Bat Emergence and Re-entry Surveys

Rosedale College, Wood End Green Road, Hayes, Middlesex, UB3 2SE

Bouygues UK Ltd

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Industry Guidelines and Standards

This report has been written with due consideration to:

- Chartered Institute of Ecology and Environmental Management (2017). Guidelines for Preliminary Ecological Appraisal. 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.1. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2017). Guidelines on Ecological Report Writing. Chartered Institute of Ecology and Environmental Management, Winchester.
- Chartered Institute of Ecology and Environmental Management (2020). Guidelines for Accessing, Using and Sharing Biodiversity Data in the UK. 2nd Edition. Chartered Institute of Ecology and Environmental Management, Winchester.
- British Standard 42020 (2013). Biodiversity – Code of Practice for Planning and Development.
- British Standard 8683:2021 (2021). Process for Designing and Implementing Biodiversity Net Gain.

Proportionality

> The work involved in preparing and implementing all ecological surveys, impact assessments and measures for avoidance, mitigation, compensation and enhancement should be proportionate to the predicted degree of risk to biodiversity and to the nature and scale of the proposed development. Consequently, the decision-maker should only request supporting information and conservation measures that are relevant, necessary and material to the application in question. Similarly, the decision-maker and their consultees should ensure that any comments and advice made over an application are also proportionate.
>
> The desk studies and field surveys undertaken to provide a Preliminary Ecological Appraisal (PEA) might in some cases be all that is necessary.
>
> (BS 42020, 2013)

Executive Summary

Arbtech Consulting Ltd was instructed by Bouygues UK Ltd to undertake Bat Emergence and Re-entry Surveys (BERS) at Rosedale College, Wood End Green Road, Hayes, Middlesex, UB3 2SE (hereafter referred to as "the site"). The survey was required to inform a planning application for the demolition of two buildings (EFAB and EFAD) and construction of two new buildings, as well as the construction of one temporary building (the second EFAD building exists) during construction phases (hereafter referred to as "the proposed development").

The following is work you will need to commission to comply with planning policy and legislation. Further information, along with opportunities for biodiversity enhancement, are outlined in Table 2 of this report.

Feature	Survey Results Summary	Impact Assessment	Recommendations
Building 2 (EFAB)	No bats were seen emerging from the buildings. A likely absence of roosting bats is confirmed from building 2.	Bats are very unlikely to be roosting within Building 2 however, the proposed development will include the use of lighting which could spill on to foraging or commuting habitat and deter bats from using these areas.	A low impact lighting strategy will be adopted for the site during and post-development

Contents

1.0 Introduction and Context

1.1 Background

Arbtech Consulting Limited was instructed by Bouygues UK Ltd to undertake Bat Emergence and Re-entry Surveys (BERS) at Rosedale College, Wood End Green Road, Hayes, Middlesex, UB3 2SE (hereafter referred to as "the site"). The survey was required to inform a planning application for the demolition of two buildings (EFAB and EFAD) and construction of two new buildings, as well as the construction of one temporary building (the second EFAD building exists) during construction phases (hereafter referred to as "the proposed development"). A plan showing the proposed development is provided in Appendix 1.

The aim of the BERS was to determine the presence or likely absence of roosting bats and to characterise any roosts present. This has been undertaken with due consideration to the "Bat Surveys for Professional Ecologists —Good Practice Guidelines" publication (Collins, 2016).

The BERS have been informed by a Preliminary Roost Assessment (PRA) which was completed by Arbtech Consulting Ltd. on 25/07/2023. This report found that one bat emergence and re-entry survey was required to determine bat presence or likely absence within the relevant building.

1.2 Site Location and Landscape Context

The site is located at National Grid Reference TQ 09075 81316 and has an area of approximately 6.1ha. There are five school buildings on the site. Building B2 was subject to survey. Buildings B1, B3, B4, and B5 were not subject to survey as they did not contain suitable habitat or roosting features for bats. There are playing fields and scattered trees on site, which bats may utilise for commuting or foraging purposes, and the wider landscape comprises suburban dwellings, allotments, parks, and golf courses. A site location plan is provided in Appendix 2.

1.3 Scope of the Report

This report provides a description of the bat activity observed and recorded during BERS. The aim of the surveys was to determine the presence or likely absence of bats and to characterise any roosts present including species, number of individuals, number and location of roost access points, and to gain an understanding of how bats use the site. The report provides information on possible constraints to the proposed development as a result of bats and summarises the requirements for any mitigation proposals, including a European Protected Species Licence (EPSL), where appropriate, to achieve planning or other statutory consent and to comply with wildlife legislation. To achieve this, the following steps have been taken:

- BERS of built structures have been undertaken to determine the presence or likely absence of bat roosts.
- An outline of potential impacts on any confirmed or unidentified roosts has been provided, based on the proposed development.
- Recommendations for mitigation have been made, along with advice on the requirements for a European Protected Species Licence (EPSL) application if appropriate.
- Opportunities for the enhancement of the site for roosting, foraging and commuting bats have been set out.

2.0 Methodology

2.1 BERS

One BERS, comprising one dusk emergence was undertaken of B2, as per the recommendations from the Preliminary Roost Assessment. The survey involved surveyors positioned around the building ensuring that all elevations and roof sections with suitable roosting features could be clearly observed. Particular attention was paid to the areas of the building identified as providing suitable access points to bat roosts. Each surveyor was assigned an area of the building to observe for the duration of the survey.

Surveyors used heterodyne and frequency division bat detectors, and Echo Meter Touch detectors connected to iPads or Android tablets. Bat echolocation calls recorded during the surveys were analysed using Wildlife Acoustics sound analysis software Kaleidoscope V3.1.7 when required. The Echo Meter Touch includes an auto ID function for bat species, however this is not 100% accurate and further post-survey sound analysis is often required to confirm species that could not be identified by the auto ID software during the survey. Surveyors also used head torches, survey record sheets and pens/pencils for recording all activity observed during the surveys. Each surveyor was also provided with a handheld radio for communication between surveyors to assist with confirming ambiguous bat activity e.g. a bat emergence or a bat passing over the building.

Four infrared recording kit was set up to monitor the building during the BERS. This comprised Nightfox Red Goggles set up on a tripod with two separate infrared lamps on a second tripod to provide additional illumination. Analysis of the footage was subsequently undertaken to detect roosting activity.

Dusk emergence surveys commenced 15 minutes before sunset and continued for 1½ - 2 hours after sunset – depending upon bat activity and surveyor visibility.

Surveys were completed during optimal weather conditions i.e., when temperatures were above 10ºC, with no rain or strong winds (greater than 5m/s), as these adverse weather conditions can impact upon bat emergence and foraging behaviour. Periods of high moon illuminance (>80%) were also avoided insofar as possible as this can reduce bat activity.

2.2 Surveyors

A total of eight surveyors were used to cover B2. The name, bat licence details or level of bat survey experience and the designated position of each surveyor during each survey is detailed in the tables in Section 3.1 below and shown on the plan in Appendix 3.

2.3 Bat Roost Characterisation

When bat roosts are present, the bat surveys undertaken at a site facilitate the characterisation of the roost type. This allows for appropriate mitigation and compensation to be designed to inform a European Protected Species Licence (EPSL) application to Natural England.

The definitions of bat roost types are provided below, taken from the *Bat Mitigation Guidelines* (English Nature, 2004) and the Bat Conservation Trust (BCT) publication *Bat Surveys for Professional Ecologists – Good Practice Guidelines* (Collins, 2016).

Day roost: a place where individual bats, or small groups of males, rest or shelter in the day but are rarely found by night in the summer.
Night roost: a place where bats rest or shelter in the night but are rarely 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 during the night but are rarely present by day.
Transitional / occasional roost: 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.
Swarming site: where large numbers of males and females gather during late summer to autumn. Appear to be important mating sites
Mating sites: sites where mating takes place from later summer and can continue through winter.
Maternity roost: where female bats give birth and raise their young to independence.
Hibernation roost: where bats may be found individually or together during winter. They have a constant cool temperature and high humidity. Sites where hibernating bats have been confirmed by appropriate survey effort should be classed as 'hibernation confirmed'.
Satellite roost: an alternative roost found in close proximity to the main nursery colony used by a few individual breeding females to small groups of breeding females throughout the breeding season.
Other: roost types are interchangeable and not always easy to classify according to the nuances of certain species.

2.4 Limitations

This survey followed best practice guidance to confirm presence or likely absence of roosting bats and where present, characterise the roost. However, this information is collected at finite dates and times, and provides an indication of the conditions on site only. The use of the building, and the site as a whole by bats, at all times cannot be established based on this information. Bats are highly mobile creatures that switch roosts regularly and therefore the usage of a site by bats can change over a short period of time.
At 19:55 LED flood lights came on automatically and remained on for the remainder of the survey. Multiple lights were present on every wall elevation of B2, as well as all other buildings within the school. As such the site is considered to be impacted by high levels of light pollution.
At Position 1 a loud generator turned on at 20:27 and remained on for the remainder of the survey. These limitations have been taken into further consideration.

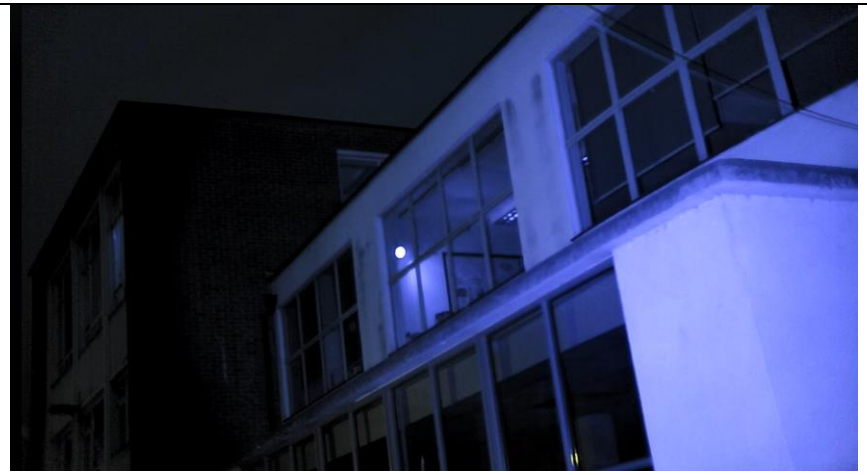
3.0 Results and Evaluation

3.1 Survey Results

The results of the survey are provided in the table below and shown on the plan in Appendix 3.

Table 1: Survey results (first visit)

Date	23/08/23	
Building inspection prior to survey	The external roost features identified during the PRA were subject to an external inspection prior to the BERS to check for evidence of roosting bats, no evidence was found. An internal inspection of the building was not completed as the previous PRA inspection was carried out one month prior, in July 2023.	
Start and end times	19:47 – 21:47 Sunset: 20:07	
Weather conditions	**Start:** Temp: 24°C Relative Humidity: 56% Cloud Cover: 70% Wind: 0.30mph Rain: None Moon illuminance: 0%	**End**: Temp: 21°C Relative Humidity: 67% Cloud Cover: 0% Wind: 0.04mph Rain: None Moon illuminance: 10%
Surveyor (position) **As shown in Appendix 3**	**Barnaby Hicks** - Less than 1 year bat survey experience – Position 1 – observing the northern elevation and roof structure of B2 **Rebekah Robertson** - 3 years bat survey experience – Position 2 observing the eastern elevation of B2 **Emma Carter (lead surveyor)-** accredited on C2 Bat License 2016-22843-CLS-CLS with three years bat survey experience - Position 3 – observing the north eastern elevation and roof structure of B2 **Niamh Bubb** - 1 year bat survey experience - Position 4 – observing the southeastern elevation and roof structure of B2 **Jayden Dawn** - 1 year bat survey experience – Position 5 – observing the southern elevation and roof structure of B2 **Mark Tosh**- 1 years bat survey experience – Position 6 – observing the western elevation and roof structure of B2 **Andrew Lee** – 1 years bat survey experience- Position 7 – observing the north and western elevation and roof structure of B2 **Jane Plenderleith** – 3 years bat survey experience – Position 8 – observing the south and western elevation of B2	
IR position **As shown in Appendix 3**	Position 1- observing the northern elevation and roof structure of B2 (next to surveyor Position 1) Position 2 - observing the western elevation and roof structure of B2 (next to surveyor Position 6) Position 3 – observing the western elevation and roof structure of B2 (next to surveyor Position 8) Position 4- observing the south eastern elevation and roof structure of B2 (next to surveyor Position 4)	

Building reference	Surveyor position	Notes/observations:
B2	1	A common pipistrelle was observed passing from south to north at 20:32. A common pipistrelle was also seen foraging in the northwestern corner at 21:01. No bat roosting activity was recorded at this position.
B2	2	A faint call from a common pipistrelle was heard but not seen at 20:41. No bat roosting activity was recorded at this position.
B2	3	No bats were seen or detected during the survey at this position, and no roosting activity was recorded. This elevation was well lit from LED lighting.
B2	4	No bats were seen or detected during the survey at this position, and no roosting activity was recorded. This elevation was well lit from LED lighting.
B2	5	No bats were seen or detected during the survey at this position, and no roosting activity was recorded. This elevation was well lit from LED lighting.
B2	6	No bats were seen or detected during the survey at this position, and no roosting activity was recorded. This elevation was well lit from LED lighting.
B2	7	At 20:32 and 21:02 a common pipistrelle was heard but not seen. No roosting activity was recorded. This elevation was well lit from LED lighting.
B2	8	No bats were seen or detected during the survey at this position, and no roosting activity was recorded. This elevation was well lit from LED lighting.
Building reference	**IR position**	**Notes/observations:**
B2	1	 Figure 1. A still of the infrared footage at the darkest point of the survey. No bats were seen.

B2	2	 Figure 2. A still of the infrared footage at the darkest point of the survey. No bats were seen.
B2	3	 Figure 3. A still of the infrared footage at the darkest point of the survey. No bats were seen.

B2	4	 Figure 4. A still of the infrared footage at the darkest point of the survey. No bats were seen.
Other observations		There were no other wildlife observations recorded during the survey. The high levels of light and noise that are present on site during the night, would probably deter bats from investigating the building after dark. This factor may be impacting levels of bat activity and acting as a deterrent for foraging, commuting and roosting bats.

4.0 Conclusions, Impacts and Recommendations

Taking the field survey results into account, Table 2 presents an evaluation of the value of the building for roosting bats in relation to the proposed development which will comprise the demolition of two buildings (EFAB and EFAY) and construction of two new buildings, as well as the construction of two temporary buildings during construction phases.

Table 2: Evaluation of building on site for roosting bats

Building Reference	Survey Results Summary	Impact Assessment	Recommendations	Biodiversity Enhancement Opportunities[1]
B2 (EFAB)	No bats were seen emerging from any section of the building. A likely absence of roosting bats is confirmed from building 2.	Bats are very unlikely to be roosting within Building 2 and as such, there are not anticipated to be any impacts on bats in this location as a result of the proposed development. Bat lighting The proposed development will include the use of lighting which could spill on to bat roosting, foraging or commuting habitat and deter bats from using these areas.	A low impact lighting strategy will be adopted for the site during and post-development, which will include the following measures: • Light spill on to trees and vegetation should be avoided. • Use narrow spectrum light sources to lower the range of species affected by lighting. • Use light sources that emit minimal ultra-violet light. • Avoid white and blue wavelengths of the light spectrum to reduce insect attraction and where white light sources are required in order to manage the blue shortwave length content they should be of a warm / neutral colour temperature <4,200 kelvin. • Not use bare bulbs and any light pointing upwards. The spread of light will be kept in line with or below the horizontal. • Light spill will be reduced via the use of low-level lighting used in conjunction with hoods, cowls, louvers and shields. Lights will also be directional to ensure that light is directed to the intended areas only. • External lighting will be on PIR sensors that are sensitive to large objects only (so that they are not triggered by passing bats) and will be set to the shortest time duration to reduce the amount of time the lights are on. • Wall lights and security lights will be 'dimmable' and set to the lowest light intensity settings. There are several products on the market that allow the control of the light intensity and the duration that the lights are on. All lighting on the developed site will make use of the most up to date technology available.	The installation of two bat boxes at the site will provide additional roosting habitat for bats. The bat box will be installed on the renovated building construction. Bat boxes should be positioned 3-5m above ground level facing in a south or south-westerly direction with a clear flight path to and from the entrance, away from artificial light. The bat boxes will be a specification suitable for common pipistrelles such as an eco crevice/cavity bat box from Wild Care or a similar alternative brand.

[1] The Local Planning Authority has a duty to ask for enhancements under the NPPF (2021).

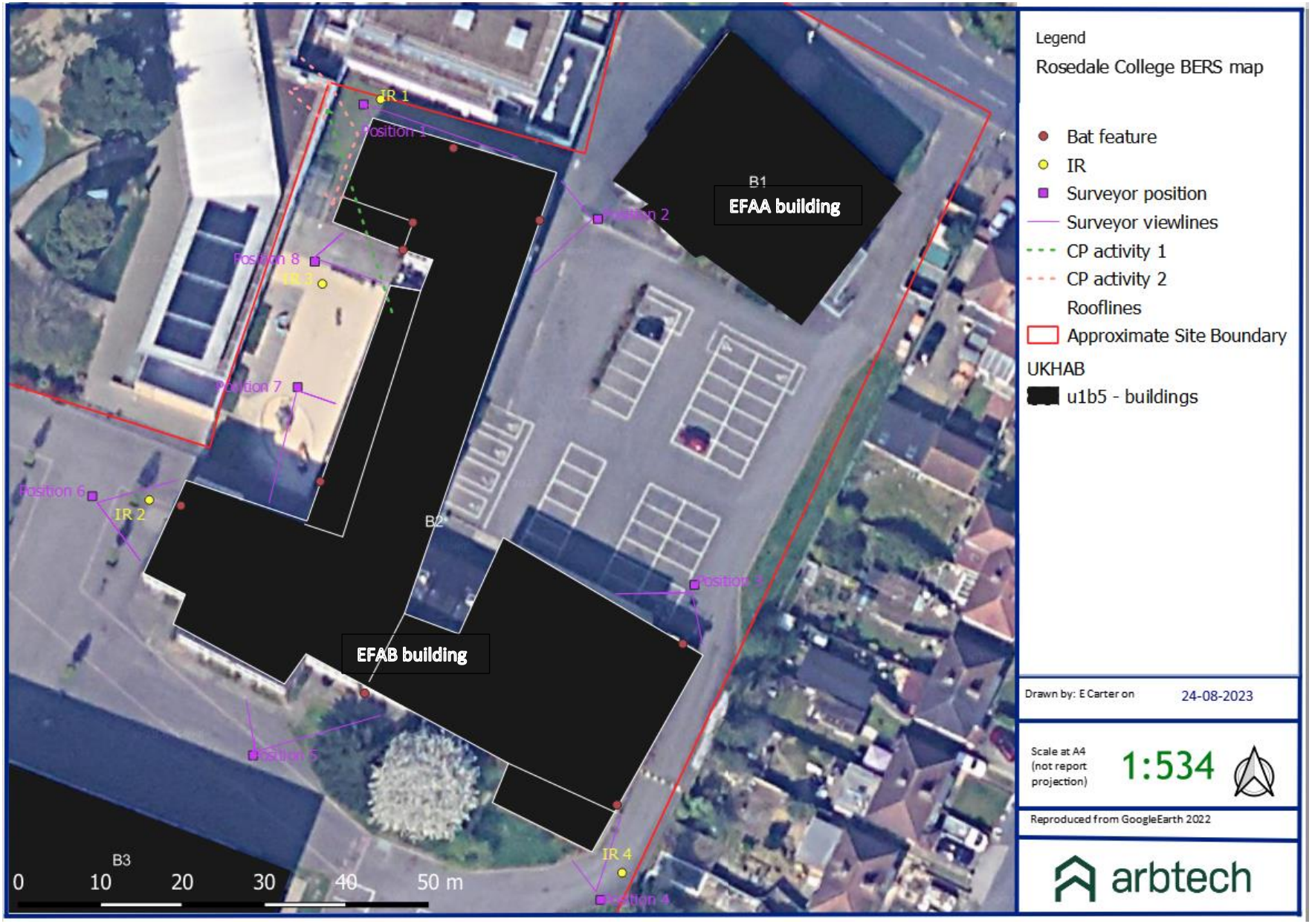
5.0 Bibliography

- Collins, J. (2016). Bat Surveys for Professional Ecologists —Good Practice Guidelines, 3rd edition, Bat Conservation Trust, London.
- Garland, L. & Markham, S. (2008) Is Important Bat Foraging and Commuting Habitat Legally Protected? http://biodiversitybydesign.co.uk/cmsAdmin/uploads/protection-for-bat-habitat-sep-2007.pdf
- Institution of Lighting Professionals (2018). Guidance Note 08/18 Bats and Artificial Lighting in the UK. Bats and the Built Environment Series Publication: http://www.bats.org.uk/news.php/406/new_guidance_on_bats_and_lighting.
- Mitchell-Jones, A.J. (2004). Bat Mitigation Guidelines. English Nature, Peterborough.
- Wray, S., Wells, D., Long, E., Mitchell-Jones, T (2010) Valuing Bats in Ecological Impact Assessment. IEEM In-Practice. Number 70 (December 2010). Pp. 23-25.

Appendix 1: Proposed Development Plan

Appendix 2: Site Location Plan

Appendix 3: BERS Plan



Appendix 4: Legislation and Planning Policy Related to Bats

LEGAL PROTECTION

All species of bat are fully protected under ***The Conservation of Habitats and Species Regulations 2017*** (as amended) through their inclusion on Schedule 2.

Regulation 43: Protection of certain wild animals - offences

(1) A person is guilty of an offence if they:

(a) Deliberately captures, injures or kills any wild animal of a European protected species,

(b) Deliberately disturbs wild animals of any such species,

(c) Deliberately takes or destroys the eggs of such an animal, or

(d) Damages or destroys a breeding site or resting place of such an animal,

(2) For the purposes of paragraph (1) (b), disturbance of animals includes in particular any disturbance which is likely—

(a) To impair their ability:

(i) To survive, to breed or reproduce, or to rear or nurture their young; or

(ii) In the case of animals of a hibernating or migratory species, to hibernate or migrate; or

(b) To affect significantly the local distribution or abundance of the species to which they belong.

Bats are also protected under the ***Wildlife and Countryside Act 1981*** (as amended) through their inclusion on Schedule 5. Under this Act, they are additionally protected from:

- Intentional or reckless disturbance (at any level)
- Intentional or reckless obstruction of access to any place of shelter or protection
- Selling, offering or exposing for sale, possession or transporting for purpose of sale

NATIONAL PLANNING POLICY

National Planning Policy Framework 2021

The National Planning Policy Framework promotes sustainable development. The Framework specifies the need for protection of designated sites and priority habitats and species. An emphasis is also made on the need for ecological infrastructure through protection, restoration and re-creation. The protection and recovery of priority species (considered likely to be those listed as species of principal importance under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006) is also listed as a requirement of planning policy.

In determining a planning application, planning authorities should aim to conserve and enhance biodiversity by ensuring that: designated sites are protected from harm; there is appropriate mitigation or compensation where significant harm cannot be avoided; measurable gains in biodiversity in and around developments are incorporated; and planning permission is refused for development resulting in the loss or deterioration of irreplaceable habitats including aged or veteran trees and also ancient woodland.

The Natural Environment and Rural Communities Act 2006 and the Biodiversity Duty

Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006, requires all public bodies to have regard to biodiversity conservation when carrying out their functions. This is commonly referred to as the 'biodiversity duty'.

Section 41 of the Act requires the Secretary of State to publish a list of habitats and species which are of 'principal importance for the conservation of biodiversity'. This list is intended to assist decision makers such as public bodies in implementing their duty under Section 40 of the Act. Under the Act these habitats and species are regarded as a material consideration in determining planning applications. A developer must show that their protection has been adequately addressed within a development proposal.

LOCAL PLANNING POLICY

A VISION FOR 2026 Local Plan: Part 1 Strategic Policies (November 2012)

The A VISION FOR 2026 Local Plan: Part 1 Strategic Policies can be viewed: https://www.hillingdon.gov.uk/local-plan

The following planning policies have implications for developers in relation to bats:

- 4.2 SO3 - Improve the quality of, and accessibility to, the heritage value of the borough's open spaces, including rivers and canals as areas for sports, recreation, visual interest, biodiversity, education, health and well being
- 4.2 SO8 - Protect and enhance biodiversity to support the necessary changes to adapt to climate change. Where possible, encourage the development of wildlife corridors. SO9: Promote healthier and more active lifestyles through the provision of access to a range of sport, recreation, health and leisure facilities

City of London Biodiversity Action Plan 2021-2026

The City of London Biodiversity Action Plan 2021-2026 can be viewed here: https://democracy.cityoflondon.gov.uk/documents/s149934/Appendix%201%20-%20Draft%20City%20of%20London%20Biodiversity%20Action%20Plan%202021-2026.pdf#:~:text=The%20aim%20of%20the%20BAP%20is%20to%20produce,taking%20into%20consideration%20both%20local%20and%20national%20priorities.

All bat species are included in the plan.

EFFECT OF LEGISLATION AND POLICY ON DEVELOPMENT WORKS

A European Protected Species Licence (EPSL) issued by Natural England will be required for works likely to affect a bat roost or for operations likely to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (e.g. survive, breed, rear young and hibernate). The licence is to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and their efficiency/success to be monitored. The legislation may also be interpreted such that, in certain circumstances, important foraging areas and/or commuting routes can be regarded as being afforded *de facto* protection, for example, where it can be proven that the continued usage of such areas is crucial to maintaining the integrity and long-term viability of a bat roost (Garland & Markham, 2008).

There are 17 species of bat breeding in England and Natural England issues licences under Regulation 55 of the Habitats Regulations to allow you to work within the law. Licences are issued for specific purposes stated in the Regulations, if the following three tests are met:

- The purpose of the work meets one of those listed in the Habitats Regulations (see below);
- That there is no satisfactory alternative;
- That the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status (FCS) in their natural range

The Habitats Regulations permits licences to be issued for a specific set of purposes including:

- include preserving public health or public safety or other imperative reasons of over-riding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment;
- scientific and educational purposes;
- ringing or marking; and,
- conserving wild animals.

Development works fall under the first purpose and Natural England issues bat mitigation licences for developments.

EUROPEAN PROTECTED SPECIES POLICIES

In December 2016 Natural England officially introduced the four licensing policies throughout England. The four policies seek to achieve better outcomes for European Protected Species (EPS) and reduce unnecessary costs, delays and uncertainty that can be inherent in the current standard EPS licensing system. The policies are summarised as follows:

- Policy 1; provides greater flexibility in exclusion and relocation activities, where there is investment in habitat provision;
- Policy 2; provides greater flexibility in the location of compensatory habitat;

- Policy 3; provides greater flexibility on exclusion measures where this will allow EPS to use temporary habitat; and,
- Policy 4; provides a reduced survey effort in circumstances where the impacts of development can be confidently predicted.

The four policies have been designed to have a net benefit for EPS by improving populations overall and not just protecting individuals within development sites. Most notably Natural England now recognises that the Habitats Regulations legal framework now applies to 'local populations' of EPS and not individuals/site populations.