tree adjacent.



Photo 27: View of tree four located at northern boundary.



Photo 28: View of birds' nest within tree four, located at northern boundary.



Appendix 5: Bat Survey Calendar

Figure 1: Survey timings calendar (taken from BCT: Bat surveys for professional Ecologists, Good Practice Guidelines; 3rd Edition).

Survey type	Month											
	J	F	M	A	M	J	J	A	S	O	N	D
Preliminary ecological appraisal - fieldwork												
Preliminary roost assessment - structures ^a												
Emergence/re-entry survey for maternity or summer roosts ^b												
Emergence/re-entry survey for transitional roosts ^b												
Emergence survey for mating roosts ^b												
Hibernation survey - structures ^a												
Preliminary ground level roost assessment - trees ^d												
Potential roost feature (PRF) inspection survey - trees												
Ground level bat activity survey - transects and automated/static												
Pre-, during and post-hibernation - automated/static bat activity survey												
Swarming survey												
Back-tracking survey												
Trapping survey ^e												
Radio tagging and tracking survey ^e												

= optimal period
 = sub-optimal period

= weather or location dependent (i.e. may not be suitable due to spring and autumn conditions in any one year or in more northerly latitudes). Note that October surveys are not acceptable in Scotland.

^a Not including trees

Appendix 6: Glossary

Activity surveys - are used to assess the level of bat activity at a site. This can be done either by using equipment such as an AnaBat device, or manually walking around a site with a heterodyne detector, documenting the number of bat passes and interceptions.

Dawn surveys - begin around 2 hours before and up to sunrise when bats are returning to their roosts from foraging, and swarming behaviour can be seen close to roost entrances.

Dusk surveys - begin around 30 minutes before sunset and up to 2 hours afterwards. These are done in order to see bats emerging from their roost sites at night.

Echolocation – is a system similar to sonar that allows bats to travel and forage even in total darkness. Bats make a call and then listen to the returning echoes in order to build up a map of their surrounding area. This allows bats to gauge the identity and distance of an object by how long the echo takes to return to them.

Habitat - the ecological or environmental area that is inhabited by a particular species of animal, plant or other type of organism.

Hibernation - is a state of inactivity and metabolic depression characterized by lower body temperature, slower breathing, and lower metabolic rate. Hibernating animals conserve energy, especially during winter when food is short, tapping energy reserves, i.e. body fat, at a slow rate.

Hibernacula - typically consist of underground sites, such as caves and cellars, which remain relatively cold and humid. Bats will hibernate to conserve energy over the winter months when falling temperatures cause a drop in the abundance of insects. These will typically be colonised around November to around March.

Insectivorous – is when an organism feeds exclusively on insects.

Nocturnal - a behaviour characterized by being active during the night and sleeping during the day.

Maternity roosts – colonised around late May early June and consist of mature females and their young. These roosts need to be warm and quiet, and are used up until around August, with females typically leaving first and then the young.

Mating roosts – mating begins around late October to November. Males of most species use special mating calls to attract females. These can include purrs, clicks and buzzing.

Roost – a site where bats live during the day, rear young and hibernate. These can be in man made structures, such as buildings, bridges, tunnels, cellars and mines, or natural features such as mature trees and caves.

Roosts in buildings – many types of buildings will be used by bats. The most likely sites are agricultural buildings (e.g. farmhouses and barns), buildings with exposed wooden beams (greater than 20cm thick), buildings with weather boarding and/or hanging tiles, and buildings close to woodland and/or water.

Roosts in trees – these are typically in mature trees with deep sheltered cracks, under loose sections of bark, or in woodpecker holes.

Species – a group of organisms in which all members can interbreed and produce viable offspring.

Summer roosts (non-breeding) - these are generally occupied by groups of males and immature females during the summer, and are usually only occupied for a short period before the group moves to another location.

Swarming – a behaviour exhibited by bats returning to their roost sites at dawn. Bats can be seen repeatedly flying to and from the roost entrance, making it much easier for consultants to identify where roosts are on a building or structure.



Temporary/Transitory roosts – These are used after hibernation (March – April) before mature females disperse to maternity roosts and male/immature females colonise summer (non-breeding) roosts. Similarly, temporary roosts form before hibernation (August -October).

Underground Roosts – these are typically used during the winter and can be mines, caves, tunnels or cellars.

Appendix 7: Author Qualifications

Adam West, Principal Ecologist

BSc (Hons) Animal and Wildlife Management.

Adam joined JCA to lead the expanding ecology department. Having returned to education as a mature student, Adam studied Countryside Management for two years before undertaking a Bachelor's degree, for which he was awarded First Class Honours. Adam has many years' experience in ecological consultancy, working on projects ranging from individual planning applications to national infrastructure projects. Adam holds a Natural England Level 1 great crested newt survey class licence and a Natural England Level 2 bat survey class licence.

James Foster, Assistant Ecologist

BSc (Hons) Biology.

James gained his undergraduate degree in biology in 2012 from University of Leeds. James has plenty of experience in ecology, having worked countless projects of different scales all over the north and midlands. James has 9 years of experience surveying anything from reptiles to hedgerows and holds a Great crested newt licence level 1 and is working towards his bat licence and barn owl licence.

Eve Goodwin, Graduate Ecologist

BSc (Hons) Plant Biology

Eve gained her Royal Society of Biology accredited undergraduate degree in 2019 from Aberystwyth University in Plant Biology. She has good plant identification skills which were developed through her academic studies and field work. She has since worked as a CAD technician and has joined JCA in 2022 where she hopes to develop her field skills further.

James Robinson – Assistant Ecologist

BSc (Hons) Wildlife and Practical Conservation MSc Sustainability

James gained both his BSc and MSc from the university of Salford, in 2019 and retrospectively 2013, James has over 3 years' experience leading and carrying out ecological field surveys across the UK, James has worked both on large scale green space developments as well as working in conjunction on large housing and residential developments in conjunction with NGO's and local planning authorities. James has previously worked as GIS technician and an assistant, Graduate Ecologist.



The information and advice which we have prepared and provided is true and has been prepared and provided in accordance with the CIEEM's Code of Professional Conduct. We confirm that the opinions expressed are our true and bona fide opinions.

Signed



.....
Eve Goodwin

14/04/23

Reviewed by



.....
Adam West

18/04/2023

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ECOLOGICAL SERVICES

Ecological Pre-Planning Services

- Phase 1 Habitat Surveys
- Great Crested Newt eDNA Sampling
- Protected species: Bat, Wintering and Nesting Bird, Badger, Amphibian, Otter, Water Vole, White-Clawed Crayfish, Dormice and Reptile Surveys.
- Preparation for Environmental Impact Assessment (EIA)
- Invasive Species Surveys
- Code for Sustainable Homes
- Butterfly & Insect Surveys

Ecological Post-Planning Services

- Biodiversity Enhancement Plans
- Protected Species Mitigation
- Ecological Management (Bat and Bird box installation and inspection)
- Planting Schemes
- Monitoring of bird or bat boxes.

ARBORICULTURAL SERVICES

Guidance for Architects & Developers

- British Standard 5837 Surveys
- Arboricultural Implications Assessments (AIA)
- Arboricultural Method Statements (AMS)

Advice for Engineers, Loss Adjusters and Insurers

- Tree Surveys for Subsidence
- Heave Assessment
- Tree Root Identification

Advice for Local Authorities and Social Housing

- Tree Safety Surveys
- Specialist Decay Detection
- Landscape and Orchard Design

Tree Advice for the Legal Profession

- Subsidence Litigation
- Personal Injury and Accident Investigation
- Expert Witness, Planning Inquiries and Appeals

Veteran Tree Management

- Ancient Woodland Management
- Veteran Tree Management

Tree Health and Pest and Disease Management

- Pest and Disease Surveys
- Tree Health Checks
- Disease Mitigation and Control



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