



Phase Two
Bat Emergence Survey Report
European Protected Species Licence (EPSL) Required.



Site Location
Thurso Close and Deveron Drive
Tilehurst
Reading
RG30 4YG

GR: SU 68414 73685

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Contract Details	
British Standard for Biodiversity	BS 42020:2013
Client	Reading Borough Council
Planning Consultant	Shrimplin Planning & Development Ltd - Rob Shrimplin
Report Reference	BESR_Update_Thurso Close_R. Shrimplin_September_2024
Date of Report	01/10/2024
Final Survey Date	13/09/2024
Associated Reports	PRNA_Thurso Close_R. Shrimplin_February 2024 BESR_Thurso Close_R. Shrimplin_May 2024 Thurso Close - Additional Ecology Mitigation Measures v3
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References - Methodology

The bat emergence survey and report methodology undertaken adheres to the Collins, J (ed.) (2023) Bat Conservation Trust Bat Surveys for Professional Ecologists Good Practice Guidelines 4th edition for surveys undertaken in the season 2024 and 3rd edition for surveys undertaken in the previous season.

1 Introduction

1.1 Summary of Development

1.1.1 Proposed Works

Demolition of the block of flats and storage unit, which have been declared dangerous by Building Control.



1.2 Summary History & Results

1.2.1 Survey History

A Preliminary Roost & Nest Assessment was undertaken at this site on 22/02/2024

The site survey assessment concluded:

- Sufficient ingress features suited to occupation by bats existed which could not be appropriately discounted.

A moderate assessment for potential suitability to host roosting bats was applied.

Previously, due to antisocial behaviour on the first emergence survey, it was not considered safe to carry out a second survey. However, the council were able to provide security to allow for the second survey to go ahead.

A summary of these results is below.

1.2.2 Summary of Bat Emergence Survey Results

Structures Surveyed	Building 1 and Building 2		
Dates of Surveys	Most Recent BES	13/09/2024	
	1 st BES	15/05/2024	
	PRNA Assessment	22/02/2024	
Roosting value	Did bats conclusively emerge from the structure?	Yes	
Evidence	Bat Droppings No	Identified by Type N/A	DNA Profiling N/A
Summary of Bat Activity onsite	Bats were active in the area on each Emergence Survey demonstrating the weather was suitable for bat activity. Species included: - Common Pipistrelle - Noctule - Soprano pipistrelle		
Summary of Next Steps	A European Protected Species Licence from Natural England is a requirement with this application, for this site, for the proposed works. Natural England will require a current years' emergence survey for the licence submission. An application for an EPSL can only be made after planning permission / listed building consent is granted (<i>if permission is applicable.</i>) Only specifically licenced professionals are permitted to write these licences. Prior to commencement of works, a copy of the EPS Licence must be completed, submitted and approved in writing by the local planning authority. Development shall subsequently proceed in accordance with any such approved details unless otherwise amended during any application process to secure the relevant European Protected Species mitigation licence from Natural England. A brief sign-off / monitoring report shall be submitted to the local planning authority within three months of completion.		

Summary of Mitigation

Timing restrictions for when works may legally proceed will not apply.

A licenced ecologist must supervise the soft demolition of features assessed as associated with bat species at this site. These features are described and mapped in Section 5.

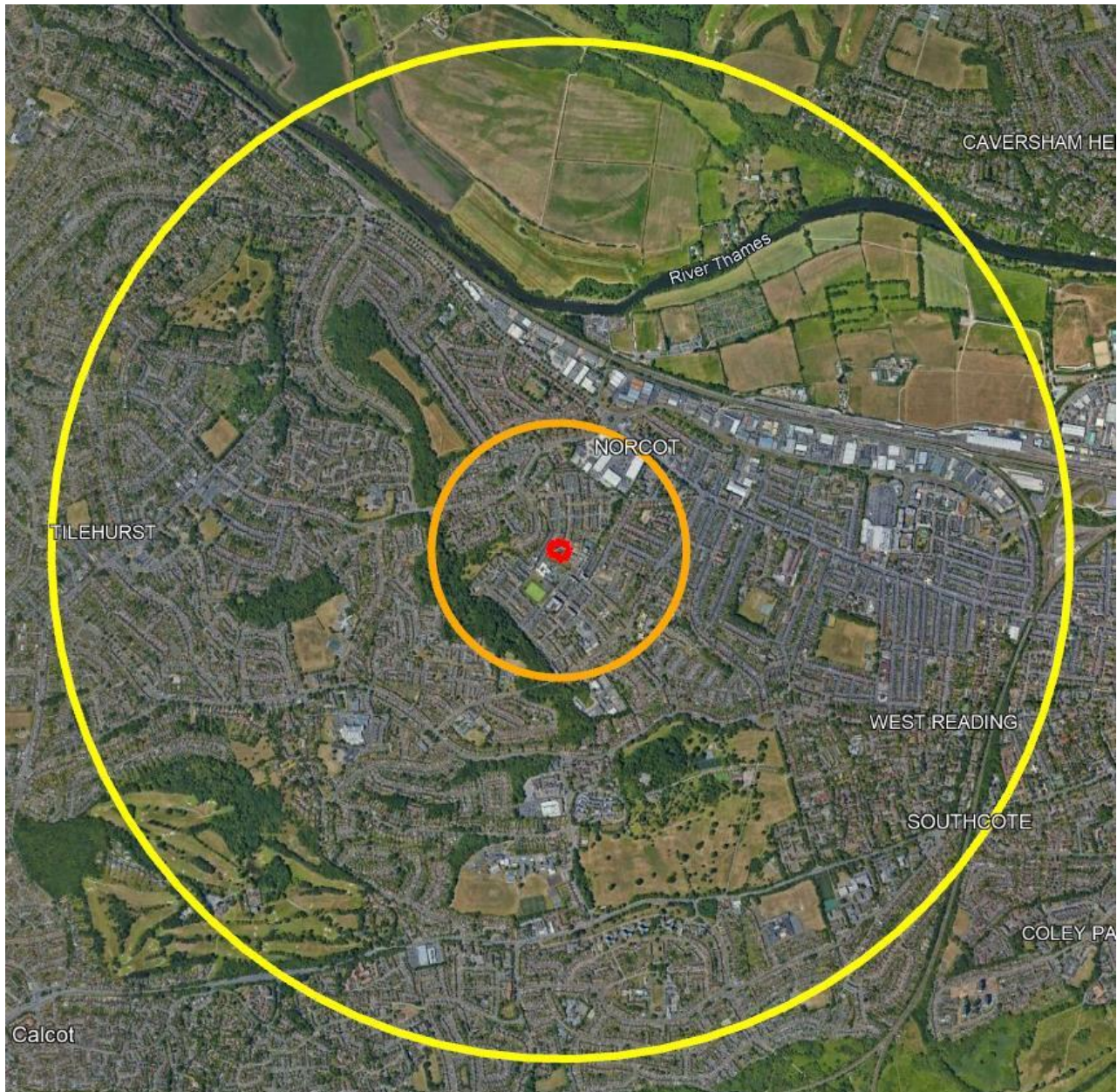
A licenced ecologist must provide a toolbox talk to those undertaking construction works at site; PRIOR to works being undertaken; pertaining to features associated with bats at this site.

The EPSL will contain a Mitigation Specification, written by the licenced ecologist, submitted and approved by Natural England and made available by the client/ acting agent, to the team undertaking works pertaining to bats.

The specification must be adhered to as a legal requirement as it forms part of the EPS Licence.

2 Site Details

2.1 500 – 2km distance. Description of Offsite Habitats



The site is not located within any designated sites. The structures surveyed are relatively near to a strip of BAP deciduous woodland which is also the Lousehill Copse LNR (300m southwest), which has some connectivity with Blundells Copse LNR, Mcilroy Park LNR and Round Copse LNR. However, there are urban built-up areas in between the site and the LNRs which limit the connectivity between the two. It is considered that the structures surveyed are not located within or adjacent to any significant land or marine designations which proposed works would negatively impact. Habitats comprise urban residential which are generally unsuited to foraging and commuting bats. EPSL for bats have been granted within 2km.

2.2 Site Map Location – Description of Onsite Habitats

The site is composed of a mixture of species poor grassland, apartment buildings, and hardstanding areas. This is set within an urbanised area within Tilehurst, Reading, provided very limited means of connectivity with good value habitat in the surrounding landscape. Building 1 and Building 2 are assessed to have moderate suitability for roosting bats, Building 3 and the Storage Unit are assessed to have negligible potential for roosting bats and nesting birds. There are also two mature trees on site.



3 Survey Results

Table 3.1

Date of Most Recent Survey	Survey Duration	Equipment Used	Weather		
			Start		End
13/09/2024	Start: - 19:02 Sunset: - 19:22 End: - 20:52	Sony A7S conversion Infrared Cameras paired with RayTec illuminators. HIKVISION Thermal Network Bullet Camera Echo metre – touch 2 Pro and Echo metre – touch 2.	Temp °C	14	10
Number of Surveyors 6			Wind (B)	1	1
			Precip.‘	0	0
			Humidity %	54	72
Survey Constraints					
The second bat emergence survey was resumed as the client provided security guards.					

3.1 Survey Set-Up, Final Survey – Figure 1



Table 3.2

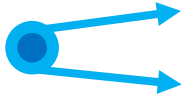
Date of 1 st Survey	Survey Duration	Equipment Used	Weather		
			Start		End
15/05/2024	Start: - 20:20 Sunset: - 20:50 End: - 22:20	Sony A7S conversion Infrared Cameras paired with RayTec illuminators. HIKVISION Thermal Network Bullet Camera Echo metre – touch 2 Pro and Echo metre – touch 2.	Temp °C	15	12
Number of Surveyors 6			Wind (B)	1	1
			Precip.‘	0	0
			Humidity %	60	77
			Survey Constraints None.		

3.2 Survey Set-Up, Final Survey – Figure 2



3.3 Map of Surveyor Location.

Table 3.4

Surveyor/Camera angle	
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3.4 Table of Emerging Bats

Date	Emerging or Re-entering Species		Identifier	Location Roost/ingress
13/09/2024	Common pipistrelle	1	A	The roost is likely to be a day roost. Accessed via a window.

3.5 Table of Emerging Bats

Date	Emerging or Re-entering Species		Identifier	Location Roost/ingress
15/05/2024	Common pipistrelle	2	A	The roost is likely to be a day roost. Accessed via a window.

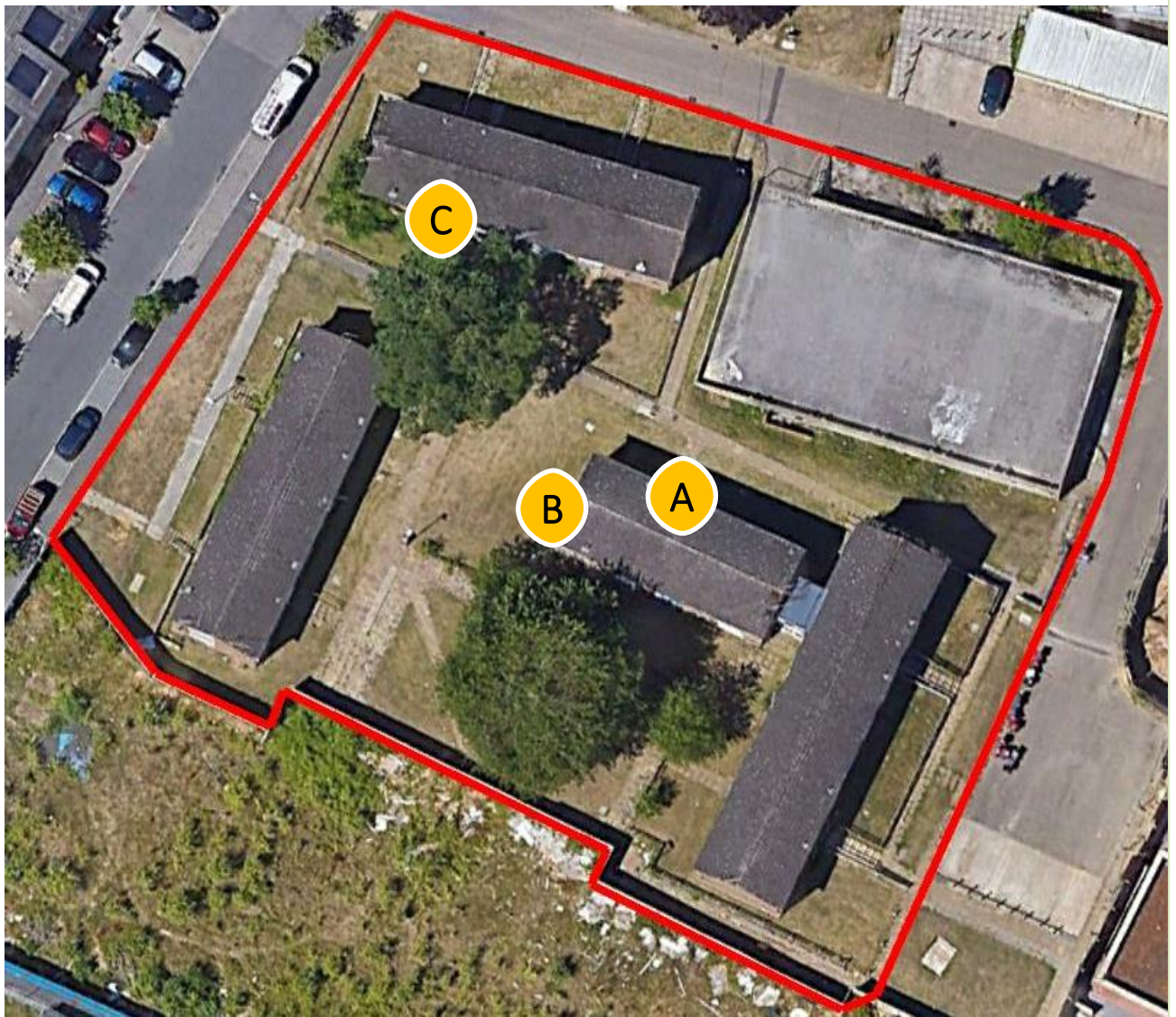
3.6 Table of Emerging Bats

Date	Emerging or Re-entering Species		Identifier	Location
15/05/2024	Common pipistrelle	1	B	The roost is likely to be a day roost. Accessed via a window.

3.7 Table of Emerging Bats

Date	Emerging or Re-entering Species		Identifier	Location
15/05/2024	Common pipistrelle	1	C	The roost is likely to be a day roost. Accessed via the eaves.

3.7.1 Location



Site Map – Emergence Location



Emergence Location A



Emergence Location B



Emergence Location C

4 Interpretation of Roost Assessment & Characteristic.

4.1 Roost Confirmed

The Bat Emergence Surveys undertaken answered the following criteria. Therefore, an assessment and conclusion as to the unmitigated impacts has been made possible.

- Are bat roosts present or likely to be absent?
 - o Present
- Which bat species use the site for roosting?

Species	Rarity
Common pipistrelle <i>Pipistrellus pipistrellus</i>	Common & Widespread. Least concern.

- How many bats do these roosts support?
 - o Peak count 4
- Where are the bat access points?
 - o Windows and eaves
- At what times of year are bats present?
 - o Active season – May to September
- What type of bat roosts are present?

Bat Roost Types. (Definitions Written by the NE Earned Recognition Project)		Optimum Period for Works
Day Roost	Day Roost: A place where individual bats, or small groups, rest or shelter in the day during the summer.	No restrictions – assuming bats can be excluded if present in small numbers or otherwise safely managed.

- Could the structures support hibernating or torpid bats
 - o Whilst the presence of a bat roost would typically suggest a moderate suitability for hibernating bats, the highly urbanised environment, combined with the fluctuations in temperature and humidity that would be caused by the holes in the roof following the fires, it is considered the structures are of Low suitability for hibernating bats.
- What flight lines do the bats use after emerging from the roost?
 - o No clear flight paths identified.

5 Mitigation Requirements

5.1 Legal Framework & Responsibilities of the client/acting agent - EPSL

Submit this Bat Emergence Survey Report together with any other related reports to the Planning Authority.

Once planning approval has been granted, an Ecologist will be engaged to undertake the EPSL application. This action requires specific professional qualifications and experience. Ecological Surveys Ltd is able to perform this action on your behalf.

It is worth noting the Natural England EPSL approval time can vary significantly and 90 days has been exceeded on occasion. The ecologist has no influence over the approval time taken. Consequently, early instruction is strongly advised.

- The EPSL requires specific commitments to be agreed by the client for the protection of bats and maintenance of roosts onsite.
- The EPSL requires that the final date the site was inspected is provided. The 1st or last Emergence Survey undertaken may provide this date for the licence. The date must be within 3 months of the licence application being made. If the EPSL application is made outside of this 3-month timeframe, a surveyor must be commissioned to inspect the site/roosting features prior to application. The client must commission this.
- The EPSL will determine the actual requirements for this site in order for proposed work to proceed and give the timeframe under which must occur. The EPSL requirements must be strictly adhered to. Any changes to the works will require a modification application to be submitted to Natural England for approval.
- Once Natural England have granted permission to proceed with works as pertaining to the specific details within the EPSL arrange for the appointed ecologist to supervise works on site for the protection of bats. Works which occur without specified supervision will break the terms of the licence and a criminal act will have been committed.
- The ecologist must be professionally qualified and licenced to handle bats and formally appointed/booked with as much notice as possible prior to the roof strip/works commencing. Failure to plan ahead may mean that the Ecologist is unable to attend site according to the contractor's schedule and as NO LICENCED WORKS can be undertaken this would have serious implications for the project schedule.
- The person appointing the contractors must ensure that the contractors are aware of the EPSL requirements, have a copy of the E3 Mitigation Specification and that the Supervising Ecologist is fully aware of the length of time they are likely to be required on site.
- It is illegal for any construction to occur where an EPSL has been required UNLESS the acting ecologist:
 - Is either the 'Named ecologist' or 'accredited agent' specified on the EPSL (and any authorised assistants working directly under the supervision of one the aforementioned categories).
 - It is a criminal offence to disturb/handle bats unless it is to save the bat from harm, injury or death, none of which must as a result of your own action. Consequently, uncovering a bat during construction / demolition works and moving it to permit works to continue, without a licence, is a criminal offence.
- The client/acting agent and all contractors must refer to the law and legislation for the

protection for bats. A brief overview is given within [Appendix 1: Legislation Bat and Bird Species](#) for details of Bat and Bird Law and Legislation and <http://www.nwcu.police.uk/> regarding avoiding committing wildlife crime.

- In the event that a bat is found during any unsupervised stages of the works, activity should stop in the vicinity of the bat/s and advice should be sought from Ecological Surveys Ltd (Tel: 07736 458609) or from the Bat Conservation Trust Helpline (Tel: 0345 1300 228). Bats should not be handled, but should ideally be left in situ, gently covered until advice is obtained, unless leaving them is a bigger risk to them than moving them (with gloves) to a place of safety.
- In addition, structures associated with this site may not be demolished if nesting has occurred until all nesting birds' chicks are fledged and flown (nesting is usually between March and September inclusive). Nesting birds are protected by law and further advice should be sought from the acting ecologist if birds are nesting.
- The mitigation given in this report does not negate or alter the responsibilities of the client in respect of any other ecological reports associated with this site.

5.2 Habitat Regulations

5.2.1 The following three regulations must also be taken into account.

- The proposed works or development may be for the purposes of "preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment." [R.44(2) (e)];
- "There is no satisfactory alternative" [R.44(3)(a)]; and,
- "The action will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range." [R.44(3)(b)].

5.3 Works Schedule – without exception, the following applies: -

- Proposed site works which will impact (disturb/damage/destroy) any features associated with this bat roost can only legally proceed on receipt of the EPSL licence;
- Must proceed & end strictly between the dates given on the EPSL licence;
- Cannot proceed without the acting ecologist supervising the disturbance, damage or destruction of the roost and associated features;
- Any extension to timings for works must be applied for in advance to Natural England via the acting ecologist.

5.3.1 Timing of Works:

The timing of the proposed works onsite will be dictated by and sensitive to the type of roost assessed as being onsite. The type of roost will determine the dates given on the EPSL for when work is legally allowed to proceed and when it must cease.

Day Roost

Construction work which directly or indirectly affects this type of bat roost may be undertaken during any month of the year. Wherever possible, the client should consider avoiding dates from May to September to ensure minimal impact to any bats which might be present.

- Only under an approved European Protected Species Licence, which legally allows this to occur;
- Only between the dates given on the European Protected Species Licence;
- Only under supervision by the licenced ecologist or their appointed agent (also licenced).

There is no evidence of the property being used as a hibernation roost, due to the open nature of the buildings following arson damage, the humidity and temperature of the buildings are unlikely to be suitable for hibernation.

5.4 Pre-Construction Phase

5.4.1 Ecological Supervision Pre-Renovation Phase

- a) The licensed ecologist, or their appointed agent (also licenced). must supervise all works deemed likely to disturb, damage or destroy bat roosts and their associated roosting features on this site in order to comply with the law and the terms of the European Protected Species Licence.
- b) The licensed ecologist, or their appointed agent (also licenced), must be present to protect and safeguard any bats which may be present on site.
- c) Please note, the works will be scheduled for when the least harm by impact is expected, as above.

5.4.2 Booking the Acting Ecologist to Supervise Works

- d) The licensed ecologist, or their appointed agent (also licenced), must be commissioned by the client/acting agent to be on site at a date as determined by the EPSL and where timings are sensitive to bat habitation.
- e) As the work associated with the disturbance, damage or destruction of onsite roosts and associated features cannot proceed without a licensed ecologist, or their appointed agent (also licenced), being present, it is strongly advised that sufficient communication/liaison is actioned between the client, the construction team and the licensed ecologist, or their appointed agent (also licenced).
- f) It might not be possible for the licensed ecologist, or their appointed agent (also licenced), to attend on any given date, so some flexibility may be required.

5.4.3 Toolbox Talk – Construction Team

- g) The following information will be provided to the construction team.

TOOLBOX TALK

In the UK all species of bat are protected by law. Breaking the law can lead to fines of up to £5000 per bat and/or up to six months in prison.

They tend to return to the same roosts each year, and these sites are also protected whether bats are present or not.

- *It is a criminal offence for anyone without a licence to:*
- *Damage, destroy or obstruct access to any place used by bats for shelter, whether bats are present or not, apart from under the supervision of an acting licenced ecologist and only under the detail of a European Protected Species Licence.*
- *Kill, injure or handle a bat – unless the bat is in imminent danger.*
- *Disturb a roosting bat.*
- *Be in possess of a bat (whether alive or dead)*

General Locations of Bats in Buildings

Source: Collins, J (ed.) (2023) Bat Conservation Trust Bat Surveys for Professional Ecologists Good Practice Guidelines 4th edition

Figure 5.2. illustrates places where bats frequently roost (© Historic England with the permission of BCT)⁶⁹.



Places that bats may use in buildings:	4 Gable end	9 Sash window	15 Wood or tile cladding
1 Cellar	5 Space between downpipe and wall	10 Attic	16 Quoins
2 Barge board and soffit	6 Window sill	11 Ridge tiles	17 Loose mortar between bricks
3 Lead flashing	7 Guttering	12 Broken tiles	18 Roof joists
	8 Porch	13 Roofing felt	
		14 Eaves	

Do

Refer to or request the MITIGATION SPECIFICATION as approved for the European Protected Species Licence.

Don't

Start work without it...!

Do

Remove any roof tiles and batons, barge, soffits, fascia, cladding/weatherboard by hand, with hand tools whilst being aware a bat could be roosting below.

Don't

Put weight onto the feature which would close any gaps beneath.

Slide or scrape a feature away from its surface.

Do

Call the licenced ecologist to you if you notice droppings beneath or on top of any features – tiles, lining, on wall-tops, stuck to walls/windows.

- *Droppings are black and sticky/crumblly if fresh, dried and grey if old.*

Don't

Handle any bat uncovered unless it is in imminent danger of being harmed.

The construction team are obliged to be aware of how they must either protect roosts and access to roosts that are being retained; modify roosts to enable bat habitation post construction; re-instate roosting features; or create new roosting features.

5.4.4 Supervising Ecologist Responsibilities

- h) An internal & external inspection of the roost will be completed by the acting ecologist prior to any work associated with roosting features commences.
- i) The acting ecologist will advise those associated with the works (roofing and associated features) which could or will disturb, damage or destroy the roost/s, of their legal responsibilities and how to proceed for the safety and protection of any bats potentially onsite.
- j) The acting ecologist will be on hand for the safe capture and release into secure protected bat provision for any bats uncovered onsite during works.

5.4.5 Safe Capture Bat Provision

- k) Bat box provision is required for the safe capture and relocation of any bats uncovered during pre-construction work by the ecologist.

The ecologist will provide this provision/s unless arranged otherwise with the client.

- Provision will be erected in a location suited to protection and safety of any occupying bats by the developer under guidance from the ecologist prior to the soft demolition – roof strip: more than 3m high, away from predation, on a S or W orientation on site, away from any artificial light spill, in proximity to suitable commuting habitat.
- Artificial light spill is restricted/prohibited in the vicinity of these boxes and their flight lines.
- These boxes will be retained throughout construction process.
- Boxes occupied by bats (where bats are relocated to them) must be retained indefinitely.

5.4.6 Construction Phase: - Retention/Modification or Creation of Bat Roosts

The following characteristics will be applied to the restoration/replacement or creation of new roosts. Where this is not viable owing to the building design/other, as near as possible with improvement or enhancement must be aimed for.

Quantitative Characteristic When modifying a roost or access into a roost or creating a new roost after destruction of a roost, the quantitative characteristic must remain the same: - there should be no net loss of roost sites. There is an expectation that mitigation/compensation will provide an enhanced resource compared to that lost.	Three roosts sites with three access points must be mitigated for. As the buildings are to be demolished with no replacement, equivalent roosts will be provided in buildings off site. This will be achieved through the erection of 3x bat boxes. In addition, any new buildings erected on site must contain bat roosting features.
Qualitative Characteristic The Qualitative Characteristic should remain the same: - the plans should aim to replace like with like. The modified or newly created roost must provide the same function as before: be suited to the same species & average number of bat and roost type e.g. maternity, hibernation, day/night and be of similar capacity/fit for purpose to accommodate quantity of bats.	A, B, C: Roost and access points provision will be appropriate for 3x day roosts. A, B, C: Must allow crevice dwelling, suited to 1-2 bats in the active season of May to September. Must not be intruded by artificial lighting.
Functional Characteristic The Functional Characteristic should remain the same or be further enhanced so that the roost can continue to function as before, e.g. be accessed from the same or similar location. This may include ensuring the habitat around the roost is maintained e.g. hedge-line	Orientation of present roosts include ingress on north, west and south facing aspects, suggesting orientation is not an important driver of roost selection on this site. The proposed boxes will be erected on south east and north west aspects, largely mirroring the existing roosts.

protected, no or restricted lighting on access or flight lines.	
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5.4.7 Artificial Lighting Strategy

- The replacement roosts will be protected from artificial light intrusion:
 - o No external lighting directed towards or spilling upon the roost ingress points.
- Light ONLY when and where it is needed for health and safety.
- Prevent light-spill and spread by eliminating bare bulbs, upward pointing lights, keeping light near to or below the horizontal. E.g., flat cut-off lanterns. Such light should be positioned to only illuminate the required areas, limiting light spill, both horizontally and vertically. Additionally, hoods, cowls, louvers and/or shields may be utilised to further direct any lighting.
- Decrease light intensity, avoid the UV spectrum: attracting insects is NOT an aim.
- Reduce height of lighting columns. Or allow for lower main beam angles to reduce glare.

5.4.8 Impact Avoidance During the Construction Phase

All activities on site should bear in mind the potential for other wildlife or the environment being harmed through the process of development from inception to end, with a proactive approach occurring for lawful protection of wildlife and the environment regarding use of materials, machines, chemicals, and human activity on site. Although this reports focus is bats, there are laws governing the protection of species and habits which remain applicable, and which would be negligent to ignore. Therefore: -

- Prevent invasive non-native plants on development land managed during this time from spreading into the wild or a neighbour's property and causing a nuisance. Restrictions apply to mulching and earth moving which may cause the spread of invasive non-native plants and animals.
- Restrictions apply to activities that cause the spread of non-native animals into the wild.
- Contractors must ensure that no harm can come to wildlife by maintaining the site efficiently, clearing away any material such as wire in which animals can become entangled and preventing access to toxic substances.
- Trenches or large excavations should be covered overnight to prevent wildlife such as badgers or hedgehogs falling in and failing to escape. If this is not possible then a strategically placed plank may provide a means of escape.
- Any large bore pipes should be capped at the end of the day to reduce the potential for badgers and other wildlife entering and becoming trapped.
- Areas that are being retained should be protected from damage during construction by erecting Heras (or similar) fencing around these features. The fencing should be erected outside the line of the canopy as this helps protect the roots from compaction of the soil.
- Any areas proposed for planting post-development should be fenced off where possible to prevent compaction of the soil through vehicle movements.

- If there is a substantial delay before development commences, the site should be maintained in a way that would prevent wildlife colonising it and causing constraints in the future. Such management should include mowing grassland at least twice a year and preventing scrub encroachment.
- Piles of brush wood and or log piles should be carefully inspected for signs of wildlife prior to their removal. This is especially crucial during the period March – September (inclusive) as some species of bird choose such sites to construct their nests. Ideally removal of such features should be done outside of the nesting season. If this is not possible, it is recommended that these features are covered in such a way as to exclude / prevent birds and / or reptiles taking up residence. Should nesting birds or reptiles be discovered, work must cease immediately, and ecological advice sought.
- All hedgerows / trees / shrubs removal should be done outside of the bird nesting season March – September (inclusive). If removal is not possible during this period, careful checks of such, must be conducted by a suitably experienced ecologist prior to works commencing.

5.4.9 Post Construction Phase

On completion of works, the client /agent must inform the acting ecologist that works have been completed in line with the Mitigation Specification.

- It is the responsibility of the client/agent to initiate this contact.
- A short report by the ecologist will verify to the LPA/NE that the terms and conditions of the EPSL has been complied with.

Summary Mitigation Specification

A fully detailed Mitigation Specification will be necessary for the purpose of applying for a European Protected Species Licence.

Unmappable Features: EPSL Application; Toolbox talk.

Safe capture box		Soft demolition supervision		Replacement roosting features (bat boxes)	
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6 Conclusions

The survey results conclusively indicate over two emergence surveys during the active season that bats are occupying roosts within the structure identified as being Building 1 and 2.

Bats and their roosts are afforded legal protection: making it illegal to destroy a bat roost, or to disturb bats within a roost without a licence.

Unmitigated works to features associated with bats will disturb, damage or destroy roosts on this site causing disturbance harm and death to these species.

In respect of the Habitat Regulations, the following three regulations have been taken into account in respect of bats:

The proposed works or development may be for the purposes of "preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment." [R.44(2) (e)];

"There is no satisfactory alternative" [R.44(3)(a)]; and,

"The action will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range." [R.44(3)(b)].

An application for a European Protected Species Licence is required, with the licence approved by Natural England and procured prior to any works commencing.

The roosts have been characterised as three day roosts, peak count 2, 1, and 1 respectively, active May to September.

The ingress points have been identified as on the north and west through broken and/or open windows on Building 1, and via a gap under the eaves on the south on Building 2.

The unmitigated impacts have been assessed as destroying three roosts of local importance when the buildings are demolished.

A Mitigation Specification will be produced as part of the EPSL application and will detail the method for the protection of these bats whilst legally enabling the disturbance/modification or destruction of these identified roosts. This specification will be made available by the client/acting agent to the team responsible for works affecting the roosts.

The Mitigation Specification will detail the required timing of commencement of works; necessary supervision by the acting ecologist; toolbox talk; incorporation of mitigation/compensation measures; protection of onsite foraging and commuting habitats, where applicable; artificial lighting strategy.

The client must apply for and obtain planning approval from the LPA before the licenced ecologist can submit a licence application to Natural England. Once the Licence is approved and providing the mitigation measures contained within this report are agreed and adhered to, it is considered that the proposed development will have not necessarily have a negative impact on local bat populations within this area.

END

7 References and Further Information

- Battersby, J. (Edited and compiled; 2005). *UK Mammals: Species Status and Population Trends*. JNCC/Tracking Mammals Partnership 2005. ISBN 1-86107568-5 <http://www.jncc.gov.uk/page-3311>
- Collins, J. (ed.) (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn.)*. The Bat Conservation Trust, London.
- Collins, J. (ed.) (2023). *Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edn.)*. The Bat Conservation Trust, London.
- Conservation of Habitats & Species Regulations 2010. HMSO
- Countryside and Rights of Way Act 2000. HMSO
<http://naturalengland.communisis.com/naturalenglandshop/docs/IN13.6.pdf>
- Mitchell-Jones, A.J. & McLeish, A.P. (2012) *The Bat Workers' Manual*. Pelagic Publishing, Exeter.
- UK Biodiversity Action Plan www.ukbap.org/uk
- Waring, S. (2012). *Bats & Breathable Roofing Membranes*. University of Reading www.batsandbrms.co.uk
- www.gov.uk/guidance/bats-advice-for-making-planning-decisions

Please refer to all details regarding Method Statement, Roost Characteristics, Surveys for Structures, as per:

- Collins, J. (ed.) (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn.)*. The Bat Conservation Trust, London.
- Collins, J. (ed.) (2023). *Bat Surveys for Professional Ecologists: Good Practice Guidelines (4th edn.)*. The Bat Conservation Trust, London.
- UK Bat Mitigation Guidelines – September 2023 www.cieem.net

7.1 Appendix 1: Legislation

Bat Conservation Trust

The Habitats Directive and respective domestic legislation

1.2.3 Annex II of the Council Directive 92/43/EEC 1992 on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive) lists animal and plant species of Community interest, the conservation of which requires the designation of Special Areas of Conservation (SACs); Annex IV lists animal and plant species of Community interest in need of strict protection. All bat species are listed in Annex IV; some are listed in Annex II.

1.2.4 In the UK¹⁶, the EC Habitats Directive was transposed into national laws and the regulations implementing the objectives of the Directive include the Conservation of Habitats and Species Regulations 2017 (as amended) (England and Wales), the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) (Scotland) and the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended). Commonly the regulations are referred to as the Habitats Regulations¹⁷. Hereafter, they are referred to as such.

1.2.5 The UK left the European Union on 31st January 2020 and is therefore no longer bound by European legislation. However, the related domestic legislation has been retained and therefore bats receive the same level of protection as prior to our departure and will do so until this is changed by specific legislation. The European Commission (EC) published an updated version of the 'Guidance document on the strict protection of animal species of Community interest under the Habitats Directive' (EC, 2021) and this remains a relevant source of information for those working with bats, despite Brexit.

Legal framework

1.2.6 Although the precise wording of the legal protection afforded to bats differs between countries in the UK, it all falls within a common framework making unlawful specific actions against bats, but with differing emphasis on the state of mind (intentional, reckless, deliberate) needed to evidence offences. The legislation does not, in the main, mention bats except in annexes and schedules. The Habitats Regulations refer to specimens of European Protected Species (EPS). All species of bats found in the wild in the UK are EPS.

Kill, injure, capture/take bats

1.2.7 It is unlawful to kill, injure, capture or take a wild bat anywhere in the UK. In England, Wales and Northern Ireland the offence requires a deliberate action; in Scotland it requires a deliberate or reckless action. All offences of this nature are identified within the Habitats Regulations.

Disturbing bats

1.2.8 It is unlawful to disturb bats, in particular if the level of disturbance can be shown to impair their ability to survive; to breed or reproduce; to rear or nurture their young; to hibernate or migrate; or to significantly affect local distribution or abundance. In England, Wales and Northern Ireland the offence requires a deliberate action. In Scotland the offence requires a deliberate or reckless action. All offences of this nature are identified within the Habitats Regulations.

1.2.9 In Scotland it is also an offence in the regulations to deliberately or recklessly disturb a bat whilst it is occupying a place of shelter or protection. This offence does not require the level of disturbance to be significant.

1.2.10 In England and Wales it is also an offence under the Wildlife and Countryside Act¹⁸ to intentionally or recklessly disturb a bat, whilst it is occupying a place of shelter or protection.

1.2.11 The Environment Act 2021 (Section 111) introduces a new exception to the Wildlife and Countryside Act offences for any actions taken under the auspices of a Habitats Regulations licence.

1.2.12 Another change to the Wildlife and Countryside Act brought in by Section 111 of the Environment Act, which came into force in September 2022, is that licences can now be issued in England (but not Wales) for reasons of overriding public interest providing there is no other satisfactory solution and the activities granted by the licence will not be detrimental to the survival of any population of the species of animal or plant to which the licence relates. This provision for development activities was not previously available within this legislation.

1.2.13 A householder who disturbs a bat in its place of shelter or protection does not commit an offence if they first seek the advice of Natural England (NE) or Natural Resources Wales (NRW) and allow time for such advice to be provided. If the bat is in the living area of a dwelling house, it is not an offence in any circumstance to disturb it. This provision does not apply to Scotland or to Northern Ireland.

Harassing bats

1.2.14 In Scotland only, it is an offence to deliberately or recklessly harass a bat or a group of bats. No definition of 'harass' is provided within the regulations and therefore this is open to interpretation. With reference to legislation protecting people, harassment includes causing alarm or distress.

Damage or destruction of roosts

1.2.15 Throughout the UK it is illegal to damage or destroy a place used by a bat for breeding or resting. All offences of this nature are identified within the Habitats Regulations. This offence is unique in that it can be committed accidentally. This is a strict liability offence; no element of intentional, reckless or deliberate action needs to be evidenced.

Obstructing access to a breeding site or resting place

1.2.16 In Scotland it is an offence under the Habitats Regulations to deliberately or recklessly obstruct access to a breeding site or resting place of a bat or to otherwise deny a bat the use of such a place.

1.2.17 In Northern Ireland it is an offence under the Habitats Regulations to deliberately obstruct access to a breeding site or resting place used by a bat.

1.2.18 In England and Wales, it is an offence under the Wildlife and Countryside Act to intentionally or recklessly obstruct access to any place used by a bat for shelter or protection. As with intentional or reckless disturbance, the Environment Act 2021 (Section 111) introduces a licensing purpose for reasons of overriding public interest and an exception for any actions taken under the auspices of a Habitats Regulations licence.

1.2.19 A householder will not commit an offence if he or she obstructs access to a bat roost in a dwelling house providing they first seek the advice of NE or NRW and allow them time to provide such advice. This defence does not apply in Scotland or to Northern Ireland.

¹⁶ The EC Habitats Directive does not apply to the Isle of Man and the Channel Islands, which are part of the British Isles but not part of the UK.

¹⁷ In Scotland and Northern Ireland the Habitats Regulations have been amended on a number of occasions, most particularly in 2007.

¹⁸ The Wildlife and Countryside Act 1981 has been amended on numerous occasions, in particular by the Countryside and Rights of Way Act 2004 (CROW) and the Natural Environment and Rural Communities Act 2006 (NERC).

Possession and sale of bats

1.2.20 Under the Habitats Regulations, it is an offence to be in possession or control of a EPS of bat alive or dead (or any part of a bat or anything derived from a bat, although bat droppings are generally considered to be acceptable), or to transport a bat, to sell or exchange a bat or to offer to sell or exchange a bat taken from the wild.

1.2.21 It is an offence under the Wildlife and Countryside Act in England and Wales to: offer or expose for sale any bat of a species listed in Schedule 5 and taken from the wild; or to possess any bat or anything derived from a bat for the purposes of sale; or to publish or cause to be published any advertisement offering to buy or sell a bat.

Illegal methods for taking or killing bats

1.2.22 The Habitats Regulations in all parts of the UK contain provisions prohibiting certain methods of taking or killing bats even when the activity itself has been licensed.

Offences relating to licensing

1.2.23 Actions, which would otherwise be illegal, can be made lawful if licensed by the appropriate licensing body¹⁹. It is an offence anywhere in the UK to make a false statement in order to obtain a bat licence or to fail to comply with the conditions of a bat licence.

Attempts and possession of items to be used to commit offences

1.2.24 It is an offence in all parts of the UK to attempt to commit any criminal offence or to possess items to be used to commit offences identified in any of the legislation referred to above. Legislation throughout the UK is such that it may not be only those who are directly responsible for offences that are liable. In Scotland, those who cause or permit offences are guilty, as are those who aid or abet offences elsewhere.

Defences

1.2.25 It is not illegal anywhere in the UK:

- to take a disabled bat, for the sole purpose of tending it and releasing it when no longer disabled, as long as that person can show that it was not disabled unlawfully by them;
- to kill a bat, as long as that person can show that the bat was so seriously disabled, other than by their own unlawful act, that there was no reasonable chance of it recovering.

1.2.26 These defences, however, only apply in circumstances where there is no reasonable alternative, and when the act will not be detrimental to the maintenance of the species at a Favourable Conservation Status (FCS) in its natural range.

Protected areas

1.2.27 Some species of bat found in the UK (greater and lesser horseshoe, barbastelle, Bechstein's and greater mouse-eared bat) are listed in Annex II of the Habitats Directive. This means that they can be listed as an interest or 'qualifying' feature of a

SAC (the reason why the SAC is designated) as part of the Natura 2000 network. Under Article 6 of the Habitats Directive²⁰, this means they are also a relevant consideration in a Habitats Regulations Assessment (HRA), which provides these species with additional legislative protection. More information on HRAs can be found on the GOV.UK website²¹. Following the departure of the UK from the European Union, UK Natura 2000 sites are now referred to as the 'National Site Network'.

1.2.28 Across the UK, Sites of Special Scientific Interest (SSSIs) [Areas of Special Scientific Interest in Northern Ireland (ASSIs)] have been identified by the Statutory Nature Conservation Bodies (SNCBs). Some such sites have been notified for their bat interest. Legislation relating to such areas identifies criminal offences if bats are disturbed, if roosts are damaged or if certain operations are undertaken without consent in places notified for their bat interest. In England and Wales, the relevant legislation is the Wildlife and Countryside Act 1981, and in Northern Ireland, the Environment (Northern Ireland) Order 2002. In Scotland, the Nature Conservation (Scotland) Act 2004 creates and protects SSSIs although no sites have been designated for bats. More information on SSSIs can be found on the SNCB websites^{22, 23, 24, 25}.

Police and court powers

1.2.29 A police constable in any part of the UK has the power, where they have reasonable cause to suspect that a person is committing or has committed an offence, to stop and search them, search or examine any relevant item in their possession, and seize it. They can also enter land other than a dwelling house without a warrant, or enter and search a dwelling house with a warrant. Constables are empowered to take with them any person or any equipment needed to exercise their powers. Legislation in England and Wales provides a defence for police officers who commit certain offences during the course of their enquiries, otherwise their acts are authorised by a licence issued by the SNCBs.

1.2.30 Those found guilty of offences relating to bats can be sentenced to six months' imprisonment and fined. Legislation in England and Wales has removed the maximum amount of fine that can be imposed, and courts there now have the power to impose unlimited fines²⁶.

1.2.31 In Scotland, if found guilty of an offence on summary conviction persons can be imprisoned up to 12 months and/or receive a fine up to £40,000. If found guilty on conviction on indictment, persons can be imprisoned up to 5 years and/or receive an unlimited fine.

1.2.32 In Northern Ireland, maximum fines at present are set at £5,000 but a penalty can be imposed for each animal involved.

1.2.33 Courts have a wide range of other sanctions available to them; for example, they can order forfeiture of anything used to commit offences or proceeds of crime orders can be made that allow for any profit arising from criminal activity to be confiscated.

¹⁹ Natural England, Natural Resources Wales, NatureScot or Department for Agriculture, Environment and Rural Affairs (Northern Ireland).

²⁰ Details of a HRA Handbook can be found at <https://www.dtapublications.co.uk/handbooks>

²¹ <https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site>

²² <https://www.gov.uk/guidance/sites-of-special-scientific-interest-public-body-responsibilities>

²³ <https://naturalresources.wales/guidance-and-advice/environmental-topics/wildlife-and-biodiversity/protected-areas-of-land-and-seas/sites-of-special-scientific-interest-responsibilities-of-public-bodies-and-statutory-undertakers/7/lang-en>

²⁴ <https://www.nature.scot/professional-advice/protected-areas-and-species/protected-areas/national-designations/sites-special-scientific-interest-sssis#:~:text=Scotland%20has%201%20422%20SSSIs%2C%20covering%20around%201%20011%20000%20hectares,SSSI%2C%20which%20extends%20to%20more%20than%2029%20000%20hectares.>

²⁵ <https://www.daera-ni.gov.uk/topics/land-and-landscapes/areas-special-scientific-interest>

²⁶ <http://www.legislation.gov.uk/uksi/2015/664/contents/made>

Interpretation of legislation

1.2.34 Legislation throughout the UK commonly uses the words intentional, deliberate or reckless. There is substantial legal opinion as to the meaning of each. The term 'roost' is not used within the legislation itself and 'disturbance' is also not defined. Commonly, questions are posed as to how long bat roosts retain their legal protection when they cease to be used. Some advice is provided in the EC guidance (2021).

Environmental Damage and Environmental Liability Regulations

1.2.35 These regulations aim to prevent damage to the environment, which includes protected species such as bats and natural habitats. This damage must have a significant adverse effect on reaching or maintaining FCS status for the protected species or natural habitat involved.

1.2.36 These regulations require an operator of an activity to take all practicable steps to prevent environmental damage and give enforcing authorities the power to serve notice on such an operator and specify what action is needed to prevent environmental damage. Failure to comply with these requirements is an offence.

1.2.37 Where environmental damage has been done, remediation orders can be imposed under these regulations to repair damage. This can be used alongside a prosecution under the Habitats Regulations to gain better outcomes for bats and their habitats.

1.3 Licensing

1.3.1 The two main types of licence relevant to these guidelines are EPS survey licences (also known as science and education or conservation licences) and EPS mitigation licences (also referred to as derogation, mitigation or development licences). Both types of licence permit activities that could otherwise be an offence. Below is a summary at the time of writing, but it is necessary to check the relevant licensing body websites to ensure the most up-to-date and relevant information is obtained.

Survey licences

1.3.2 Survey licences are issued by the following licensing authorities:

- England: NE
- Wales: NRW
- Scotland: NatureScot
- Northern Ireland: Northern Ireland Environment Agency, Department of Agriculture, Environment and Rural Affairs (DAERA)

1.3.3 Licences issued in one country of the UK cannot be used in a different country; it is necessary to obtain a licence from each of the individual countries you aim to work in.

1.3.4 These licences do not cover the damage or destruction of a roost site for development; see instead EPS, derogation, mitigation or development licences.

1.3.5 Survey licences are issued to ecologists under the Habitats Regulations and Wildlife and Countryside Act to permit them to undertake activities that could otherwise be illegal and lead to an offence, such as entry into a bat roost, temporary disturbance of bats during a survey (including use

of a torch and endoscope) and capture and handling of bats. **Different activities are permitted under different survey licences so ecologists should always check what they are actually licensed to do.**

1.3.6 Ecologists go through a period of training and peer review before being signed off for a licence by their trainer and/or referees. The possession of a survey licence is an indication that the surveyor has reached a minimum standard of training and experience, although this does not relate to impact assessment or the design and implementation of avoidance, mitigation, compensation, enhancement and monitoring schemes. It is, however, worth mentioning that there are no set 'national' criteria established for assessing surveyor competence.

1.3.7 Ecologists without a survey licence should not enter known roosts or sites where signs of bat presence (or possible bat presence) have been found. Even where no signs have been found, surveys of potential roost sites should be carried out by ecologists with a survey licence covering the relevant activities. This will ensure that the ecologist knows what to look for and where, in order to subsequently make a judgement on the suitability of a potential roost site for bats. Licensing authorities may reject survey information completed by non-licensed persons.

1.3.8 A suitably qualified ecologist (in other words a competent ecologist) is required by BS42020 to undertake bat surveys. Some Local Planning Authorities (LPAs) will also have specific requirements regarding surveyors being licensed if carrying out bat surveys for planning purposes, so local requirements should always be checked. It is also important to demonstrate competence in survey work for the submission of bat mitigation licences to the relevant licensing authority.

1.3.9 Although a limited amount of trapping (using mist nets, harp traps and lures) is permitted under some survey licences (class licences in England), a relevant project licence will be required for more complex projects and for any projects involving the attachment of radio transmitters. Other marking methods, not covered by these guidelines, also require a licence, such as the fitting of tags or rings. A project licence is granted for specific species and numbers of bats, for specific dates and at a particular location. When applying for a project licence, the applicant needs to demonstrate that the level of disturbance is justified and that he or she has the necessary experience to undertake the work.

Conservation licences

1.3.10 Conservation licences may be issued to allow improvements to a bat roost where the main purpose of the work is for conservation of the species at a specific site. These licences would normally only be issued for a specific proposal at a specific site and only for the duration of the work.

Photography/filming

1.3.11 A licence to photograph (including filming) bats is not required if the photography is an **incidental part of other licensed bat work** and it causes no extra disturbance above that caused by the licensed activities. Such photography includes:

- non-flash photography (i.e. using only natural light or low-level artificial light such as a domestic torch or low-output LED) of roosting bats and of people carrying out licensed work in and around roosts;
- flash photography in roosts and hibernacula only when no bats are present;

- photography of bats caught at traps during survey work;
- flash photography of individual bats during a roost survey for identification purposes or of groups of bats for survey purposes; and
- the use of night vision aids (NVAs, including night vision/infrared/thermal imaging cameras) to record roosting (as part of other licensed work) or emerging bats either without the use of further illumination or using infrared illumination (not a red filter).

1.3.12 These only apply where the licence holder considers that this would cause less disturbance than handling or prolonged illumination of bats. It is recommended that there is only one designated photographer at any one time to reduce disturbance.

1.3.13 Flash photography in occupied bat roosts or hibernacula, or entering bat roosts or hibernacula specifically for the purpose of photography (including filming), must be specifically licensed.

1.3.14 As disturbing bats specifically for the purpose of photography is potentially very disturbing to bats, licences are only likely to be given where the licensing authority agrees there is a clear need for the photographs and only to experienced photographers who can demonstrate their ability to work efficiently with minimal disturbance to the bats.

Class licences for surveying bats in England

1.3.15 In England, a class licensing system has been introduced for survey licences (issued for the purposes of science and education, including research). These licences are for all bat-related activities (both voluntary and professional) outside of the NE volunteer bat roost visitor advice service. This includes:

- bat box checks;
- hibernation surveys;
- general survey work;
- professional survey work;
- limited use of harp traps, mist nets and acoustic lures for development survey purposes.

1.3.16 At present there are four levels of class licence; these are summarised below. The GOV.UK website²⁷ should be consulted for further details.

- **Level one – to survey bats by observation only (licence WML-CL17) – Disturbance only**
Surveying of bats by observation only (including the use of artificial light, in the form of torches but not endoscopes) for scientific, research or educational purposes, including informing development projects. This does not include surveys of hibernating bats.
- **Level two – to survey bats using artificial light, endoscopes, hand and hand-held static nets (licence WML-CL18) – Disturbance with handling.** Surveying of bats using artificial light (e.g. torches), endoscopes, hand and static hand-held nets for scientific, research or educational purposes, including informing development projects. This includes surveys of hibernating bats.
- **Level three – to survey bats using artificial light, endoscopes, hand and hand-held static nets, mist nets and acoustic lures (licence WML-CL19) – Disturbance with handling and mist netting.** Surveying of bats using artificial light (e.g. torches),

endoscopes, hand, static hand-held nets, mist nets and acoustic lures for scientific, research, or educational purposes, including informing development projects.

- **Level four – to survey bats using artificial light, endoscopes, hand and hand-held static nets, harp traps and acoustic lures (licence WML-CL20) – Disturbance with handling and harp trapping.** Surveying of bats using artificial light (e.g. torches), endoscopes, hand, static hand-held nets, harp traps and acoustic lures for scientific, research, or educational purposes, including informing development projects.

European Protected Species (EPS) licences (also known as derogation, mitigation or development licences)

1.3.17 EPS licences are issued by the same licensing authorities as survey licences. EPS licences are issued under the Habitats Regulations only after three tests have been satisfied in relation to the proposed action, as follows:

- the proposed action must be for the purpose of preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment; and for preventing serious damage to property;
- there is no satisfactory alternative to the proposed action; and
- the action authorised will not be detrimental to the maintenance of the species concerned at a FCS in their natural range.

1.3.18 NE published a Technical Information Note on FCS definitions (Hanna, 2021) and FCS is defined in the Habitats Directive as follows (from (EC, 2016):

“conservation status will be taken as ‘favourable’ when: population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.”

1.3.19 The Environment Act 2021 (Section 111) introduced a new exception to the Wildlife and Countryside Act offences for any actions taken under the auspices of a Habitats Regulations licence. Another change is that licences can now be issued in England (but not Wales) for reasons of overriding public interest providing:

- there is no other satisfactory solution; and
- the activities granted by the licence will not be detrimental to the survival of any population of the species of animal or plant to which the licence relates.

1.3.20 This provision for development activities was not previously available under the Wildlife and Countryside Act (1981).

1.3.21 In order for the licensing tests to be correctly applied, it is essential that baseline survey information of a sufficient quantity, quality and standard is supplied. Without this survey information, a licence may not be granted.

1.3.22 Information on when a licence is required, how to apply for a licence, and maintaining the FCS of a species, can be found on the relevant licensing authority websites.

1.3.23 In 2014, NE announced the introduction of a Bat Low Impact Class Licence (BLICL) scheme, now titled the Bat Mitigation Class Licence (BMCL). Ecologists can apply to become a Registered Consultant to use this type of licence (following attendance on a specific training course and a subsequent assessment), which is for low conservation status roosts and relates only to specific bat species identified by NE. One of the conditions for using this licence is that a Site Registration form is completed, submitted to and approved by NE.

1.3.24 In 2018, NE announced the introduction of a Bats in Churches Class Licence, recognising that churches often require a more bespoke and flexible approach to works where large populations of bats are roosting and potentially causing high levels of impact. Novel approaches to avoidance, mitigation and compensation can be used under this licence, based on the findings from church-specific research and with strict monitoring regimes in place. The licence works on the same principles as the BMCL, with ecologists attending training and undertaking an assessment of their skills and experience before applying to become a Registered Consultant and benefitting from a more streamlined licensing process.

1.3.25 In 2021, NE began a pilot of the Earned Recognition scheme. Earned Recognition works on the basis of assessing and accrediting a consultant's competence in undertaking survey work and designing effective avoidance, mitigation and compensation so that, by using an accredited consultant, developers can experience a more streamlined licensing process for their scheme or project. A competency framework defines the requirements for different levels of accreditation. Consultants who work on projects that involve higher risks to bats require a higher level of accreditation that involves demonstrating a higher level of competence. At the time of writing, a second pilot phase known as Beta ER is underway.

1.3.26 It is also possible within England to apply for an organisational licence, which licenses organisations (but with very specific conditions) to carry out routine activities that affect one or more protected species²⁸.

1.3.27 In 2019, Scotland also provided a streamlined

approach to bat mitigation licensing with the introduction of the Bat Low Impact Licence (BLIMP). This can be used where the conservation impacts of works are low, providing certain criteria are met. This system also requires an ecologist to register a site before works are carried out.

1.3.28 Although this is correct at the time of writing, the relevant SNCB websites should be checked for any updates or further information on licences.

1.4 Planning policy context

1.4.1 The biodiversity duty is imposed in England through the Environment Act 2021, which amends the Natural Environment and Rural Communities (NERC) Act 2006 by adding the words 'and enhance' alongside 'conserve'. The new Act states that public authorities must consider what action they can take to further the biodiversity objective and must put together policies and objectives for taking action for biodiversity.

1.4.2 In Wales the biodiversity duty is imposed by the Environment (Wales) Act 2016. Section 6 'Biodiversity and resilience of ecosystems duty' of the act states that a public authority must seek to maintain and enhance biodiversity in the exercise of functions in relation to Wales, and in so doing promote the resilience of ecosystems, so far as consistent with the proper exercise of those functions. Section 7 requires biodiversity lists and duty to take steps to maintain and enhance biodiversity.

1.4.3 The Nature Conservation (Scotland) Act 2004 states that 'it is the duty of every public body and office-holder, in exercising any functions, to further the conservation of biodiversity so far as is consistent with the proper exercise of those functions'.

1.4.4 The Wildlife and Natural Environment (NI) Act 2011 states that public bodies should further the conservation of biodiversity in exercising their functions.

1.4.5 Relevant policy documents for the UK relating to planning and biodiversity/nature conservation are referenced in Table 1.2, current at the time of writing.

Table 1.2. Government policy guidance for biodiversity and nature conservation in the UK.

Country	Relevant Planning Policy
England	National Planning Policy Framework (NPPF) (GOV.UK, 2021 a) especially Ch. 15 Conserving and enhancing the natural environment Circular 06/05: Biodiversity and Geological Conservation – Statutory Obligations and Their Impact Within the Planning System (GOV.UK, 2005) National Planning Practice Guidance Natural Environment (GOV.UK, 2019) (para 10 – 35)
Northern Ireland	Strategic Planning Policy Statement for Northern Ireland (Department for Infrastructure (Northern Ireland), 2021)
Scotland	Scottish Planning Policy (GOV.SCOT, 2014) National Planning Framework 4
Wales	Planning Policy Wales 11 (Welsh Government, 2021)

Table 3.1. Bat roost types. (Definitions written by the NE Earned Recognition Project).

Roost type	NE definition
Day roost	A place where individual bats, or small groups, rest or shelter in the day during the summer.
Night roost	A place where bats rest or shelter in the night but are not found in the day. May be used by a single individual on occasion or it could be used regularly by the whole colony.
Feeding roost	A place where individual bats, or a few individuals, rest or feed for short periods during the night but are not present by day.
Transitional roost	A place used by a few individuals or occasionally small groups for generally short periods of time on waking from hibernation or in the period prior to hibernation.
Maternity roost	A place where female bats give birth and raise their young to independence. In some species males may also be present in the maternity roost.
Hibernation roost	A place where bats may be found individually or together during winter. They have a constant cool temperature and high humidity.
Satellite roost	An alternative roost found in close proximity to the main nursery colony used by a few individuals to small groups of breeding females throughout the breeding season.

Table 3.2. Roosting preferences of different species.

Species scientific names	Species common names	Roosting preferences
<i>Rhinolophus ferrumequinum</i>	Greater horseshoe bat	During the summer females use large, old, undisturbed buildings (BCT/BMT Cordah Limited, 2005) including coach houses, stable blocks and barns (Duvergé and Jones, 2003). Also, churches. This species prefers to fly directly into the roost and to their roosting position and bats hang freely (Ransome and Hutson, 2000). Maternity sites are often found in large spaces at least 3-4m high, providing a sufficiently large flight area (BCT/BMT Cordah Limited, 2005). This species generally uses night roosts to rest whilst foraging, which are found in a variety of structures, for example outbuildings, garages, stables, milking sheds, porches and trees (Duvergé and Jones, 1994, 2003; Ransome and Hutson, 2000).

Table 3.2. Roosting preferences of different species. *continued*

Species scientific names	Species common names	Roosting preferences
<i>Myotis brandtii/mystacinus</i>	Brandt's / whiskered bat ⁴⁴	Both species can roost in trees and a wide range of buildings in the summer (BCT/BMT Cordah Limited, 2005). Buckley <i>et al.</i> (2013) recorded whiskered bats roosts ranging from a one-hundred-year-old house with stone walls and a slate roof to a farm shed with concrete walls and a corrugated roof. Mature broadleaved trees including beech and sycamore were also used for roosting and roost switching was observed. Hibernates in caves or other underground sites, where they can be found in the open or in cracks and crevices (Altringham, 2003).
<i>Myotis daubentonii</i>	Daubenton's bat	Roosts are found in hollow trees, bridges or sometimes buildings (Billington and Norman 1997) generally close to water (Racey <i>et al.</i> , 1998). Nursery roosts are not exclusively female (Angell <i>et al.</i> , 2013) – males may make up 25% or more of the colony and large male-only colonies have also been recorded. One study recorded roost switching every 1.5 days in non-breeding females and every 5 days in lactating females, although the bats were faithful to the roosting area regardless of whether they were roosting in trees or buildings (Ngamprasertwong <i>et al.</i> , 2014). Boonman (2000) found that this species selected oaks over beech trees and preferred roosts on the edges of woodlands in a study in the Netherlands. Hibernation sites are usually underground including caves, mines and suitable tunnels where bats are found both in crevices and on open walls (Altringham, 2003). They may also hibernate in tree cavities (BCT/BMT Cordah Limited, 2005).
<i>Myotis nattereri</i>	Natterer's bat	Roost sites include tree holes and different types of buildings but has also been found in bridges (Billington and Norman, 1997; Smith and Racey, 2002). Usually roost in attics between late May and mid-July (Smith and Racey, 2002) and often roosts have enough space for internal flight (Swift, 2009). This species also breeds in bat boxes (Park <i>et al.</i> , 1998; Bilston, 2014). Timber-framed barns built between the 12th and 19th centuries may be particularly important to this species (Briggs 1995, 2002), with roosts found in mortise joints in both the summer and winter. Churches are also important. A more recent paper (Smith & Racey, 2018) identified that this species exhibits high behavioural flexibility in roost selected. They compared two adjacent maternity colonies and one mostly used trees where the other mainly used buildings; however, roofs appeared to be more important to both during late May to mid-July. The bats showed a preference for tree roosts when temperatures exceeded 29°C. Hibernates in cracks and crevices in caves and mines (Altringham 2003). Other hibernation sites recorded are canal and railway tunnels, ice houses and tree cavities (Smith and Racey 2002).
<i>Nyctalus leisleri</i>	Leisler's bat	Roosts in trees, bat boxes and buildings such as houses; for example, around the gable end of lofts, under tiles, under soffit boards and in disused chimneys (Corbet and Harris, 1991). Often uses a variety of sites in the summer (Waters <i>et al.</i> , 1999). Hibernates in tree holes, buildings and sometimes underground sites (BCT/BMT Cordah Limited, 2005).
		More information is available in NE's FCS definition for this species (NE, 2023).

Table 3.2. Roosting preferences of different species. *continued*

Species scientific names	Species common names	Roosting preferences
<i>Nyctalus noctula</i>	Noctule	Roosts almost exclusively in tree holes, but sometimes found in bat boxes or buildings (Altringham, 2003). One Netherlands study found that woodpecker holes are preferred, in trees close to woodland edge (Boonman, 2000). A study from Poland (Ruczyński, <i>et al.</i>, 2010) found that this species preferred to roost in deciduous woodland, exceeding 100 years old, with a variety of tree species including oak, hornbeam and lime. In this study, where there was a lack of old deciduous woodland, the bats preferred old wet woodland. A 2020 study (Voigt <i>et al.</i>) used GPS loggers to study this species in Berlin, finding that noctules foraged close to artificial lighting when it was adjacent to waterbodies or well-vegetated areas but avoided lit roads. They used dark corridors for commuting. Hibernates in trees but sometimes found in buildings (BCT/BMT Cordah Limited, 2005).
<i>Pipistrellus pipistrellus</i> and <i>P. pygmaeus</i>	Common pipistrelle and soprano pipistrelle	Maternity colonies are found mainly in buildings, usually roosting out of sight in crevices. Colonies may use a number of sites through the summer but are often loyal to the same sites for many years (Thompson, 1992). Maternity colonies are extremely variable in terms of numbers, from 20 to over 1,000 bats (Speakman <i>et al.</i>, 1999). Barlow and Jones (1999) found that soprano pipistrelle colonies (median of 203) tended to be larger than those of the common pipistrelle (median of 76). Davidson-Watts <i>et al.</i> (2006) reported common pipistrelle shifting roosts between pregnancy and lactation. Davidson-Watts (2007) found that roost selection was based on temperature for common pipistrelle and on surrounding habitats (woodland and water) for both species. Males roost singly or in small groups in the summer, in buildings or trees (Lundberg and Gerell, 1986). Churches are used for roosting sites. Bat boxes are used by both males and females, but generally only males use them during the summer (Park <i>et al.</i>, 1998). These species do not use underground sites for hibernation but are sometimes found in the cracks and crevices of buildings in the winter (BCT/BMT Cordah Limited, 2005). Evidence from the Netherlands shows mass swarming events of common pipistrelle bats in the autumn followed by mass hibernation in a diverse range of building types in urban environments (Korsten <i>et al.</i>, 2016). Swarming by common pipistrelle has been observed in the UK (Bell, 2022 and Tomlinson, 2020) but this phenomenon requires further research. Ecologists should be aware of the potential for larger numbers of this species to be present during the autumn and winter in large buildings in highly urbanised environments.
<i>Pipistrellus nathusii</i>	Nathusius' pipistrelle	The very few known British nursery roosts are in buildings, with hibernation roosts in hollow trees and crevices in cliffs, walls and caves (Altringham, 2003). One study recorded males roosting under lead flashing and roof tiles (Hargreaves, 2012).
<i>Eptesicus serotinus</i>	Serotine	Roosts in buildings in small cavities or crevices with high access points such as gables but very occasionally also found in trees (BCT/BMT Cordah Limited, 2005). Recorded hibernation sites include cavity walls, disused chimneys and occasionally caves (BCT/BMT Cordah Limited, 2005).

Table 3.2. Roosting preferences of different species. *continued*

Species scientific names	Species common names	Roosting preferences
<i>Barbastella barbastellus</i>	Barbastelle	In summer, breeding females move regularly (Greenaway, 2008) between a large number of different tree roosts (Billington, 2003; Greenaway, 2001; Zeale, 2011). One study found that they preferred dead trees surrounded by holly understorey (Greenaway, 2001) and another found them in tree crevices and cavities, between overlapping limbs and behind ivy (although the ivy was likely concealing another feature), on average 6.9m above ground level (Billington, 2003). Greenaway (2008) found that tree roosts were in relatively undisturbed places and frequently in thick cover, although cracks much higher up in trees were used at the time of birth. Bat boxes are also used (Greenaway, 2008). Davidson-Watts (2008, 2014a) reported almost all roosts found in two studies were behind loose bark and in mixed locations not always surrounded by understorey. Harris (2020) also recorded many roosts behind loose bark. Russo <i>et al.</i> (2004) in a study of mostly lactating females in Italy found that trees in unmanaged woodland were favoured. The same study reported that dead beech trees and taller trees were preferred and roost cavities were mainly beneath loose bark, at greater height and facing south. Carr <i>et al.</i> (2019) found that woodland thinning negatively affected this species by reducing roosting opportunities. Winter roosts include deep, hollow trees (usually dead and among holly understorey) and sometimes buildings or underground sites (Greenaway, 2001). Other winter roosts recorded are flaking bark and splits less than 2m above the ground (Billington, 2000) and disused railway tunnels, barns, outbuildings, church porches and lime kilns. Chilmark Quarry is an example of barbastelle bats using an abandoned mine for hibernation⁴⁵. One study in Poland recorded barbastelle in a cave from the beginning of October until the end of March – the bats preferred the coldest part of the cave, near the entrance, until temperatures fell below -12°C, at which point the bats moved, potentially to deeper crevices (Hejduk and Radzicki, 2003). Spring and autumn roosts have been recorded behind loose bark (Billington, 2000; Greenaway, 2001), in dead tree stumps (Greenaway, 2001) and in splits in limbs mainly less than 2m above ground level (Billington, 2000).
<i>Plecotus auritus</i>	Brown long-eared bat	Maternity roosts found in trees, in the voids of large, old buildings and bat boxes in woodland (Briggs, 1995; Bilston, 2014). Usually roosts against wooden beams at the roof apex in attics or farm buildings (BCT/BMT Cordah Limited, 2005). Bats often cluster at the highest part of the roof and require enough space for unobstructed, internal flight (Entwistle <i>et al.</i>, 1997). Found also in churches. This species can also be found roosting in crevices (Downs & Wells, 2021). Shows high roost fidelity (Entwistle <i>et al.</i>, 1997). Commonly uses feeding perches and night roosts in porches or outbuildings separate from the main roost (BCT/BMT Cordah Limited, 2005). Hibernate in underground sites, tree holes and buildings (BCT/BMT Cordah Limited, 2005).
<i>Plecotus austriacus</i>	Grey long-eared bat	Frequently roosts on ridge beam in spaces between rafters. Maternity colonies show high roost fidelity (Razgour <i>et al.</i>, 2013). Number of males in maternity colony increases through summer. Many males are, however, solitary. More information is available in NE's FCS definition for this species (NE, 2021).

Figure 5.2. illustrates places where bats frequently roost (© Historic England with the permission of BCT)⁶⁹.



Places that bats may use in buildings:

- 1 Cellar
- 2 Barge board and soffit
- 3 Lead flashing

- 4 Gable end
- 5 Space between downpipe and wall
- 6 Window sill
- 7 Guttering
- 8 Porch

- 9 Sash window
- 10 Attic
- 11 Ridge tiles
- 12 Broken tiles
- 13 Roofing felt
- 14 Eaves

- 15 Wood or tile cladding
- 16 Quoins
- 17 Loose mortar between bricks
- 18 Roof joists

Method

7.2.7 The method involves ecologists visiting at dusk to listen/record (using a bat detector and, usually, an NVA) and observe bats emerging from their roosts. Information is compiled on species, numbers, access points, roosting locations and flight-paths. It is important for surveyors to minimise noise and lighting disturbance, avoiding the use of torches whilst setting up and during the survey, particularly in situations where ambient noise and light levels are low and bats are less likely to be habituated to human disturbance. The use of torches, lit screens on some detector/camera

models and high visibility clothing can also temporarily spoil a surveyor's night vision.

7.2.8 Surveys should usually be carried out using NVAs (night vision, infra-red camera, thermal imaging camera) as bats often emerge after it is too dark for surveyors to observe them. This is particularly important where there is potential for late-emerging species (see Section 3.5) and in very dark conditions (e.g. under the tree canopy and among fluttering foliage). Occasionally, the use of NVAs may be less important (e.g. for known roosts where bats are confirmed to emerge early or in situations/locations with higher levels of natural or artificial lighting), although not using NVAs should be fully justified in reporting. Surveyors using this equipment should be trained and experienced in its use and the right equipment should be used to achieve the aims. Licence applications will require information on this.

7.2.9 Guidelines are now available for the use of thermal imaging cameras (Fawcett-Williams and BCT, 2021) for bat surveys. At the time of writing, guidelines on the use of NVAs for bat surveys are also being developed.

7.2.10 Infra-red systems require a separate source of true infra-red illumination (not a red light filter) to be most effective. Footage should be recorded, so that it can be analysed afterwards and footage of bats emerging should be retained as a record of the survey. A still shot must be taken at the darkest point of the survey to show the field of view and that appropriate illumination has been used – this should be provided in any reporting and also be retained as a record of the survey. If NVAs are *not* used then adequate justification should be provided in the survey report (e.g. high levels of natural or artificial lighting).

7.2.11 When used appropriately, NVAs can be used to *reduce* the number of surveyors. This requires the camera, lenses, lamps and techniques, complemented by a bat detector soundtrack, to reliably match or exceed what a surveyor can achieve and evidence provided. The camera should be turned on before the survey starts and turned off after completion of the survey.

7.2.12 The positioning of NVAs/ecologists should be informed by the PRA (see Section 5.2), which should have identified potential roosting and access points, or by the GLTA and other tree surveys (see Chapter 6), which should have identified PRFs for bats. These places should be the focus of the survey and their number and arrangement should inform the number and arrangement of NVAs/ecologists required to complete the survey. However, ecologists should be aware that bats may emerge in unexpected places.

7.2.13 There should be sufficient surveyors on site for all aspects of a building or tree to be in view and for all equipment to be under constant observation for security purposes, to ensure it is operational throughout the survey and to adjust infrared lamps if necessary. Ecologists should be adequately briefed about which NVAs they are responsible for. The surveyors can observe bat activity away from the immediate vicinity of the building, which can provide important context, and surveyors should remain in constant contact using equipment such as hand-held radios to communicate easily and quickly about any observations or issues arising. Survey effort must be checked by those assessing surveys and reports.

7.2.14 Comparison of results from cameras and independent surveyors can help to understand the relative efficacy of each. This may change during the survey as visible light levels drop.

7.2.15 More complex structures or multiple structures require more NVAs/ecologists, particularly if there are many potential

access points, as all areas with potential should be covered. It may be necessary to visit the site (covering different locations each time) over several consecutive nights (collectively considered to be one survey visit) to cover all areas. However, it is important to ensure that survey effort is not overly 'diluted' when surveying large or complex structures because this approach could lead to over- or under-estimating numbers of bats if the bats change their access points between nights.

7.2.16 Reviewing of the footage recorded by NVAs should be done as soon as possible after the survey, whilst the survey is fresh in the minds of the ecologists. Different screen setups will vary in terms of what can be seen on recorded footage – this variation should be tested and screen use optimised.

7.2.17 If bats are observed emerging from structures, this does not necessarily mean they are roosting in the same location as the exit point; it may be necessary to identify roosting locations separately. Sometimes this can be established during the PRA or, alternatively, an NVA/ecologist could be stationed within the structure at dusk to observe emergence from a roosting point into the building. Survey design should be iterative, each survey informed by the previous one.

7.2.18 It may be possible to use fewer ecologists to watch for bats exiting; for example, a whole block of buildings or a whole woodland unit, but this would only identify that roosts were present within the block/woodland and would not identify individual buildings, trees or roosts. The choice of method depends on the amount of detail required to meet the survey aims.

7.2.19 The results of the surveys should be recorded in a standard format using a pre-designed, preferably digital, survey form.

Complementary methods

7.2.20 Deploying NVAs and automated/static bat detectors inside a structure can be particularly useful in gaining information about late-emerging species that often fly around inside the roost prior to emergence. Caution should be exercised in using automated/static detectors for this purpose, however, because sometimes they can detect bats flying outside a structure, not just those flying inside. Detector settings should therefore be appropriately calibrated for the intended use, to increase confidence in the results. Detector settings can be tweaked to try and target only bats within buildings (e.g. turning sensitivity down, microphone type, position).

7.2.21 When recording is carried out inside a roost, surveyors should also be aware that echolocation calls are often atypically short in duration (in extreme clutter), and a broad range of social calls are often produced in this situation that are not encountered outside a roost. The recordings can therefore often be atypical, distorted, and / or of poor quality. If it is necessary to record inside a roost, it should be accepted that the challenge of manually assigning recordings to species is likely to be greater than for free-flying bats, and the performance of automated systems for bat sound identification will be reduced.

Alternative methods

7.2.22 See Chapter 6 for alternative methods to detect the presence of bats in trees.

Timing

7.2.23 Recorded bat activity is dependent on the prevailing conditions at the time of the survey, which vary temporally (through the night, between nights, through the seasons and

between years) and spatially (dependent on latitude and longitude).

7.2.24 Bat activity is also determined by what the bats are doing at different times of the year (although this is also dependent in part on prevailing conditions); the bat life cycle is given in Section 3.2.

7.2.25 The bat active period is generally considered to be between April and October inclusive (although the season is likely to be shorter in more northerly latitudes).

7.2.26 In general:

- April surveys may detect transitional roosts.
- May to August surveys may detect maternity colonies and males/non-breeding females in summer roosts. As maternity colonies can switch roosts during the breeding season, one survey pre-parturition and one survey post-parturition is appropriate if maternity roosts could be present and two or more surveys are carried out.
- August counts can include both adults and juveniles. However, caution should be exercised as many maternity colonies will disperse during this month.

- August and September (perhaps into October) surveys may detect mating bats. Ideally, this period should be covered where three surveys are carried out. If appropriate habitat is present, these surveys could be extended into the night to carry out swarming surveys (see Section 8.3).
- September and October surveys may detect transitional roosts (September and October are less suitable for surveys in more northerly latitudes and October surveys are not considered appropriate in Scotland).

7.2.27 It is important to stress that prevailing conditions and local trends in bat activity (for example, when were the young born in the year in question?) should be considered and recorded to provide context to survey results.

7.2.28 Surveys should be designed around the information that is required to achieve the survey aims. Recommended timings for surveys are given in Table 7.1 below. This should be adjusted (earlier or later) if necessary by the ecologist, bearing in mind the site-specific circumstances, although this should be justified in the survey report.

Table 7.1. Recommended timings for presence/absence surveys to give confidence in a negative result for structures (also recommended for trees where other methods such as PRF inspection are not possible, but unlikely to give confidence in a negative result). To be used in tandem with Table 7.2.

Low roost suitability or PRF-I	Moderate roost suitability	High roost suitability or PRF-M
May to August (structures)	May to September ^a , with at least one of surveys between May and August ^b	May to September ^a , with at least two of surveys between May and August ^b
No further surveys required (trees)		
a September surveys are both weather- and location-dependent. Conditions may become more unsuitable in these months, particularly in more northerly latitudes, which may reduce the length of the survey season. September surveys are likely to miss maternity roosts due to dispersal before this time, but may pick up mating roosts. b Multiple survey visits should be spread out to sample as much of the recommended survey period as possible; it is recommended that surveys are spaced at least three weeks apart, preferably more. Survey timings should consider the prevailing conditions in the year of survey, which will vary geographically. In years with a cold spring, the surveys should not be started in early May or all completed in May. The surveys should maximise the possibility of detecting maternity roosts, which can switch roosts between pregnancy and lactation, and the optimum coverage includes the pre-parturition, post-parturition and mating periods.		

7.2.29 Please note that these are the timings recommended for presence/absence surveys. Some roost characterisation surveys (see Section 7.3) may be appropriate in April (to identify transitional roosts) and October (to identify transitional and mating roosts) depending on the findings of previous surveys, the weather and the location (although please note that October surveys are not considered appropriate in Scotland).

7.2.30 Bats are often active during the winter months: feeding, drinking or moving roost, and therefore activity can be recorded in winter too (winter hibernation surveys of structures are covered in Section 5.3). Because this is likely to be more sporadic, however, automated surveys are generally more appropriate than emergence surveys.

7.2.31 Different species vary in the time they tend to emerge from the roost according to their flight and predator avoidance capabilities (see Section 3.5). In general, dusk emergence

surveys should start (i.e. ecologists in place) 15 minutes before sunset and finish 1.5-2 hours after sunset, with survey times adjusted depending on the observations made during previous surveys.

7.2.32 These time periods mean that some of the survey will be in complete darkness, making the use of NVAs essential.

7.2.33 Other considerations in terms of timing are as follows:

- if a roost emergence point is not lit by the setting sun, it is likely to be darker and bats may emerge earlier;
- if bats have vegetation cover close to the roost they may emerge earlier because the vegetation offers protection;
- if the evening sky is overcast, the darker conditions may encourage earlier bat emergence (Downs, *pers. comm.*, 2022);
- if there have been periods of prolonged bad weather, bats

may adjust their behaviour to increase foraging times by emerging earlier;

- disturbance from lighting, noise or vibration may impact emergence times;
- poor weather conditions may cause bats to alter their emergence times (see para 2.6.5.); and
- if the roost is very large, some of the bats may emerge earlier.

7.2.34 Timings may be adjusted (earlier or later) if necessary by the ecologist, bearing in mind the site-specific circumstances, although this should be explained in the survey report.

Survey effort

7.2.35 Increasing the survey effort generally increases the likelihood of discovering bats. However, surveys should always be proportionate to the circumstances, which can only be assessed using professional judgement.

7.2.36 Froidevaux *et al.* (2020) studied 155 bat survey reports (involving structures, not trees) submitted with planning applications in two counties of the UK. They concluded that

daytime inspections were efficient in detecting bats when they roost in the open (e.g. some *Plecotus* species roosts) but were likely to miss the presence of bats roosting in crevices (e.g. *Pipistrellus* species). They recommend a minimum of three emergence surveys in good weather conditions for bats to be 95% confident that a building does not host a roost of *Pipistrellus* and four emergence surveys for *Plecotus* species. However, this study did not include consideration of how buildings had been classified in terms of their suitability (low, moderate or high) or the impact of NVAs on the accuracy of these surveys. Further study is required on these topics and for now it is considered that not enough information is available to change the survey regime previously recommended.

7.2.37 Table 7.2 provides the minimum recommended numbers of survey visits to give confidence in a negative result for structures. Confidence in a negative result is not possible for trees due to limitations outlined in Chapter 6, although emergence surveys of trees should only be used in a limited set of circumstances. The number of visits could be adjusted (up or down) if necessary by the ecologist, bearing in mind the site-specific circumstances, although this should be fully justified in the survey report.

Table 7.2. Recommended minimum number of survey visits for presence/absence surveys to give confidence in a negative result for structures (also recommended for trees but unlikely to give confidence in a negative result).

Low roost suitability or PRF-I	Moderate roost suitability	High roost suitability or PRF-M
One survey visit. One dusk emergence survey ^a (structures). No further surveys required (trees).	Two separate dusk emergence survey visits ^b .	Three separate dusk emergence survey visits ^b .
a Structures that have been categorised as low potential can be problematic and the number of surveys required should be judged on a case-by-case basis (see para 5.2.44). In some cases, more than one survey may be needed, particularly where there are several buildings in this category. b Multiple survey visits should be spread out to sample as much of the recommended survey period (see Table 7.1) as possible; it is recommended that surveys are spaced at least three weeks apart, preferably more.		

7.2.38 Numbers of surveys may need to be increased from those recommended in Table 7.2 where thorough internal inspections have not been possible; the number should be decided using professional judgement and rationale reported. Internal inspections (of structures and PRFs) can provide historical evidence of bat presence whereas emergence surveys only provide information about bat presence or absence at the time of the survey.

7.2.39 It would be disproportionate to apply the survey effort outlined above (which is designed for individual or small numbers of buildings) to large-scale projects where buildings require maintenance/re-roofing rather than demolition. When determining survey effort, there will be a need to determine the likely species and status of roosts, taking into account building structure, building condition and local context. The survey effort should be at least adequate to determine species and identify (or rule out) maternity roosts. Information is being gathered to provide case studies illustrating different approaches and will be made available as a separate piece of guidance.

Weather conditions

7.2.40 Please refer to para 2.6.2 onwards for guidance on weather.

Next steps

7.2.41 If presence of a bat roost(s) is established, the next stage of the process is to carry out roost characterisation surveys (see Section 7.3 – depending on how much information on species, numbers, access points, roosting locations, timing of use and type of roost has already been collected), although it may be necessary to continue with presence/likely absence surveys of other parts of the site.

7.2.42 In structures, where likely absence has been adequately established, then no further action is required in relation to bats. However, it may be appropriate for contractors to be briefed about the risk of discovering bats unexpectedly during works and the need to stop work in this scenario. Clients should also be made aware of this risk and the potential implications in terms of delay.

7.2.43 In trees, it is very difficult to have confidence that roosts are absent (see Chapter 6) and therefore, even where no bats are found, it may still be necessary to apply precautionary measures when carrying out tree-felling and pruning activities.

7.3 Roost characterisation surveys

Description and aims

7.3.1 When presence is established, this should trigger roost characterisation surveys unless sufficient information has already been collected (using robust survey methods with no significant constraints) to inform the impact assessment and design of mitigation measures. Roost characterisation surveys include emergence surveys. They also include the collection of information about the physical characteristics of the roost and surrounding area.

7.3.2 The aim of these surveys is to answer the questions outlined in Section 7.1, and to ascertain the features and characteristics of the roost (for example size, perching points, aspect, orientation, temperature, humidity, lighting) and the surrounding area (for example proximity of vegetation to exit points, availability of foraging areas locally) that are of importance.

7.3.3 All of this information can then be used to assess the potential impacts of the proposed development activity and design suitable mitigation and monitoring strategies. For example, information on roost characteristics may be required to inform the construction of a like-for-like replacement roost where the original roost will be lost. This

information is essential when applying for planning permission or an EPS licence.

7.3.4 The additional limitations of tree surveys (in comparison to surveys of structures) are highlighted in Chapter 6.

Equipment

7.3.5 Generic documentation/equipment required for field surveys for bats is provided in para 2.5.13 onwards; survey-specific equipment is listed in Appendix 1.

Expertise and licences

7.3.6 The expertise and licences required are the same for both presence/likely absence surveys and roost characterisation surveys (see para 7.2.5).

Method

7.3.7 The method used is the same for both presence/likely absence surveys and roost characterisation surveys (see para 7.2.7 onwards).

7.3.8 Some bat species will not waste energy echolocating upon emergence (maybe because of higher light levels or landscape familiarity, the reason is not totally clear), which means other methods should be used to gain the species identification information required; for example, DNA analysis of droppings (see Appendix 4) or handling of bats in the roost (see para 5.2.34). Visual cues such as behaviour, size, wing shape and ear shape may also contribute to identification, but in most cases these cannot be used in isolation.

Box 7.1. A note on roost re-entry surveys.

The routine use of roost re-entry surveys (previously known as dawn surveys) for presence/absence has been removed from this edition of the guidelines. This is due to: (a) the use of NVAs increasing the accuracy of dusk emergence surveys, and (b) the variability in roost re-entry times within and between species. Andrews and Pearson (2022) carried out a review of empirical data on re-entry times of different species and found huge variability, such that returning bats can easily be missed.

Whilst the authors of the guidelines take no responsibility for how surveys are scheduled and surveyors deployed (individuals and companies are responsible for their own health and safety and that of their staff), removing the use of roost re-entry surveys as standard for presence/absence is also likely to be important from a health and safety perspective.

However, ecologists may choose to use a roost re-entry survey for roost characterisation *if there are very specific reasons, constraints are acknowledged and all of this is provided in the reporting*. Positive data from dawn surveys (e.g. confirmation of roost entrance points) may be valuable but negative data (i.e. bats are absent) and counts are less reliable. Re-entry surveys should be carefully timed, bearing in mind the likely time of return of the species concerned (see Andrews and Pearson, 2022 and Section 3.5).

Roost re-entry times are influenced by the night length/time of year, the age and reproductive status of the bats, the availability of preferred prey at different times and the temperature. Swift (1980) showed that pipistrelle bats in north-east Scotland had a unimodal peak in activity during pregnancy in May and June but after parturition they showed bimodal peaks in activity after dusk and immediately before dawn. Ransome (1973) showed that when external temperatures reached 8°C as a minimum the feeding activity of greater horseshoe bats was curtailed during the night. Ruzinska *et al.* (2022) found that older adult females exhibited a gradual increase in swarming from midnight to dawn but younger females and juveniles swarmed later before dawn.

Roost re-entry surveys can potentially be effective for accurately detecting points of access, providing they are timed correctly. NVAs should be used to improve accuracy.

7.3.9 The collation of information about the physical characteristics of the roost and surrounding area is discussed below.

Size and nature of roost

7.3.10 In structures, the size of the roost, including the presence and location of timber joints and other features

supporting roosts, should be documented if it is likely that a replacement roost will be required. The size and nature of the internal space appears to be important to bats that fly around inside prior to emerging, most notably *Plecotus*, *Rhinolophus* and some *Myotis* species. The number and location of all access points (and their dimensions, which can be important for some species) should also be documented. In trees, the

dimensions of the roost feature should have been documented during the PRF Inspection survey (see Section 6.8) if accessible.

Roosting surfaces

7.3.11 In structures, the availability of appropriate roosting surfaces (e.g. natural materials such as wood) is a key measure of the ecological functionality of a site, and should be recorded if it is likely that the roost will need to be replaced.

Aspect and orientation

7.3.12 Aspect and orientation affect how the roost is heated by the sun, although in structures heating may also result from man-made features such as boilers. The aspect, orientation and shading of the roost and associated access points should be documented (along with any artificial heat sources), so that this can be replicated (where possible) in a replacement roost if necessary.

Temperature and humidity

7.3.13 Williams (2010) and Gunnell *et al.* (2013) state that one of the factors making structures suitable for roosts is their ability to provide a stable microclimate and that temperature plays a key role in roosting ecology and selection. A range of microclimatic conditions within one structure gives bats options to move around. It should be noted, however, that bats may be roosting in what appear to be suboptimal conditions in terms of temperature and humidity, so this must be taken into consideration when taking measurements and determining future characteristics. Where proposals will result in the loss of a maternity or hibernation roost, the temperature and humidity inside and outside the roost must be monitored using data loggers to understand how conditions fluctuate in relation to ambient temperatures throughout the season the roost is used (although this may be constrained by limited access to the areas bats are actually using). In structures that are used by bats at different times of the year, it may be necessary to collect data during more than one season. It may be the damping of temperature variation, rather than absolute temperatures, that make a roost suitable for bats. Collecting data inside and outside the roost will help to determine this and replicate conditions, where appropriate, in replacement roosts, particularly since assumed knowledge is not always correct (Downs & Wells, 2021). Different conditions are likely to suit different species (see, for example, Davidson-Watts and Jones, 2006; Smith and Racey, 2005; Boonman, 2000; Shepherd and Stroud, 2009); a literature search will provide extra information.

Lighting

7.3.14 Current lighting levels and locations should be noted to provide a comparison with new lighting proposals. Even one change such as an outside security light can have an impact and lighting needs to be considered in relation to current and proposed new bat access points. In cases where no lighting change is proposed, it may not be necessary to measure the light levels at all, but current lighting fixtures should be plotted. Guidance is available from BCT and ILP (2023).

Habitat

7.3.15 Vegetation in close proximity to a roost can be extremely important for some species of bat that seek cover from predators and the weather immediately after emerging. It also provides structure for acoustic orientation and navigation and opportunities for foraging. Features likely to be important to bats should be noted so that these can be retained or

replicated post-development as necessary. The importance of different habitat features varies from species to species (see, for example, Davidson-Watts *et al.*, 2006; Entwistle *et al.*, 1997), influencing both emergence (Schofield, 2008) and foraging site arrival/departure times (Downs & Racey, 2006).

Complementary methods

7.3.16 The complementary methods are the same for both presence/likely absence surveys and roost characterisation surveys (see para 7.2.20 onwards).

7.3.17 It may also be possible to capture bats using a hand net in order to identify their species, gender and age during a roost characterisation survey. The correct licence (see para 1.3.1 onwards), knowledge and skills (see para 2.5.1 onwards) should be in place to carry out this activity and sensitive times of year should be avoided (such as when bats are heavily pregnant or with dependent young).

Alternative methods

7.3.18 See Chapter 6 for considerations regarding tree surveys and alternative methods to detect presence of bats.

Timing

7.3.19 See para 7.2.23 onwards; comments on timing are the same for both presence/likely absence surveys and roost characterisation surveys. It may be appropriate to carry out surveys in April and/or October depending on the need to characterise transitional roosts or mating roosts, the findings of previous surveys, the weather and the location (although please note that October surveys are not considered appropriate in Scotland).

Survey effort

7.3.20 Survey effort required to collect the relevant information that is needed for an impact assessment and the design of mitigation strategies is very much site-specific. Appropriate surveys should be repeated until the information outlined in Sections 5.1 and 7.1 is reliably collected, although appropriate methods and equipment should be used to minimise the number of repeat visits required and effort should always be proportionate to impact.

7.3.21 If presence has been confirmed by droppings found during a PRA (Section 5.2) but roost characterisation surveys have not recorded any bat presence, it may be necessary to carry out further surveys at alternative times of year. If presence has been confirmed by droppings found during a PRF inspection survey (Section 6.8) then DNA analysis should be carried out on the droppings, but further surveys may provide no return and it may be necessary to proceed with the information already collected. Licensing policy 4 in England may cover this scenario.

Weather conditions

7.3.22 Please refer to para 2.6.2 onwards for guidance on weather.

Next steps

7.3.23 Where bat roosts are likely to be impacted by proposed activities, it will be necessary to carry out an impact assessment and design an appropriate mitigation and monitoring strategy with habitat enhancements for bats, where appropriate. This information is essential to inform a planning application or EPS licence application to allow the proposed activities to proceed legally.