



DARWIN ECOLOGY
integrating nature conservation

8 Layton Lane, Shaftesbury, Dorset SP7 8EY
Email: info@darwin-ecology.co.uk www.darwin-ecology.co.uk

Bat Emergence Surveys and Mitigation Report

Battleaxes
Bristol Road
Wraxall, Bristol
BS48 1LQ

October 2022

Darwin Ecology Ltd
Registered Office: 8 Layton Lane, Shaftesbury, Dorset SP7 8EY
Company No. 07654823

Contents:

1. EXECUTIVE SUMMARY	3
2. INTRODUCTION AND BACKGROUND	4
Site Overview	4
3. LEGISLATIVE AND POLICY BACKGROUND	5
Bat Legislation	5
National Planning Policy Framework (NPPF) July 2018	5
4. METHODOLOGY	7
Dusk emergence / re-entry surveys	7
Update Internal Survey	7
5. OVERVIEW OF SURVEY RESULTS	8
Results - Dusk Emergence and Dawn Re-entry Surveys	8
Limitations	9
6. DISCUSSION AND RECOMMENDATIONS	11
General Method statement to be applied to all works	12
7. ENHANCEMENT RECOMMENDATIONS	15
8. REFERENCES	17

QUALITY CONTROL		
The information which we have prepared and provided is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct.		
Prepared by	Senior Ecologist Olatz Gartzia BSc, MSc, ACIEEM	14.10.22
Checked by	Senior Ecologist Sophie Higgins BSc, MSc, ACIEEM	17.10.22
Issue Number	1	
<p>This report remains valid for 12 months from date of issue.</p> <p>Survey data are valid for 12-18 months from the date the survey was undertaken.</p>		

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Whilst every effort has been made to guarantee the accuracy of this report, it should be noted that living creatures are capable of migration and whilst protected species may not have been located during the survey duration, their presence may be found on site at a later date.

The views and opinions contained within the document are based on a reasonable timeframe between the completion of the survey and the commencement of any works. If there is any delay between the commencement of works that may conflict with timeframes laid out within this document, or have the potential to allow the ingress of protected species, a suitably qualified ecologist should be consulted.

It is the duty of care of the landowner/developer to act responsibly and comply with current environmental legislation if protected species are suspected or found prior to works.

1. EXECUTIVE SUMMARY

- 1.1. Darwin Ecology Ltd. was commissioned by Studio Hive Ltd to undertake Phase 2 emergence/re-entry surveys at Battleaxes, Bristol Road, Wraxall, Bristol, BS48 1LQ. The surveys were required to support a planning application for the renovation and development of the site for a new mix of uses including community hub, farm shop, cafe, studio spaces and artisans' studios together with overnight accommodation.
- 1.2. Arbtech Consultants undertook a Preliminary Ecological Appraisal and building inspection survey on the 2nd August 2022. During the survey, three buildings were inspected. The main building (Building 1) was found to have several gaps on the tiles and wall and feeding remains were found throughout the building, including within the stairwell to the ground floor and was assessed as providing a high potential. The outbuilding (Building 2) had several slipped tiles and feeding remains and a small cluster of droppings, so was confirmed as a bat roost. Finally, the garage (Building 3) was assessed as providing a moderate potential due to some slipped and missing tiles on the roof.
- 1.3. In line with the Bat Conservation Trust (2016) guidelines, three emergence surveys were carried out in August and September 2022.
- 1.4. During the emergence surveys a single common pipistrelle (*Pipistrellus pipistrellus*), a single soprano pipistrelle (*Pipistrellus pygmaeus*), and a lesser horseshoe (*Rhinolophus hipposideros*) bat day roosts were identified on the southern aspect of Building 1.
- 1.5. No bats were seen emerging or entering Buildings 2 or 3. The activity on site was generally low and limited to the line of trees present on the southern end of B1 only with low numbers of common pipistrelle and serotine bat (*Eptesicus serotinus*) foraging.
- 1.6. As the proposals include the re-roofing of Building A, a Bat Mitigation Class Licence (BMCL) will be required to permit the above actions. The works would result in the temporary destruction of day roosts for common pipistrelle and lesser horseshoe bats.
- 1.7. Outline mitigation and enhancement recommendations have been made in order to ensure that opportunities are available for protected species following the completion of the development, and that the ecological value of the site is enhanced in the long-term.

2. INTRODUCTION AND BACKGROUND

- 2.1. Darwin Ecology Ltd. was commissioned by Studio Hive Ltd to undertake Phase 2 emergence/re-entry surveys at Battleaxes, Bristol Road, Wraxall, Bristol, BS48 1LQ. The surveys were required to support a planning application for the renovation and development of the site for a new mix of uses including community hub, farm shop, cafe, studio spaces and artisans' studios together with overnight accommodation.
- 2.2. Arbtech Consultants undertook a Preliminary Ecological Appraisal and building inspection survey on the 2nd August 2022. During the survey, three buildings were inspected. The main building (Building 1) was found to have several gaps on the tiles and wall and feeding remains were found throughout the building, including within the stairwell to the ground floor and was assessed as providing a high potential. The outbuilding (Building 2) had several slipped tiles and feeding remains and a small cluster of droppings, so was confirmed as a bat roost. Finally, the garage (Building 3) was assessed as providing a moderate potential due to some slipped and missing tiles on the roof.
- 2.3. The proposed drawings on which this assessment is based are provided in Appendix 1.

Site Overview

- 2.4. The site is located in Wraxall, approximately 10km from Bristol City Centre within a small residential area located in a rural context.
- 2.5. The site is approximately 0.4ha and comprises several buildings including a large manor house converted into a pub, an outbuilding known as Wendy House and a double garage. The buildings are surrounded by a hardstanding car park with a small section of ornamental planting (see Figure 1).
- 2.6. The wider landscape comprises other residential properties with associated amenity gardens to the south and south west, large arable fields in all cardinal points and a large woodland to the north (see Figure 2).

Scope of Report

- 2.7. The aim of this report is to:
- Determine the presence/absence of bats in the buildings within the site;
 - Classify the roost type identified (e.g. day roost, maternity roost etc);
 - Carry out an impact assessment of the proposed works and how they will directly / indirectly affect the identified bat roost(s);
 - Outline the relevant legislation and protection afforded to bats; and
 - Provide avoidance, compensation, mitigation and enhancement measures recommended to avoid harm/injury to roosting bats.



Figure 1: Site location within the local landscape (Copyright Google Earth, 2022)

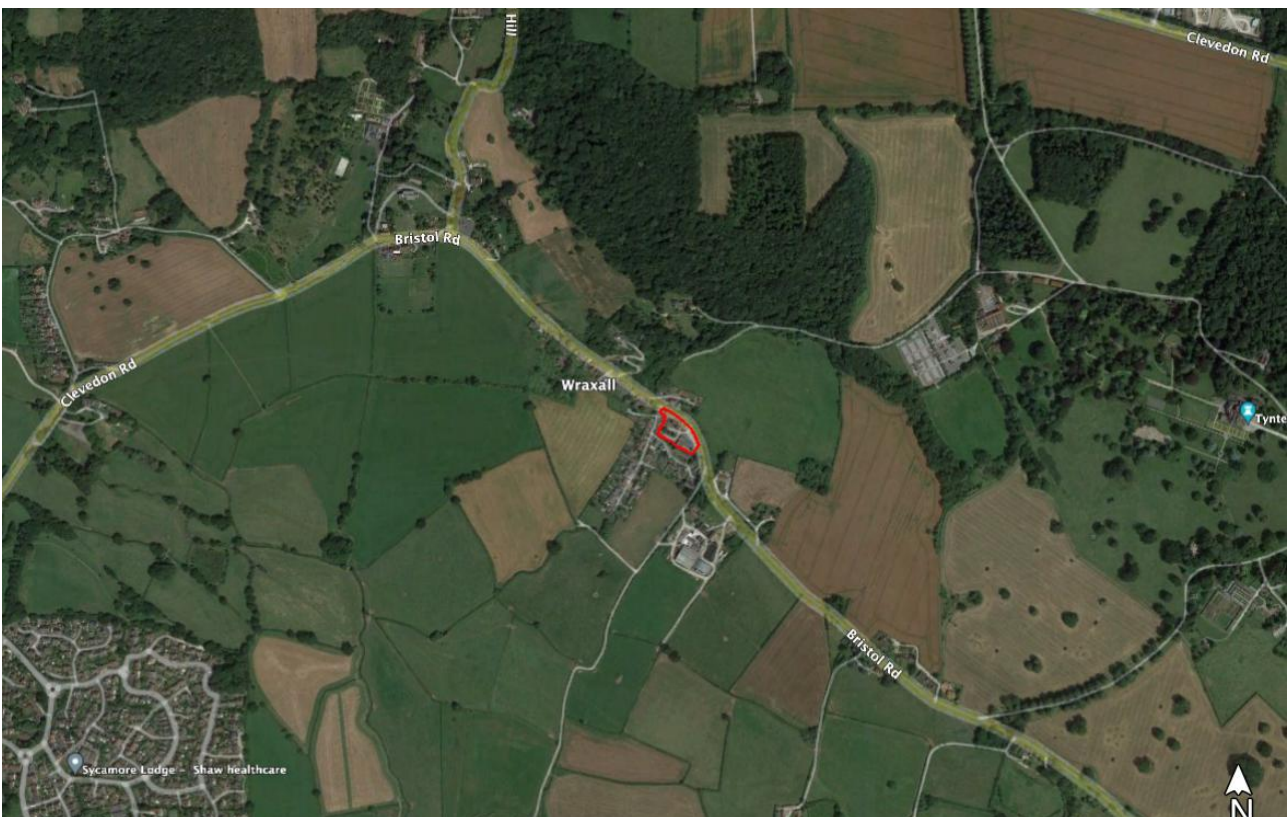


Figure 2: Site location within the wider landscape (Copyright Google Earth, 2022)

3. LEGISLATION & POLICY

Bat Legislation

- 3.1. In England and Wales, all bat species and their roosts are legally protected under the European *Habitats Directive (1992)*; the *Conservation of Habitats and Species Regulations (2017)*; the *Wildlife and Countryside Act (1981) (as amended)*; the *Countryside and Rights of Way Act, 2000*; and the *Natural Environment and Rural Communities Act (NERC, 2006)*.
- 3.2. *Barbastelle (Barbastella barbastellus)*, *Bechstein's (Myotis bechsteinii)*, greater horseshoe (*Rhinolophus ferrumequinum*), lesser horseshoe (*Rhinolophus hipposideros*), brown long-eared, soprano pipistrelle, and noctule (*Nyctalus noctula*) bats are all species of principal importance in England under *Section 41* of the *Natural Environment and Rural Communities Act 2006*.
- 3.3. You will be committing a criminal offence if you:
 - Deliberately capture, injure or kill a bat;
 - Intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats;
 - Damage or destroy a bat roosting place (even if bats are not occupying the roost at the time);
 - Possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat; or
 - Intentionally or recklessly obstruct access to a bat roost.
- 3.4. The government's statutory conservation advisory organisation, Natural England, is responsible for administering EPS licenses that permit activities that would otherwise lead to an offence.
- 3.5. A licence can be obtained if the following three tests have been met:
 - Regulation 53(9)(a) - there is "no satisfactory alternative" to the derogation, and;
 - Regulation 53(9)(b) - the derogation "will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range" and;
 - Regulation 53(2)(e) - the derogation is 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".

National Planning Policy

- 3.1. The *National Planning Policy Framework (2021)* aims to minimise impacts on biodiversity and provide net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity. Chapter 15 'Conserving and enhancing the natural environment' details what local planning policies should seek to consider with regard to planning applications.
- 3.2. Planning policies and decisions should contribute to and enhance the natural and local environment by:

174 a) Protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);

174 b) Recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;

174 d) Minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;

175) Plans should: distinguish between the hierarchy of international, national and local designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries;

176) Great weight should be given to conserving and enhancing landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural beauty which have the highest status of protection in relation to these issues. The conservation and enhancement of wildlife and cultural heritage are also important considerations in these areas, and should be given great weight in National Parks and Broads. The scale and extent of development within all these designated areas should be limited, while development within their settings should be sensitively located and designed to avoid or minimize adverse impacts on the designated area.

- 3.3. Specific policies regarding habitats and biodiversity comprise:

179) To protect and enhance biodiversity and geodiversity, plans should:

- a) identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity, wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation and
- b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species and identify and pursue opportunities for securing measurable net gains for biodiversity.

180) When determining planning applications, local planning authorities should apply the following principles:

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

Local Planning Policy

- 3.4. The local planning policy for the site is the North Somerset Core Strategy, with relevant policies comprising:

CS4 – Nature Conservation

The biodiversity of North Somerset will be maintained and enhanced by:

- seeking to meet local and national Biodiversity Action Plan targets taking account of climate change and the need for habitats and species to adapt to it;
- seeking to ensure that new development is designed to maximise benefits to biodiversity, incorporating, safeguarding and enhancing natural habitats and features and adding to them where possible, particularly networks of habitats. A net loss of biodiversity interest should be avoided, and a net gain achieved where possible;
- seeking to protect, connect and enhance important habitats, particularly designated sites, ancient woodlands and veteran trees;
- promoting the enhancement of existing and provision of new green infrastructure of value to wildlife;
- promoting native tree planting and well targeted woodland creation, and encouraging retention of trees, with a view to enhancing biodiversity.

CS9 - Green Infrastructure

The existing network of green infrastructure will be safeguarded, improved and enhanced by further provision, linking in to existing provision where appropriate, ensuring it is a multi-functional, accessible network which promotes healthy lifestyles, maintains and improves biodiversity and landscape character and contributes to climate change objectives.

Priority will be given to:

- the protection and enhancement of the formal parks and gardens originating from the Victorian era;
- the protection and planting of trees in woodlands and urban areas, particularly native trees, for public amenity and climate change mitigation and benefits to biodiversity, health and recreation;
- the promotion of the north slopes of the Mendip Hills AONB as sub-regional corridors for biodiversity, recreation and landscape retention;
- the promotion of the Congresbury Yeo, River Banwell, North Somerset Levels and Moors, and Grumblepill Rhyne as local corridors for biodiversity and landscape enhancement;
- the protection and enhancement of biodiversity;
- the connection of disjointed woodlands, particularly ancient and semi- natural woodland, such as those around the Wraxall/Failand ridge;

- the continued development of a network of green spaces, water bodies, paths and cycleways and bridleways in and around the urban areas, recognising the value of sustainable drainage systems for green infrastructure;
- the management, maintenance, upgrading and extension of the public rights of way network including improved connectivity to areas of green infrastructure within and outside North Somerset;
- the provision of strategically significant green spaces in association with all areas of development.

4. METHODOLOGY

Phase 2 Bat Surveys

- 4.1. Five dusk and dawn emergence surveys were conducted during the 2022 survey season. Surveys were undertaken in line with Bat Conservation Trust (BCT) Good Practice Guidelines (2016), with any limitations outlined below.
- 4.2. The surveys were conducted by the following surveyors:
 - Olatz Gartzia BSc (Hons), MSc ACIEEM
 - Claire Collings BSc (Hons) MCIEEM
 - Emily Wood BSc (Hons), MSc
 - Jessie Forster BSc (Hons)
 - Nathan Biggs
 - Becca Oswin BSc (Hons) GradCIEEM
 - Will Nield
 - Raquel Gonzalez
 - Eric Brice
- 4.3. Surveyors were positioned strategically around the buildings in order to provide adequate coverage of all elevations. Surveyors focused on any features identified during the Preliminary Roost Assessment (PRA) as having potential to be used as bat access points. The location of the surveyors and building numbers / names are shown on Figure 3, Bat Survey Results.
- 4.4. Dusk surveys began 15 minutes prior to sunset and lasted 1.5 hours after sunset. Dawn surveys started 1.5 hours before sunrise and lasted until 15 minutes after sunrise. Surveyors recorded bat activity using hand-held Echometer Touch detectors connected to Android or iPhone devices. Analysis of recordings was undertaken to confirm species identification. Observations recorded during surveys included bat access points, bat species, time, and type of activity (e.g. emergence, re-entry, commuting, foraging, etc.). Incidental records of bats within the vicinity of the building (but not necessarily roosting) were also recorded.
- 4.5. A Sony DCR-SR35 with night fox illuminator were also used to film bat activity at a fixed position, covering an aspect of the building not visible to the surveyors or as survey aids. The video footage was reviewed following the survey to identify any bat activity captured and any significant activity patterns and access points were identified and recorded.
- 4.6. A summary of the survey dates and weather conditions are provided in **Table 1**.

Table 1: Emergence and re-entry survey dates and weather conditions

Date	Survey type	Temp at start (°C)	Sunset/sunrise time	Weather conditions
17.08.2022	Dusk	18	20:25	80% cloud cover, light to moderate wind and no rain
23.08.2022	Dusk	25	20:17	Dry, light breeze, cloud cover 100%
31.08.2022	Dusk	21	20:00	Dry, light wind with 60% cloud cover
14.09.2022	Dawn	13	06:45	80% cloud cover, light to moderate wind and no rain
21.09.2022	Dusk	17	19:12	20% Cloud cover, light wind with no rain

Evaluating Bat Roosts

- 4.7. The value of the bat roosts on site was assessed in accordance with the article published in the Chartered Institute of Ecology and Environmental Management (CIEEM), In Practice Magazine - *Valuing Bats in Ecological Impact Assessment* (Wray, et al., 2010).
- 4.8. Roosts are assigned a relative ecological value based on the rarity of the species (Table 2) and categorisation of roost type (Table 3), informed by survey results. Once a value has been calculated, robust mitigation for any impacts identified from the proposed development can be determined.

Table 2: Categorising bat species by distribution and rarity

Rarest	Rare	Common
Greater horseshoe Bechstein's Alcathoe Greater mouse-eared Grey long-eared Barbastelle	Lesser horseshoe Whiskered Brandt's Daubenton's Natterer's Leisler's Noctule Nathusius' pipistrelle Serotine	Common pipistrelle Soprano pipistrelle Brown long-eared

Table 3: Valuing bat roosts

Geographic Frame of Reference	Roost Type
District, Local or Parish	Feeding perches (common species) Individual bats (common species) Small numbers of non-breeding bats (common species) Mating sites (common species)
County	Maternity sites (common species) Small number of hibernating bats (common and rarer species) Feeding perches (rarer/rarest species) Individual bats (rarer/rarest species) Small numbers of non-breeding bats (rarer/rarest species)
Regional	Mating sites(rarer/rarest species) including well-used swarming sites Maternity roosts (rarer species) Hibernation sites (rarest species) Significant hibernation sites for rarer/rarest species or all species assemblages
National/UK	Maternity sites (rarest species) Sites meeting Sites of Special Scientific Interest (SSSI) guidelines
International	Special Areas of conservation (SAC) sites

Limitations

- 4.9. The main building at Battleaxes was a tall building with a very complex roof and despite the use of many surveyors many small areas were not visible during the surveys. Additionally, the building was adjacent to a busy road with no pavement and for health and safety reasons only two surveyors could be located on the northern aspect.
- 4.10. A dusk survey with the use of a night vision aid was carried out in place of a dawn survey on Building 1 which was assessed as providing a high potential per the Bat Conservation Trust Interim Guidance Note, May 2022. The results are therefore considered to be an accurate representation of the general use of the buildings by roosting bats.
- 4.11. Nevertheless, bats may use roosting features intermittently throughout the year and may be present in larger or smaller numbers depending on their breeding cycle, weather conditions and in response to disturbance. Bats may be present at other times of the year and the results in this report should therefore be viewed in the context intended.

5. SURVEY RESULTS

5.1. Three emergence and re-entry surveys were carried out on Buildings 1 and 2, while Building 3 was surveyed once at dusk and once at dawn. Survey results are detailed below, and an activity map and surveyor location is provided in Figure 3.

Building 1

Emergence survey 17.08.2022

- 5.2. During the emergence survey on 17th August, a single common pipistrelle bat was seen emerging at 20:50 from under a slipped tile on the roof of the southwestern section of the building near the chimney. A soprano pipistrelle bat was then seen at 21:02 emerging from a location under the eaves of the south facing gable on the south western section of the building.
- 5.3. Overall, a very low level activity was recorded, with occasional passes and some foraging in the courtyard by common pipistrelle bats and a single big bat pass.

Table 4: Emergence Survey on Building 1 (17th August 2022)

Timing	Species	Roost type	No. of bats	Structure	Location on structure	Roost description
Start: 20:10	Common pipistrelle	Day roost	1	Building 1	South western section's roof	Roof tiles
Sunset: 20:25						
End: 22:25	Soprano pipistrelle	Day roost	1	Building 1	South western section's roof	Eaves of south facing gable
Observations: Very low activity around the site by common pipistrelle bats with occasional noctule and serotine passes.						

Emergence survey 31.08.2022

5.4. During the emergence survey on 31st August 2022, no bats were recorded emerging from Building 1. Low levels of activity was recorded mainly from common pipistrelle bats foraging along the vegetation. Occasional soprano pipistrelle activity and serotine bats were also recorded.

Emergence survey 21.09.2022

5.5. During the emergence survey on 21st September, a single common pipistrelle bat was seen emerging at 19:43 from under a slipped tile on the roof of the southwestern section of the building near the chimney. A lesser horseshoe bat was then seen at 19:48 emerging from an unidentified location on the southern aspect of the building. The location could not

be determined due to the presence of overgrown vegetation impeding surveyors to see the lower sections of the building. Emergence point it is believed to be on of the lower doors or windows facing the southern courtyard.

- 5.6. Overall, a moderate to high level activity was recorded, with common and soprano pipistrelles foraging on vegetation, with occasional passes from serotine and lesser horseshoe bats.

Table 5: Emergence Survey on Building 1 (21st September 2022)

Timing	Species	Roost type	No. of bats	Structure	Location on structure	Roost description
Start: 18:57	Common pipistrelle	Day roost	1	Building 1	South western section's roof	Roof tiles
Sunset: 19:12 End: 20:42	Lesser horseshoe	Day roost	1	Building 1	Southern aspect	Door/window facing courtyard
Observations: A moderate to high level activity was recorded, with common and soprano pipistrelles foraging on vegetation, with occasional passes from serotine and lesser horseshoe bats.						

Building 2

Emergence survey 17.08.2022

- 5.7. During the emergence survey on 17th August, no bats were recorded emerging from Building 2.
- 5.8. Overall, a very low level activity was recorded, with occasional passes and some foraging in the courtyard by common pipistrelle bats and a single big bat pass.

Emergence survey 31.08.2022

- 5.9. During the emergence survey on 23rd August 2022, no bats were recorded emerging from Building 2. Moderate levels of activity was recorded mainly from common pipistrelle bats foraging along the tree line on the courtyard. Occasional soprano pipistrelle activity and serotine bats were also recorded.

Re-entry survey 14.09.2022

- 5.10. During the dawn re-entry survey on 14th September 2022, no bats were recorded emerging from Building 2. A single common pipistrelle bat was recorded during the survey.
- 5.11. Once the survey ended, a licensed surveyor accessed the building to observe the interior, during which no bats were recorded. Two small dropping piles were recorded (5-6 droppings on each pile), on the south eastern corner of the room beneath a wire attached

to the wall, and beneath the gap on the window on the northern elevation, indicative of this window to be the entry point.

Building 3

Emergence survey 23.08.2022

- 5.12. During the emergence survey on 23rd August 2022, no bats were recorded emerging from Building 3. Very low activity was recorded mainly from soprano and common pipistrelle bats with occasional noctule and serotine passes.

Re-entry survey 14.09.2022

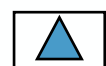
- 5.13. During the dawn re-entry survey on 14th September 2022, no bats were recorded emerging from Building 3. No bat activity was recorded.

Dropping DNA results

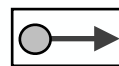
- 5.14. The droppings collected following the re-entry survey on 14th August 2022 were sent to Swift Ecology for analysis. The results came back as undetermined due to the degradation level of the sample.



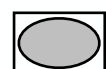
*NOTE Areas are indicative and are not shown to exact scale.



Surveyor Location

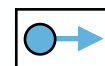


2022 Bat Emergence/ Re-entry Location and Flight Path
(coloured by species)

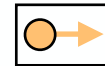


Area of Continuous Bat Activity
(coloured by species)

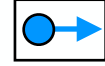
Bat Species



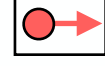
Common Pipistrelle



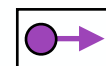
Soprano Pipistrelle



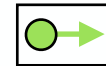
Noctule



Serotine



Lesser horseshoe



Myotis *spp.*



Unidentified species



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Info@darwin-ecology.co.uk
www.darwin-ecology.co.uk

Project: Battleaxes,
Wraxall

Figure 3: Emergence/ Re-
entry Survey Results

Date: September 2022

6. DISCUSSION, RECOMMENDATIONS AND MITIGATION

Bats

Evaluation of Bat Roosts on Site

- 6.1. Battleaxes is confirmed to support a day roost for a single common pipistrelle, soprano pipistrelle and lesser horseshoe bats on the southern aspect of Building 1. Despite the presence of droppings on Building 2, no emergences or re-entries were recorded. Based on the location and the number of the droppings, and the internal characteristics of the building, it was classified as an occasionally used night roost for a brown long-eared bat.
- 6.2. Table 6 provides a value of the roost in accordance with Wrey *et al.*, 2010. Impact of works.

Table 6: Value of bat roosts at Battleaxes

Species	Rarity	Roost Type	Value
Common pipistrelle	Common	Day	Local
Soprano pipistrelle	Common	Day	Local
Lesser horseshoe	Rare	Day	County
Brown long-eared	Common	Night	Local

Impact of Works

- 6.3. The proposed plans at Battleaxes comprise the renovation and development of the site which will include roof repairs or re-roofing.
- 6.4. Potential impacts to bats at Battleaxes therefore include the temporary loss of a day roost for a single common pipistrelle and a soprano pipistrelle bat, and the permanent loss of a day roost of a lesser horseshoe bat. Therefore, works could result in the potential for disturbance, injury or killing of bats in their roosts during works. Without mitigation the works will result in an offence under the *Conservation of Habitats and Species Regulations (2017)*.
- 6.5. The submission of a mitigation and compensation strategy will be necessary to permit the proposed works. The mitigation strategy provides details of the mitigation measures to minimise the risk of killing or injury of individual bats during the works process.

Mitigation

- 6.6. In line with the Bat Mitigation Guidelines (Mitchell-Jones, 2004) the roosts are of **low** conservation status. Therefore, the mitigation and compensation is providing new roost facilities where possible that need not be exactly like-for-like, but should be suitable, based on species' requirements. There are minimal timing constraints or monitoring requirements.
- 6.7. As proposed works impact B1, a Bat Mitigation Class Licence (BMCL) will be required for the works.

- 6.8. *Registration under BMCL:* Registration of the site can be submitted following planning approval by the Local Planning Authority (LPA) and the registration must be granted prior to any works commencing on site with potential to impact bats or their roosts. Whilst Natural England aim to provide licensing decisions within 10 working days, processing times may extend to 15 working days.
- 6.9. Under the BMCL, registered consultants can register a site, which permits the disturbance and / or capture of bats and / or damage / destruction of bat roost(s) of low conservation significance. Sites may be registered under the BMCL where there are:
- No more than three common species of bat;
 - Only individual or small numbers of bats of each species; and
 - No more than three roosts in total across all structures at the site.
- 6.10. Such licences will only be granted where it can be shown that there will be no detriment to the species of bat concerned. As such, suitable mitigation measures are will still be required. Mitigation measures will be proportionate to the level of use by bats on site and to the species roosting on site. Mitigation will include measures to ensure that bats are not harmed during the proposed works and to ensure that there is long-term provision of roosting opportunities on site. Input from a registered consultant (or their accredited agent) will be required during licensable activities at the site (such as roof removal).
- 6.11. *Timing of Works:* As the roosts present are summer day roosts (i.e. not maternity roosts), works may occur between March and October inclusive. Works between November and February should be avoided wherever possible as this is the winter hibernation period and bats are sensitive to disturbance at this time. The ideal period for works is during either the spring or autumn transitional periods (March / August and September / October / November respectively).
- 6.12. *Toolbox Talk:* Before commencing any work on site, all contractors will be inducted by a licensed bat ecologist or accredited agent in a Toolbox Talk, to ensure they are aware of the risks to wildlife, and particularly the presence of bat roosts, their legal protection and the working practices required to avoid harming bats and other species in order to ensure works follow legal requirements.
- 6.13. *Ecological Supervision:* Immediately prior to any works on site, the buildings must be subject to an internal and external survey by a suitably qualified and licensed bat ecologist to ensure as far as possible that no bats are present. In addition, hand removal / soft strip of all features suitable for use by bats must be done very cautiously and under supervision by a bat licensed ecologist.
- 6.14. *Alternative Roost Provision:* To provide safe release sites for any bats found during works, a single Schwegler 1F double fronted bat box will be used as a temporary roosting site.

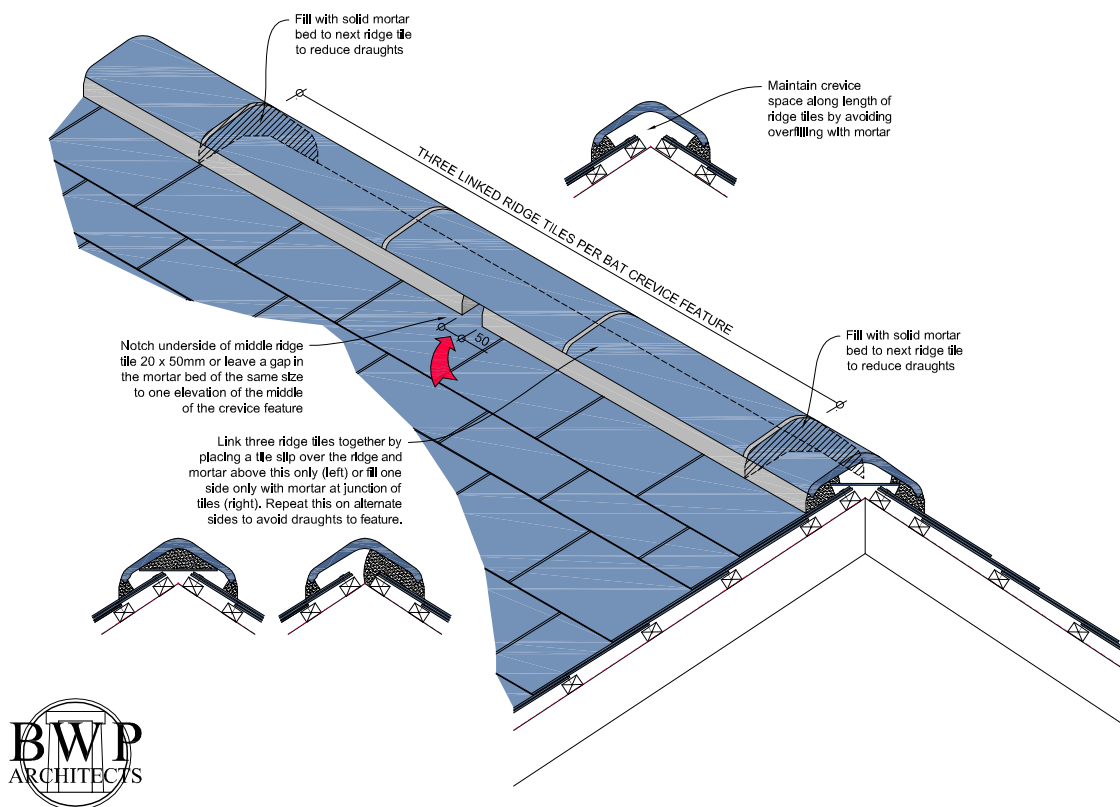
The location of the boxes will be determined by a licensed bat ecologist to ensure the likelihood of uptake is increased. Bat boxes will be installed at a height of between 4 - 10 m, preferably on a sheltered, southern, un-cluttered aspect with good connectivity to linear features such as other mature trees and hedgerows. The boxes must be installed prior to the works commencing to ensure that roosting opportunities are available on site at all times during and post-development.

- 6.15. *Roofing Membrane*: **NO breathable roofing membrane will be permissible in any part of the building that may be used by bats.** Type 1F bitumen roofing felt must be used at areas where bats may gain access (to be discussed with licensed ecologist but generally including features such as traditional clay-tiled roofs, verges, ridges, chimney bases, dormer windows, etc.) or where specific bat roosting features are created, as breathable roofing membranes are proven to create a lethal entanglement hazard to bats. Natural England will not permit the use of breathable roofing membranes at sites where confirmed bat roosts have been recorded. Any deviation from use of Type 1F bitumen roofing felt must be discussed and approved in advance by a licensed ecologist. Mitigation solutions can sometimes be found where optimal ventilation is required (for example, where the proposed works include the conversion of loft voids into habitable spaces).
- 6.16. *Timber Treatment*: Any use of timber-treatment or pest control treatment must be selected from the approved lists for safe use in or near bat roosts which can be provided on request.
- 6.17. *Lighting*: Any new external lighting must not illuminate bat access points and must be directed to avoid light spillage onto vegetation, particularly linear habitat features such as the gardens and hedgerows at the east of the site. Bats are sensitive to light and could potentially avoid the area if access points or the surrounding areas become lit. Minimising the periods of lighting and using motion sensors is strongly recommended, using a short timer to reduce the duration of lighting and reduce disturbance to bats. It is important to direct the light only where it is needed and avoid light spillage onto vegetated margins. Upward lighting can be minimised by fitting lights with downward facing baffles to avoid light pollution. Preventing light spillage above an angle of 70 degrees can be achieved by using fixtures that shield the bulb and direct the light downward. Warm white LEDs are less harmful to bats than bright white LEDs. If appropriate measures are taken to reduce light spillage from the development, it is likely that there will be no negative impacts on local bat populations.
- 6.18. See **Appendix 2** for further information on designing lighting to minimise impacts on bats.
- 6.19. *Habitats*: The proposals do not result in significant loss of foraging habitat for bats, however, a wildlife friendly landscaping scheme is recommended to enhance the site for bats and other wildlife.

Compensation

Roosting features for pipistrelle bats

- 6.20. It is recommended that a minimum of four roosting features be created in order to provide compensatory roosting opportunities. Ridge features for bats is recommended on the roof of Building 1 (Refer to Figure 4 for example of feature). The location of these features should be decided by an ecologist, but should face unobstructed flight lines and suitable commuting habitat, such as hedgerows or tree lines.



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Figure 4: Example of ridge feature for pipistrelle bats.

- 6.21. Wet or mortared ridges are always the preferred technique on buildings where bat access needs to be reinstated.
- 6.22. Where discrete features are being created, breathable roofing membrane must NOT be used in order to avoid hazards to bats.
- 6.23. In addition, to compensate for the loss of external common pipistrelle bat roosts, four access points will be created under fascia or barge boards. The features should provide gaps of 15-20 mm between the board and the wall plate and should be created on the same locations bat roosts are currently present were possible.



Photo 1: Example of ridge feature for pipistrelle

Roosting features for lesser horseshoe bats

- 6.24. It is recommended that a replacement roost is provided with appropriate measurements (at least 2.8m in height and 5m in length and width). The replacement roost should be located as close to possible as the existing roost and ideally along the southern elevation near the courtyard. An access point in the form for a closed door with a letter box style opening should be provided or a window with grids or baffles (Refer to Photo 2 below for example). The opening should be 300mm by 400mm and have a 45 degree slope, lined with led to deter birds from using the roost. The access should be on the southern elevation to replicate the existing access.



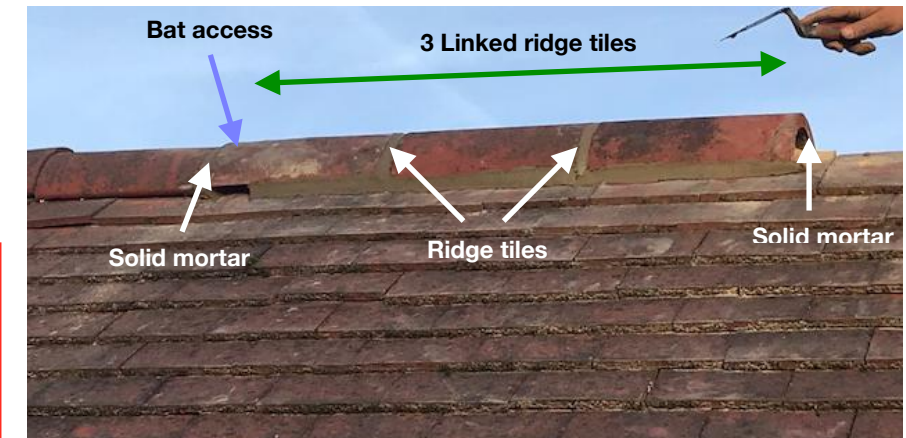
Photo 2: Example of window access for horseshoe bats.

Bat internal roost - Created with a minimum space of 2.8m H x 5m W x 5m L. Roof must be tiled and have a wet ridge and wet verges. The access point must comprise a closed door with a letter box style opening should be provided or a window with grids or baffles. The internal space must include exposed beams to provide hanging provisions.

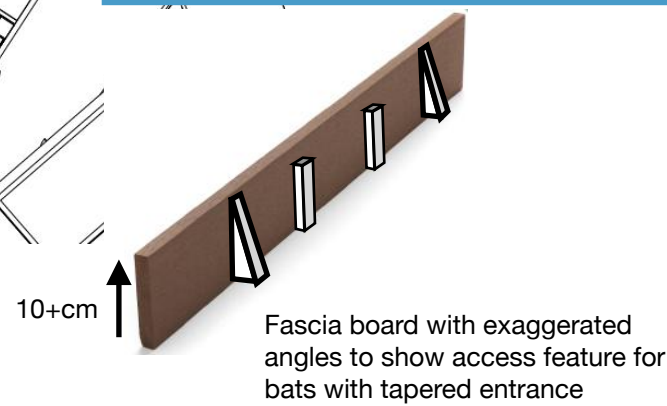
Ridge tile features - Created by doing a notch on the underside of a ridge tile measure 20mm high by 50mm wide, and leaving the gap free of mortar when bedding the tile into the ridge. To ensure three ridge tiles remain linked fill one side with mortar and leave the other side empty (do this on alternate sides to ensure the feature does not become draughty).




Gaps under fascia / Barge boards - The features should provide gaps of 15-20 mm between the board and the wall plate and should be created on the same locations bat roosts are currently present were possible



No breathable roofing membrane will be permissible at the replacement roost. **All bat licensed project require that type 1F bitumen felt lining is used.**



Bat Boxes:
 1x Schwegler 2F will be installed on suitable trees at a height of at least 4m, preferably on a southern un-cluttered aspect with good connectivity to linear features such as other mature trees and hedgerows. Additionally, two integrated bat boxes or 1 x Vincent Bat Box Pro and 1 x Schwegler 1FF will be installed on Building 1



-  Loft void to be created
-  External gaps under fascia / barge board
-  Proposed locations of integrated bat boxes

-  Proposed locations of ridge tile features
-  Letterbox style opening for lesser horseshoes

7. ENHANCEMENT RECOMMENDATIONS

7.1. National planning policy states that all developments should seek to enhance onsite biodiversity whether impacts on protected species are recorded or not. Incorporating enhancement features into new or renovated buildings should be carefully considered. These features can be simple and inexpensive, please see below for specific recommendations.

Bats

7.2. In addition to the proposed compensation features, two additional integrated bat boxes such as Green&Blue integrated bat brick will be installed on the southern aspect of B1. If this is not possible a Vincent Bat Box Pro and a Schwegler 1FF will be installed on the same locations. Integrated bat bricks could also be installed in the new builds as an enhancement to the site.

7.3. Additionally, five ridge tile features should be included on the new roof.

Birds

7.4. Bird boxes can also be installed on any trees or building on site. Bird boxes should be installed at least 4 m from ground level and with unobstructed air space in front.

Wildlife Beneficial Landscaping Scheme

7.5. Wildlife friendly landscape planting seeks to enhance biodiversity, improve connectivity to the surrounding habitats and provide food and shelter for a wide range of wildlife. All amenity planting and formally landscaped areas should be designed using a variety of plant species beneficial for wildlife. These do not necessarily have to be native but should be chosen for their ability to provide nectar or fruit and should be non-invasive species. There are a number of specialist seed mixes available specific to certain soil types, growing conditions and designed to benefit different groups of species such as bees or butterflies and moths.

7.6. All habitats should be managed in a suitable way to encourage a wide variety of insects and other wildlife to use the site.

7.7. Further information regarding habitat creation, enhancement and management can be provided on request.

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APPENDIX 1 PROPOSED PLANS

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Millimetres @A1

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- KEY**
- PROPOSED TREES
 - PROPOSED HEDGING
 - PROPOSED GRASS SEEDING
 - PROPOSED GRASS / FERNS / PERENNIALS / SHRUBS VARIATIONS
 - PROPOSED BANKED PLANTING
 - PROPOSED GREEN ROOFS
 - RAISED PLANTING BEDS
 - SELF BINDING COMPACTED GRAVEL
Colour Buff
 - LOOSE GRAVEL
Colour TBC
 - GARDEN FENCE:
1.8m High closeboarded timber fence, hardwood posts set in concrete footings.
 - NATURAL STONE WALLING/RETAINING
New natural, pennant stone walls to match existing Wraxall stone
 - NATURAL STYLE RETAINING WALL
New concrete walling with natural finish to marry in with surroundings
 - RESIN BONDED AGGREGATE TYPE 2
Vehicular/pedestrian tarmac to engineers specification. Colour TBC
 - RESIN BONDED AGGREGATE TYPE 3
Vehicular/pedestrian tarmac to engineers specification. Colour TBC
 - BLOCK PAVING
Pedestrian concrete block paving, with natural granite finish. Colour cream or buff
 - FLAG PAVING
Pedestrian sandstone flag paving, stretcher bond, mixed sizes and colours

PLANNING APPLICATION DOCUMENT

This document forms part of a planning application. It represents the record of the design issued to the Local Authority planning department at a given point in time and should not be used for contractual purposes.

The design shown is a representation of the building at RIBA Stage 2-3 and as such, is not suitable for use as construction information. Please take note of the document status in reference to international BIM standard ISO 19650.

For Contractors, Stakeholder and End User purposes related to Health & Safety and the CDM Regulations:

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement and construction phase plan. Please refer to all pre-construction health and safety information, located on the project Common Data Environment (CDE).

P1	14/02/23	Planning Application Issue	GP	NS	JC
Rev.	Date	Description	By	Chk'd	App'd

Drawing Suitability	PLANNING APPLICATION	Information Status	S2
STUDIO HIVE ARCHITECTURE	Architecture by Studio Hive 33 Oakfield Road Clifton Bristol BS8 2AT Tel: +44 (0) 117 2443 575 www.studio-hive.co.uk © Architecture by Studio Hive Ltd. (2021)		

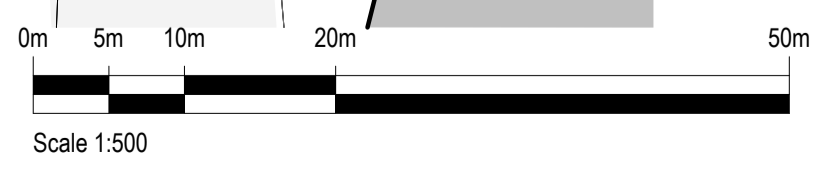
Client: Studio HIVE Ltd

Project Title: Battleaxes

Drawing Title: Proposed Site Plan

Scale	1 : 200	Author'd	GP	Checked	NS	Reviewed	GR	Authorised	JC	
Original Paper Size	A1	Date	21/10/22	Date	21/10/22	Date	21/10/22	Date	21/10/22	
Drawing Number	2105-ASH-XX-ZZ-DR-A-90110								Revision	P1

1 Proposed Site Plan
 SCALE 1 : 200



APPENDIX 2 BATS & LIGHTING



THE IMPACT OF LIGHTING ON BATS

Bats favour a dark environment for both roosting and foraging as they are adapted to low-light conditions. Artificial lighting will disturb bats if the lighting covers roost access points, flight paths or foraging habitats.

The main peak of nocturnal insect abundance occurs at dusk and a delay in emergence results in a lower foraging rate for bats.

Artificial lighting creates a 'vacuum effect' for nocturnal insects. During the night nocturnal insects use the light of the moon* to navigate. However, artificial lighting and even sky glow above cities obscures the natural moonlight as it is closer

and radiates light in multiple directions.

Some species of bats have been recorded foraging around street lights such as *Pipistrellus* species and *Nyctalus* species. However, species that are less tolerant of artificial light are at a disadvantage when foraging as insects are drawn away from these species usual foraging grounds into the zones of artificial light.

Lighting must be considered in context to any development as increased lighting may cause roost abandonment, reduced reproductive success, and reduced foraging. Mitigation to reduce the impacts of lighting for bats is therefore of great importance in bat conservation.

Table 1: Summary of predicted impact of lighting for each species/genus

Impact	High	Medium	Low
Behaviour			
Maternity roost	All species	-	-
Night roost	<i>Rhinolophus hipposideros</i> <i>Rhinolophus ferrumequinum</i> <i>Myotis</i> spp. <i>Plecotus</i> spp.	<i>Pipistrellus</i> spp. <i>Nyctalus</i> spp. <i>Eptesicus serotinus</i> <i>Barbastella barbastellus</i>	-
Emergence	All species	-	-
Foraging	<i>Rhinolophus hipposideros</i> <i>Rhinolophus ferrumequinum</i> <i>Myotis</i> spp. <i>Plecotus</i> spp.	-	<i>Pipistrellus</i> spp. <i>Nyctalus</i> spp. <i>Eptesicus serotinus</i> <i>Barbastella barbastellus</i>
Commuting	<i>Rhinolophus hipposideros</i> <i>Rhinolophus ferrumequinum</i> <i>Myotis</i> spp. <i>Plecotus</i> spp.	-	<i>Pipistrellus</i> spp. <i>Nyctalus</i> spp. <i>Eptesicus serotinus</i> <i>Barbastella barbastellus</i>
Swarming	All species	-	-
Hibernation	All species	-	-

*For more information see Warrant, E., and Dacke, M. (2016) Visual Navigation in Nocturnal insects. *Physiology*, 31, 182-196.

Sources of light that can disturb bats include; light spill via windows, sport floodlighting, car headlights, roadside lighting, security lighting, aesthetic lighting of waterways, and aesthetic illumination of buildings. Glare will affect bats over greater distance than the target area directly illuminated.

Avoidance is the most effective method, but if this is not possible the following measures should be considered.

What lighting should I use?

- Low pressure sodium lights or 'warm' LEDs
- Wavelength above 540nm
- Colour temperature below 2700K
- Shielded lights that prevent light spill above a 70 degree angle
- Passive infrared (PIR) motion sensors



What to avoid:

- Lighting roost entrances, flightpaths, and foraging or commuting routes
- Reflective surfaces beneath lighting
- High level lights
- Non-directional lighting

Lighting should be considered at an early stage allowing impacts to be minimised through the design of the site.

Key Points

- Keep lighting intensity to the minimum level required
- Limit the times that lights are on to provide some dark periods (e.g. switching installations off between midnight and 5am)
- Dim lighting according to demand
- As an alternative to lighting pathways use paving materials that reflect moonlight
- Low level lighting allows darkness to be retained within higher vegetation
- Set dark habitat buffers - lighting should always be a minimum of 25m from vegetated margins and 40m from waterbodies
- Incorporate dark corridors within the site
- Compensate for the loss of dark areas by enhancing other dark areas
- Consider building design - install internal lighting away from windows

APPENDIX 3 ENHANCEMENTS



TYPES OF BAT BOXES



Schwegler 2F Double Front Panel

- Manufactured from long-lasting woodcrete
- Lifetime - 20-25 years
- Suitable for pipistrelle and Myotis species
- A second inner wooden panel is fitted adjacent to the front panel imitating a cavity wall



Schwegler 1FD Double Front Panel

- Manufactured from long-lasting woodcrete
- Lifetime - 20-25 years
- Suitable for pipistrelle and Myotis species
- A second inner wooden panel is fitted adjacent to the front panel imitating a cavity wall
- Small entrance hole discourages birds from using the box



Vincent Pro Bat Box

- Manufactured from timber and recycled plastic
- The front and the top of the box is black, which helps heat absorption
- Suitable for a range of species including pipistrelle species, Myotis species, and brown long-eared bats.
- No maintenance required



Schwegler 2FN

- Manufactured from long-lasting woodcrete
- Lifetime - 20-25 years
- Suitable for pipistrelle species, Myotis species, serotine, brown long-eared, noctule and Leisler's bats
- Dual entrance
- Birds and dormice have also been found using this box
- A newer model is now available, Schwegler 3FN, designed with smaller entrance holes which discourage birds and dormice



Schwegler 1FS Large Colony Box

- Manufactured from long-lasting woodcrete
- Lifetime - 20-25 years
- Suitable for a range of bats including pipistrelle species, Myotis species, Noctule, and brown long-eared bats
- Three grooved inner wooden panels are connected to the front panel, which are ideal for bats to cling to.
- Accommodates large summer colonies



Schwegler 1FF Colony Box

- Manufactured from long-lasting woodcrete
- Lifetime - 20-25 years
- Suitable for a range of crevice dwelling bats including pipistrelle species, barbastelle, noctule, and brown long-eared bats
- Rough wooden surface for bats to cling onto and climb



Greenwoods Ecohabitats Small Hollow Bat Box

- Manufactured from long-lasting ecostyrocete
- Lifetime - 20-25 years
- Suitable for a range of bats preferring a cavity space, including pipistrelle species, myotis species, noctule, and brown long-eared bats
- Suitable for hibernating bats