



# Hillier House, Guildford

## Hillier Almshouse Charity

# Preliminary Bat Roost Assessment

23/07

21<sup>st</sup> April 2023

### Document History

Revision	Date	Description	By	Review
0	21 <sup>st</sup> April 2023	Hillier House Preliminary Bat Roost Assessment	Jack Kellett	Caroline Coleman

## Hillier House, Guildford

Job ref: 23/07  
Document No.: 23/07a  
Revision: 0  
Date: 21<sup>st</sup> April 2023  
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## Executive Summary

A Preliminary Bat Roost Assessment of the proposed development area at Hillier House was completed by JWK Wildlife Surveys Ltd in March 2023 on behalf of Hillier Almshouse Charity. This Ecology Report forms part of the environmental support to accompany the planning application for proposed works at the site and includes the results of a desk study and preliminary roost assessment, which were completed to establish the ecological baseline conditions within the site and to identify any potential ecological constraints to the proposed development in relation to bats.

The survey site is located within an urban location in the western extents of Guildford town in the Guildford borough of Surrey. The settlements of Artington and Littleton lie approximately 1.7km south and 1.8km southwest, respectively. The site is accessed from Bray Road that joins the wider survey site estate on the northern margin. Further pedestrian access is also possible directly from A31 that bounds the southern site extents.

Recent records for five species of bat were returned within 2km of the survey site with the closest records relating to brown long-eared bat, located 820m southeast of the survey structure in 2015.

The desk-based search revealed that the site falls within the SSSI IRZ for Wey Valley Meadow and Whitmoor Common SSSI's, located 1.5km northeast and 3.5km north, respectively. None of the sites have bat populations as a qualifying feature. The proposed development site is of limited size and the works discrete in nature with no functionally linked land to any designated site and it is therefore not considered that current proposals would have any significant negative impacts upon any offsite feature.

Under current proposals, no works are scheduled to any areas identified as providing potential roosting features for bats and therefore no further surveys are recommended.

However, due to the presence of potential bat roosting features within the survey structure, should proposals change and any potential roosting features be impacted a single dusk emergence/dawn re-entry survey is recommended to augment the findings of the preliminary roost assessment, this follows current guidance (Collins 2016). The results of the activity survey can then be used to devise appropriate mitigation measures for the site. The activity survey must be undertaken in the active period for bats taken to run between mid-May and August inclusive.

If bats are found to be roosting within the building, two additional surveys would be required which would allow suitable mitigation and avoidance measures to be devised to safeguard bats or if loss, damage or disturbance of a roost is unavoidable, a Protected Species Mitigation (PSM) Licence will need to be obtained to enable the lawful removal of a roost. This will include the production of a method statement document which will be submitted as part of the licence.

The proposed development works should ensure a sensitive lighting design is incorporated into the scheme where possible to ensure any existing foraging and commuting routes remain dark post works to allow bats to pass through the environment.

Recommendations for ecological enhancements have been provided to help contribute towards achieving biodiversity gains.

# 1. Introduction

## 1.1 Background

JWK Wildlife Surveys Ltd was commissioned by Hillier Almshouse Charity to undertake a Preliminary Bat Roost Assessment relating to the proposed development works at Hillier House, Guildford, Surrey (hereafter referred to as “the site”).

Planning permission is being sought to extend the existing retirement housing.

The land subject to survey at Hillier House is the proposed development boundary which is presented in Figure 1 (Appendix A).

## 1.2 Study Area Context

The survey site is located within an urban location in the western extents of Guildford town in the Guildford borough of Surrey. The settlements of Artington and Littleton lie approximately 1.7km south and 1.8km southwest, respectively. The site is accessed from Bray Road that joins the wider survey site estate on the northern margin. Further pedestrian access is also possible directly from A31 that bounds the southern site extents. Private residential land bounds the site immediately to the west and northwest with Guildford County School to the south, beyond the A31. The wider grounds of Farnham Road Hospital bound the eastern and northern site areas.

In the wider landscape residential land dominates in all directions with interspersed greenspace to the southwest. Guildford town centre lies approximately 700m east. Open grassland areas dominated to the southwest with an associated network of scattered hedgerows and tree lines. The wider development site has an approximate area of 0.3ha with a central grid reference of SU988 493.

## 1.3 Scope of Survey and Aims

The primary aim of the Preliminary Roost Assessment is to provide information on the baseline ecological conditions present within the survey area, in order to identify any ecological constraints present on site in relation to bats. Specifically, the key objectives of this report are to:

- Identify the potential for and presence of bats within the survey structures from a preliminary bat roost assessment and data provided by the local biological records centre;
- Identify the presence or absence of bats within the survey structures from a series of dusk emergence and dawn re-entry surveys;
- Provide recommendations to mitigate any development related impacts where possible and highlight requirements for any Protected Species Mitigation Licences; and
- Provide recommendations for ecological enhancements and net gain.

## 1.4 Legislative and Regulatory Context

All bat species and their roosts and resting places are fully protected under Schedules 5 and 6 of the Wildlife and Countryside Act 1981 (as amended), the Countryside and Rights of Way (CROW) Act 2000, and the Conservation of Habitats and Species Regulations 2017.

Full details of the legislative, planning policy and biodiversity framework along with information regarding the biology of bats their habitat requirements is provided in Appendix B.

## 2. Methodology

### 2.1 Desk Study

A desk study was undertaken for the site to obtain background ecological information in relation to bats for the site in March 2023. The desk study included the identification of any statutory sites designated for features relating to bats as well as any granted Protected Species Mitigation Licences (PSML) for bat roosts.

#### 2.1.1 Statutory Designated Sites

A search was carried out using the Multi-Agency Geographic Information for the Countryside (MAGIC) website (accessed March 2023) to identify the presence of the following statutory designated sites for nature conservation:

- Statutory sites of European and international designation within 2km of the site including: Special Areas of Conservation (SAC); Special Protection Areas (SPAs); and Ramsar sites.
- Statutory sites of national or regional designation within 2km of the site, including Sites of Special Scientific Interest (SSSIs); National Nature Reserves (NNRs); and Local Nature Reserves (LNRs).

The MAGIC website was used to identify if the site falls within any of Natural England's Impact Risk Zones for SSSIs<sup>1</sup>.

#### 2.1.2 PSML

MAGIC was also used to search for Protected Species Mitigation Licences which have been granted within 1km of the site in relation to bats. Typically, PSML are granted for development works affecting bat roosts.

#### 2.1.3 Bat Records

A data search was commissioned from the local records centre for all available data for bats within 2km of the search area.

### 2.2 Survey Area

The survey area for the information detailed within this report was limited to the two survey structures present within the site boundaries. Professional judgement was used to determine a proportionate and pragmatic survey area appropriate to this project during the survey. This was determined through consideration of the Zone of Influence, the potential impacts of the development, geographical area, desk study results, habitat quality and likely species present in accordance with good practice guidance and was considered appropriate to meet the objectives of the survey (Refer to Section 1.3 Scope of Survey and Aims).

## 2.3 Field Survey Methodology

All bat surveys were undertaken in consideration of current good practice guidelines, which include the Bat Mitigation Guidelines (Mitchell-Jones, 2004); The Bat Workers Manual (Mitchell-Jones and McLeish, 2004), Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edition) (Collins, 2016) and Interim Guidance Note on Night Vision Aids (Bat Conservation Trust, 2022). In addition, all surveys were led by an ecologist who holds a Natural England level 2 bat class survey licence.

### 2.3.1 Bat Surveys

#### 2.3.1.1 Preliminary Bat Roost Assessment

The interior and exterior of the building was inspected closely with the aim of identifying the presence of bats and any secondary evidence together with any potential roost sites. Secondary evidence includes droppings, feeding remains, scratch marks and oil and urine staining.

The external inspection comprised a detailed search of all accessible architectural features for roosting bats or secondary evidence. A high-powered torch was used to illuminate internal features at height, for instance the apex of a roof and associated supporting beams, and these were inspected using close focusing binoculars when required.

Where access permitted, and where present, roof voids were also inspected. This comprised a search of the floor area and other flat surfaces, including stored materials, in order to find evidence of discarded feeding remains and bat droppings. Internal features such as the roof lining were examined to assess actual or potential roost opportunities.

#### a) Roost Characterisation

Where a potential bat roosting feature or confirmed roost was identified, the surveyor assessed how these could be used by bats throughout the year, in accordance with Natural England (2015):

- day roost - where individual bats, or small groups of males, rest or shelter in the day, but rarely on summer nights;
- night roost - where bats rest or shelter at night, but rarely during the day;
- feeding roost - where bats rest at night between feeding sessions, but rarely during the day;
- hibernation roost - where bats are found during winter;
- transitional or occasional roost - where bats gather at a temporary site before and after hibernation;
- mating site - where males and females gather from late summer to early winter;
- maternity roost - where babies are born and raised until they are independent;
- satellite roost - where breeding females roost close to the main nursery colony in the breeding season; and
- swarming site - where bats gather in large numbers from late summer to autumn.

## 2.4 Limitations

The findings of this report represent the professional opinion of qualified ecologists and do not constitute professional legal advice. The client may wish to seek professional legal interpretation of the relevant wildlife legislation cited in this document. Should there be a delay in the proposed timeline, it is considered prudent that the survey findings be reviewed and updated as required for subsequent planning applications so that the assessment of ecological impacts is undertaken against an accurate baseline.

### **2.4.1 Data Search**

It is important to note that, even where data is held, a lack of records for a defined geographical area does not necessarily mean that there is a lack of ecological interest; the area may be simply under-recorded.

### **2.4.2 Bat Surveys**

Bats are mobile animals and can move roost sites throughout the year. It is possible that surveys carried out in March may miss roosts occupied later or earlier in the year. However, where undisturbed, it is possible to find secondary evidence of bats inside a building throughout the year, although secondary signs may be missed where they are within an area that can't be fully accessed.



### 3. Results

#### 3.1 Desk Study Results

##### 3.1.1 Statutory Designated Sites

The site is not subject to any statutory designations.

A total of four statutory designated sites were present within 2km of the proposed development site. The Surrey Hills Area of Outstanding Natural Beauty (AONB) lies 500m southwest at its closest point. Wey Valley Meadow SSSI lies 1.5km southwest, with Pewley Down LNR 1.85km southeast and Riverside Park LNR 2km northeast.

No other statutory designated sites were present within 2km of the survey structure. The site falls within the SSSI Impact Risk Zone for Wey Valley Meadow and also Whitmoor Common SSSI, located 3.5km north.

All of the above detailed sites are designated for habitat or landscape value and associated floral and invertebrate assemblages mainly associated with grassland and woodland habitats with bats not forming any qualifying feature to any site.

##### 3.1.2 Habitat

Approximately 30 woodland stands were identified within 2km of the survey site, with five categorised as ancient. The closest feature was located approximately 600m southwest.

No waterbodies were identified using online sources within 500m of the survey area boundary. The River Wey flows north to south approximately 550m east through Guildford town centre.

##### Connectivity

The wider survey site has some direct connections, via vegetative linear boundaries to a network of residential gardens and open grassland to the southwest, however main areas lie beyond A31.

##### 3.1.3 PSML

No granted PSML were present within 1km of the proposed development site.

##### 3.1.4 Bat Records

The data search returned recent (post 2013) records for five bat species within 2km of the survey area including; Common Pipistrelle (*Pipistrellus pipistrellus*), Soprano Pipistrelle (*Pipistrellus pygmaeus*), Noctule (*Nyctalus noctula*), Serotine (*Eptesicus serotinus*) and Brown long-eared bat (*Plecotus auritus*). Full details are presented in Table 1.

**Table 1 Bat Records (post 2013) within 2km of the Site.**

Species	Record details	Protection / Conservation status
Common Pipistrelle	Three recent unspecified records were returned by SBIC. The closest and most recent record was from 2019, located 1.9km east.	Schedule 2 of the Conservation of Habitats and Species Regulations 2010, NERC Act (2006), Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). UK BAP.
Soprano Pipistrelle	Four recent unspecified records were returned by SBIC. The closest and most recent record was from 2019, located 1.9km east.	Schedule 2 of the Conservation of Habitats and Species Regulations 2010, NERC Act (2006), Schedule

		5 of the Wildlife and Countryside Act 1981 (as amended). UK BAP.
Noctule	Three recent unspecified records were returned by SBIC. The closest and most recent record was from 2019, located 1.9km east.	Schedule 2 of the Conservation of Habitats and Species Regulations 2010, NERC Act (2006), Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). UK BAP.
Serotine	A single unspecified recent record for serotine was returned within 2km, located 2km southwest from 2015.	Schedule 2 of the Conservation of Habitats and Species Regulations 2010, Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Red list Vulnerable
Brown long-eared bat	Two unspecified recent records for brown long-eared bat were returned by SBIC, the closest from 2015 820m southeast. The most recent, also from 2015 located 2km southwest.	Schedule 2 of the Conservation of Habitats and Species Regulations 2010, NERC Act (2006), Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). UK BAP.

## 3.2 Bats

### 3.2.1 Preliminary Bat Roost Assessment

The building inspection was undertaken on the 22<sup>nd</sup> March 2023, the weather conditions were dry and bright with a gentle breeze. The temperature was 12°C.

All buildings subject to proposed works and identified as providing potential roosting features for bats identified during the preliminary bat roost assessment are detailed below within Table 2. A map showing the building location is provided in Appendix A

**Table 2: Building 1 Preliminary Bat Roost Assessment**

Building no.	Central Grid Ref	Footprint (m <sup>2</sup> )	Limitations	Date of Initial Assessment	Dates of Subsequent Assessments (if applicable)
B1	SU98824 49361	c. 880m <sup>2</sup>	None	22/03/2023	N/A
Usage	Roof Type(s)	Retaining Wall Construction	Adjacent Structure(s)/Connection(s)	Closest Significant Natural Habitat(s)	
Retirement residential	Double pitched throughout main areas with flat-roofed section connecting.	Brick throughout.	None.	Open grassland habitats 175m southwest and River Wey 550m east.	
Stories	Roof Construction	Fascia Feature(s)	General Descriptions (if applicable)	Connectivity/Commuting Route(s)	
Two	Concrete interlocking tiles throughout main pitched roof sections. Bitumen felt covered flat roof on connecting area.	Hanging tiles on majority of upper retaining wall sections across both western and eastern sections and multi-storied section of northern extent., Timber fascia boards on flat roofed sections.	Structure broadly follows an inverted 'U' shape with the main sections forming the western and eastern extents with a small, single storied flat roof section connecting on their northern extents.	Direct connections to adjacent gardens via tree lines and planted vegetative shrubbery.	
Loft Space / Cellar	Internal Construction		Eaves/Soffits/Chimney	Damage/Degradation	Orientation (main roof area)
Loft space	Timber framed throughout with central ridge beam. Timber rafters and supporting joist present. Exposed brick visible on both gable features with the majority of other roof sections lined with bitumen felt.		Discrete timber boxed eaves.	No areas of major damage, however some areas of superficial degradation including raised and damaged hanging tiles. Internally, some ripped areas of lining were noted.	Majority north to south.

**Photos**

Looking north across the eastern aspect.



A view of the south-eastern gable.



Looking north to flat roofed central section.



A view of the single storied northern areas.



Internal view showing timber frame structure.



Internal view showing timber roof frame.



**Roosting Bats Identified**


No.

**Secondary Signs**

None

**Key Potential Roosting Features**

Externally - raised and damaged hanging tiles, specifically on the western and eastern elevations of both main sections.  
Internally - open timber frame and areas of ripped lining provide some suitable features however no direct ingress points were noted from external areas.

Key Potential Roost Feature/Evidence Photos		
Example of raised hanging tiles.	N/A	N/A
	-	-
Notes Ingress opportunities due to construction style and age-related degradation associated with hanging tiles.		<b>Overall Assessment Rating</b> <b>Low Potential</b>

## 4. Discussion and Recommendations

### 4.1 Desk Study

Recent bat records (post 2013) were returned from SBIC for five species within 2km of the survey site with the closest records relating to brown long-eared bat, located 820m southeast of the survey structure in 2015.

It is assumed, due to the number and species records returned from the data search that multiple bat species are present within the area, and it is considered likely that bats would use the surrounding network of natural habitat blocks for foraging and commuting.

#### 4.1.1 Designated Sites

Four statutory designated sites were present within 2km of the proposed development area. The site falls within the SSSI IRZ for Wey Valley Meadow and Whitmoor Common SSSIs, located 1.5km southeast and 3.5km north, respectively. None of the sites have bat populations as a qualifying feature. The proposed development site is dominated by habitats considered to be of low value for biodiversity with no hydrological connection or any functionally linked land to any of the sites. It is therefore not expected that the proposed works for this site will lead to a negative impact on any designated site.

#### Recommendations

If the nature of the proposed works were to change, it is recommended that the client contact Natural England for advice before proceeding with works.

### 4.2 Bats

#### 4.2.1 Preliminary Roost Assessment

The survey structure was generally in good condition, however several areas of age and construction style related disrepair with multiple areas of minor superficial damage. Specifically, raised and damaged hanging tiles provided ingress opportunities for bats with associated internal lining and timber frame features providing potential roosting features. Based on the presence of suitable roosting habitat for bats it is considered the structure provides **low** overall potential.

#### Recommendations

Bats receive protection under the Conservation of Species and Habitats Directive 2010 (as amended), which affords protection to bats and the places they use for feeding, shelter and breeding.

Under current proposals no works are scheduled to any, or within 10m of any identified potential roosting feature and therefore no further survey work are considered necessary.

However, should proposals change and works be required to any potential roosting areas/or within proximity to any highlighted potential roosting features a single dusk emergence/dawn re-entry survey is recommended to augment the findings of the preliminary bat roost assessment; this follows current guidance (Collins 2016). The results of the activity survey can then be used to devise appropriate mitigation measures for the site, which may include the requirement for two further surveys should roosting bats be identified. The activity survey must be undertaken in the active period for bats taken to run between mid-May and August inclusive.

If bats are found to be roosting within the building suitable mitigation and avoidance measures will need to be devised to safeguard bats or if loss of a roost is unavoidable, a Protected Species Mitigation (PSM) Licence will need to be obtained to enable the lawful removal of a roost. This will include the production of a method statement document which will be submitted as part of the licence.

### Commuting and Foraging

Current proposals do not involve the removal of any natural features that are considered to provide significant commuting or foraging routes for bats and no external lighting, significantly above the current levels, is proposed.

Should proposals change and significant external lighting levels increase the below details in regard to a sensitive lighting design should be followed.

### *Lighting*

Due to the presence of bats within the wider site the proposals should aim to incorporate a sensitive lighting design to minimise light spill on surrounding features that could be used by foraging and commuting bats.

### Bats and Lighting

Different species of bat have been found to react differently to night-time lighting, however research has found that generally, all species of bats are sensitive to artificial lighting and that excessive lighting can delay bats from emerging, thus shortening the time available for foraging, as well as causing individuals to move away from suitable foraging grounds or roost sites to alternative dark areas (Jones, 2000). Bats can also become isolated from their foraging grounds if the linear features they use for commuting are suddenly illuminated, creating a light barrier (Fure, 2006).

New development should aim to minimise indirect impacts from lighting associated with the proposals. This can be achieved by following accepted best practice (Institute of Ecology and Environmental Management 2006, Institute of Lighting Engineers 2009, Bat Conservation Trust, 2014):

- low pressure sodium lights are a preferred option to high pressure sodium or mercury lamps, and lights should be directed low with minimal light spillage;
- ideally, some parts of the site (boundary habitats) should be kept dark, preferably at bat emergence (0-1 hour after sunset) and during peak bat activity periods (e.g. 1.5 hours after sunset and 1.5 hours before sunrise); and
- artificial lighting should not directly illuminate any potential bat commuting or foraging areas such as tree lines or offsite gardens.

Development provides the opportunity to enhance a site for biodiversity in accordance with local and national planning policy, therefore recommendations for site enhancement measures are provided in the section below.

## 5. Ecological Enhancements

Government planning policy (National Planning Policy Framework) now explicitly requires local authorities to seek wildlife gains through the planning process and not to just offset losses. Therefore, development projects should aim to create ecological enhancements and improve the biodiversity value of sites above and beyond mitigation / compensation requirements. A range of enhancement measures have been recommended below to contribute towards meeting these aims.

### 5.1 Native Species-Rich Planting

Any landscaping schemes should include a significant proportion of native species-rich planting of local provenance including a range of native trees, hedges, shrubs and wildflowers in order to increase the ecological value of the site for wildlife. The use of nectar rich and fruit bearing trees and shrubs is also advised where possible.

### 5.2 Connectivity

Any planting proposals for the scheme should serve to enhance the habitats on site for biodiversity and improve connectivity with the wider environment through the creation and maintenance of green corridors. This could be achieved through minimising light spill on boundary features, supplementary planting of vegetated boundaries to ensure species can pass the site freely.

### 5.3 Bats

#### 5.3.1 Roosting Provision

The proposed development presents an opportunity to enhance the site for bats. It is recommended that two bat boxes should be erected on mature trees within the wider site. This could include Schwegler 2F boxes or the Schwegler 1 FQ, which is maintenance free. Bat Boxes should be oriented southwest to southeast and located at least 3m above ground level on trees and ideally directly below the eaves if located on a building. The bat boxes must be located outside external light spill and close to suitable vegetation. They should be sheltered from strong winds and be exposed to the sun for part of the day. More details are provided in Appendix D.

The exact location of the bat boxes should be discussed and agreed with an ecologist prior to construction.

### 5.2 Additional Enhancements

#### Invertebrates

A range of insect nesting boxes<sup>2</sup> could be attached to offsite trees/shrubs within the wider site to encourage insect biodiversity at the site. Several long-lasting products are available that can be attached to trees, including boxes designed to attract pollinating insects, and ladybirds and lacewings that are a natural form of pest control for aphids and greenfly.

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<sup>2</sup> Available at <https://www.nhbs.com/browse/search?q=insect+boxes>



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**Appendix A. Figure**



Figure 1: Hillier House Preliminary Bat Roost Assessment

Drawn by: JK  
 Date: 20/04/2023  
 Not to Scale



## **Appendix B. Legislation and Biology**

## Legislation and Policy Framework

Bats and their resting places (e.g. bat roosts) are protected under the Wildlife and Countryside Act 1981 (as amended), the Countryside and Rights of Way (CROW) Act 2000, and the Conservation of Habitats and Species Regulations 2017.

The Conservation of Habitats and Species Regulations 2017 transpose the European Union's 'Habitats Directive' (Council Directive 92/43/EEC) on the Conservation of Natural Habitats and of Wild Fauna and Flora (EC Habitats Directive) into UK law. The Regulations provide for the designation and protection of 'European Sites', the protection of 'European Protected Species' (EPS), and the adaptation of planning and other controls for the protection of European Sites. Bats and other European Protected Species (EPS) are listed on Schedule 2 of the Conservation of Habitats and Species Regulations 2017.

Under the Wildlife and Countryside Act 1981 (as amended) it is an offence to:

- Intentionally kill, injure or take certain animals listed on Schedule 5 (including bats)
- Intentionally or recklessly damage or destroy any structure or place which any wild animal listed on Schedule 5 (including bats) uses for shelter or protection;
- Intentionally or recklessly disturb any such animal (including bats) while it is occupying a structure or place which it uses for shelter or protection; or
- Intentionally or recklessly obstruct access to any structure or place which any such animal (including bats) uses for shelter or protection.

In addition, under this legislation there are offences relating to sale, possession and control of wild animals listed in Schedule 5.

Under the Conservation of Habitats and Species Regulations 2017 it is an offence to:

- Deliberately capture, injure or kill any wild animal listed as a European Protected Species (including bats);
- Deliberately disturb wild animals of any such species in such a way as to be likely:
  - 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;
  - To affect significantly the local distribution or abundance of the species to which they belong.
- Deliberately take or destroy the eggs of such an animal, or;
- Damage or destroy a breeding site or resting place of such an animal.

In addition, under this legislation there are offences relating to possession, control sale and exchange of an EPS.

## National Planning Policy

National Planning Policy Framework 2021 (NPPF) and Section 40 of the Natural Environment and Rural Communities Act 2006 (NERC), places a duty on all public bodies including local planning authorities to consider habitats and species of Principal Importance listed in Section 41 of the NERC Act and Priority Species/Habitats within Biodiversity Action Plans when considering a planning application.

It is recognised by the NPPF that the planning system should contribute to and enhance the natural and local environment by protecting and enhancing valued landscapes, recognising the benefits of ecosystem services, minimising impacts on biodiversity and providing net gain where possible by establishing coherent and resilient wildlife networks. Furthermore, it prevents both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by, soil, air, water or noise pollution or land instability.

When determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the following:

- If significant harm from a development cannot be avoided, mitigated or compensated, then planning should be refused;
- Development within or outside SSSIs should not normally be permitted;
- Development proposals where the primary objective is to conserve or enhance biodiversity should be permitted as should those that encourage opportunities to incorporate biodiversity; and
- Development that would result in deterioration of irreplaceable habitats (such as ancient woodland etc.) should be refused unless the benefits outweigh the loss.

## Summary of Biology and Habitat Requirements

Bats have evolved a number of behavioural, physiological and morphological features connected with their ability to fly and their nocturnal activity patterns (Kunz, 1982). British bats are entirely insectivorous and have a complex sonar system known as echolocation that enables them to find their insect prey and navigate around their environment at night. Echolocation involves emitting a rapid series of high frequency calls and then interpreting the returning echoes to build up a picture of their surroundings.

Bats' habitat requirements vary widely both at an individual and species level. Certain features such as woodland edges and freshwater pools support the highest densities of insects and are therefore often focal points for foraging bats (Walsh and Harris, 1996 a and b). Natterer's and brown long-eared bats for example mainly forage in woodland environments whilst Daubenton's bats forage chiefly in areas associated with water. Pipistrelle (*Pipistrellus spp.*), noctule, Brandt's, whiskered, serotine (*Eptesicus serotinus*) and Leisler's bats are generalist in their feeding strategies and forage around water bodies, woodlands, hedgerows and pasture (Altringham, 2003).



Bats use natural and man-made landmarks to navigate between roosts and foraging habitat (Schofield and Mitchell-Jones, 2003). Of importance are linear habitat features such as rivers, hedgerows and woodland edges as well as minor unlit roads or roads with hedgerows or tree



lines. Distances that bats travel between roosts and foraging areas are variable both within and between species. For example, brown long-eared bats generally forage within 1 – 2 km of a roost, whereas pipistrelles generally forage within 3 – 4 km of a roost and a Leisler's may forage up to 14 km from its roost (Hundt, 2012).



Bats use different types of roosts at different times of the year and different roosts within the breeding season. Bats hibernate between late October and March in an unexposed roost with a stable temperature, typically a cave, mine, cellar or tunnel. Around March, bats emerge from hibernation sites and move to their summer roosts, typically within man-made structures or suitable crevices in trees. Some of these roosts are used regularly (i.e. every summer) and for substantial periods of time, whereas others serve as 'transitional roosts' being used for only one or two days every year or temporarily (e.g. for one season only). Births occur during the summer months (June to August). The numbers of bats using roosts can vary from a single bat to hundreds of bats in a nursery colony or hibernation site (Altringham, 2003). Mating takes place between late August and early December, either at the winter hibernating site or at autumn mating sites.

## **Appendix C. Bat Box Design**



Example	Type	Dimension D x W x H (cm)	Target species	Location
	<b>2F Schwegler Bat Box (General Purpose) with or without Double Front Panel</b>	16 x 16 x 33	<p><b>Without panel:</b></p> <p>Particularly successful with brown long-eared bat. Also used by noctule.</p> <p><b>With panel:</b></p> <p>Ideal for crevice-dwelling species: pipistrelles, <i>Myotis</i> species (particularly Daubenton's), Leisler's and serotine.</p>	<p>On trees or buildings and at a height of 3 to 6m.</p> <p>In open sunny positions and in groups of 3 to 5 facing different directions.</p> <p><b>Please note that once bats have inhabited a roost site they may only be disturbed by licensed bat workers.</b></p>
	<b>1FQ Schwegler Bat Roost (For External Walls)</b>	9 x 35 x 60	<p>Species known to use buildings e.g. pipistrelles, long-eared bats, Natterer's, whiskered, Brandt's, Alcahoie (assumed based on current evidence), Daubenton's (occasionally), Bechstein's (very rarely), noctule (very rarely), Leisler's, serotine and barbastelle (rarely).</p>	<p>On external or internal walls (e.g. within a loft space). A minimum of 3m above the ground and where there is a clear flight path for bats entering and leaving.</p> <p><b>Please note that once bats have inhabited a roost site they may only be disturbed by licensed bat workers.</b></p>

Example	Type	Dimension D x W x H (cm)	Target species	Location
	<b>2FR Schwegler Bat Tube</b>	12.5 x 20 x 47.5	Species known to use buildings e.g. pipistrelles, brown long-eared, Natterer's, whiskered, Brandt's, Alcahoie (assumed based on current evidence), Daubenton's (occasionally), Bechstein's (very rarely), noctule (very rarely), Leisler's, serotine and barbastelle (rarely).	<p>Into the masonry of an external wall. It can either be built flush with the wall or beneath a rendered surface. A minimum of 3m above the ground and where there is a clear flight path for bats entering and leaving.</p> <p>Transverse connecting holes (optional) allow several tubes to be placed next to each other in modular form. It is recommended that at least three units are connected together. An optional passage through the rear panel also enables existing cavities in the walls to be accessed via the tube. This provides an excellent solution to the problem of providing access to existing roosts when converting or renovating older buildings.</p> <p><b>Please note that once bats have inhabited a roost site they may only be disturbed by licensed bat workers.</b></p>
	<b>Bat Brick House</b> Entrance hole: 20mm (high crescent at base)	Custom.	Designed to provide roosting opportunities for most of the UK bat species, including pipistrelles. The entrance hole can be tailored to different species.	Fitted into the walls of brick built buildings, either retrospectively post construction or during construction. Best at a height of 3-6m and ideally in sunny positions in clusters, facing different aspects. <a href="http://www.birdbrickhouses.co.uk/index.html">http://www.birdbrickhouses.co.uk/index.html</a> <p><b>Please note that once bats have inhabited a roost site they may only be disturbed by licensed bat workers.</b></p>

Example	Type	Dimension D x W x H (cm)	Target species	Location
	<b>Bat Brick</b>	10 x 21.5 x 6	Species known to use buildings e.g. pipistrelles, brown long-eared, Natterer's, whiskered, Brandt's, Alcatheo (assumed based on current evidence), Daubenton's (occasionally), Bechstein's (very rarely), noctule (very rarely), Leisler's, serotine and barbastelle (rarely).	<p>Shaped specially to allow bats to access the cavity of a house. They can be incorporated during both new build or renovation projects. (A cavity chamber may need to be constructed to maintain an area free of insulating material where bats can roost).</p> <p>Best at a height of 3-6m and ideally in sunny positions in clusters, facing different aspects.</p> <p><b>Please note that once bats have inhabited a roost site they may only be disturbed by licensed bat workers.</b></p>
	<b>Schwegler Brick Box Type 27</b>	24 x 18 x 26.5	Species known to use buildings e.g. pipistrelles, brown long-eared, Natterer's, whiskered, Brandt's, Alcatheo (assumed based on current evidence), Daubenton's (occasionally), Bechstein's (very rarely), noctule (very rarely), Leisler's, serotine and barbastelle (rarely).	<p>Flush with the outside wall of a building or underneath structures like arches, bridges and tunnels, where conditions are correct. It can be rendered or covered so that only the entrance hole is visible.</p> <p>Best at a height of 3-6m and ideally in sunny positions in clusters, facing different aspects.</p> <p><b>Please note that once bats have inhabited a roost site they may only be disturbed by licensed bat workers.</b></p>