Meadow Farm Stud, Newtown, Ramsbury, Marlborough, SN8 2PP

Dusk Emergence and Pre-dawn Re-entry Surveys for Bats



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The results of the survey and assessment work undertaken by All Ecology are representative at the time of surveying.

Every endeavour has been made to identify the presence of protected species on site, where this falls within the agreed scope of works.

The flora and fauna detailed within this report are those noted during the field survey and from anecdotal evidence. It should not be viewed as a complete list of flora and fauna species that may frequent or exist on site at other times of the year.

Up to date standard methodologies have been used, which are accepted by Natural England and other statutory conservation bodies. No responsibility will be accepted where these methodologies fail to identify all species on-site.

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Reference to sections or particular paragraphs of this document taken out of context may lead to misrepresentation.

Executive Summary

In August 2021, All Ecology was commissioned to undertake Dusk Emergence and Pre-dawn Re-entry Surveys for Bats on a house at a site known as Meadow Farm Stud, Newtown, Ramsbury, Marlborough, SN8 2PP.

The house is the subject of a potential planning application to permit its demolition and the erection of a new dwelling in its place.

The dusk and dawn surveys confirmed the presence of three bat roosts of Common Pipistrelle, Soprano Pipistrelle and Brown Long-eared bat, all used by single bats.

Pipistrelle bats were observed exiting/re-entering gaps between timber fascia boards and are likely to be roosting in small crevices in close vicinity to the roost entrances. A Brown Long-eared bat was observed roosting within the garage roof space during the initial building inspection. A single brief recording of a Brown Long-eared bat was noted during each of the dusk and dawn surveys by the surveyor located on the west side of the building; however, although the bat is known to roost in the roof space, no visual confirmation of the roost entrance/exit point was recorded. Recordings of Brown Long-eared bats during each survey were limited to single brief recordings which have been attributed to a single bat leaving and re-entering its roost. All roosts were classified as day roosts used by low numbers or individual bats.

The proposed demolition of the building will result in the loss of the roosts identified. Therefore, an **EPS Licence will be required** to permit the works.

The proposed mitigation strategy is to construct a dedicated bat loft within a new building on site which will provide new and enhanced roosting opportunities for Brown Long-eared bats, with added features pipistrelles and other species.

Details on timing of works, lighting, and supervision are also given.

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1.0 Introduction

Background

1.1 In August 2021, All Ecology was commissioned to undertake Dusk Emergence and Pre-dawn Re-entry Surveys for Bats on a house at a site known as Meadow Farm Stud, Newtown, Ramsbury, Marlborough, SN8 2PP.

1.2 The building is surrounded by typical residential gardens and entrance driveway with the boundaries of the site formed of hedge and trees. The site is located on the eastern edge of Ramsbury village, Wiltshire with the wider area being a mosaic of pasture and arable land, small pockets of woodland and the River Kennet approximately 180 m south.

1.3 The house is the subject of a potential planning application to permit its demolition and the erection of a new dwelling in its place.

1.4 A previous building inspection recorded a small number of scattered bat droppings within the main roof space of the house and two small clusters of droppings within the roof space of the attached garage. A Brown Long-eared bat was recorded roosting within the enclosed roof space of the garage on the underside of the roof structure above where droppings were recorded.

1.5 In terms of hibernation, any potential is likely to be limited to gaps and crevices for species such as pipistrelles that will tend to hibernate in relatively exposed locations in order to take advantage of warmer winter days to forage. Although long-eared bats will often remain in their summer roosts well into autumn and sometimes winter, the building's roof voids are unlikely to have any areas that are sufficiently insulated from external changes in temperature, making these areas poor for hibernation.

1.6 In accordance with the Bat Conservation Trust – Bat Surveys for Professional Ecologists: Good Practice Guidelines. 3rd Ed (Collins, 2016), buildings deemed to have high potential for roosting bats should be subject to two dusk emergence surveys and a separate pre-dawn re-entry survey to determine presence or likely absence of roosting bats. These should take place from May – September with at least two of these surveys should be undertaken from May to August inclusive. These should be in appropriate weather conditions for bats and be at least two weeks apart. The building was therefore subject to these surveys.

Objectives and Aim

1.7 The main objectives and aim of the surveys were to establish the following:

- Status of known roost(s).
- Presence/absence of other bat roosts.
- Status of other roosts if present.
- Whether a European Protected Species (EPS) licence is required to ensure legal compliance.
- Which type of mitigation measures would need to be employed.

Site Location



Figure 1: Site location plan.

Legislation and Status

Bats

1.8 All species of bat are listed on Schedule 5 of The Wildlife and Countryside Act (1981) and as such receive protection under Section 9 of this Act. This has been amended several times, most recently by the Countryside and Rights of Way Act 2000, which added 'or recklessly' to Section 9(4) (a) and (b). In summary, it is a criminal offence to:

- Intentionally kill, injure or take a wild bat.
- Be in possession of, or control, any live or dead wild bat or part of, or anything derived from a wild bat.
- Intentionally or recklessly damage, destroy or obstruct access to any place that a wild bat uses for shelter or protection.
- Intentionally or recklessly disturb any wild bat whilst it is occupying a structure or place that it uses for shelter or protection.
- Transport for sale or exchange, or offer for sale or exchange, a live or dead bat or any part of a bat.

1.9 The Conservation of Habitats and Species Regulations 2010, consolidate all the various amendments made to the Conservation (Natural Habitats, &c.) Regulations 1994, in respect of England and Wales. It is an offence to possess, sell or offer or transport for sale any European species of bat or any part derived from such a species. These Regulations also remove the 'incidental result defence'. In other words, it is no longer a defence to show that the killing, capture or disturbance of a species covered by the Regulations or the destruction or damage of their breeding sites or resting places was the incidental and unavoidable result of a lawful activity. Natural England can grant European Protected Species (EPS) licenses in respect of development to permit activities that would otherwise be unlawful.

1.10 Under Section 40 of the Natural Environment and Rural Communities Act (2006) public bodies, including Local and Regional Planning Authorities have a duty to 'have regard' to the conservation of biodiversity in England when carrying out their normal functions, which includes consideration of planning applications. In compliance with Section 41 of the Act, the Secretary of State has published a list of species considered to be of principal importance for conserving biodiversity in England. This is known as The England Biodiversity List, all of which make up the UK BAP Priority Species. This list forms the basis of the UK Biodiversity Framework, and in England, Biodiversity 2020: A strategy for England's wildlife and ecosystem services (Defra, 2011). Regional Planning Bodies and Local Planning Authorities will use it to identify the species that should be afforded priority when applying the requirements of the National Planning Policy Framework (NPPF) to maintain, restore and enhance species and habitats.

1.11 Seven bat species are NERC Priority Species (JNCC, 2007). These are:

- Barbastelle *Barbastella barbastellus*
- Bechstein's *Myotis bechsteinii*
- Noctule *Nyctalus noctula*

- Soprano Pipistrelle *Pipistrellus pygmaeus*
- Brown Long-eared *Plecotus auritus*
- Greater Horseshoe *Rhinolophus ferrumequinum*
- Lesser Horseshoe *Rhinolophus hipposideros*

1.12 Greater Horseshoe, Lesser Horseshoe, Barbastelle and Bechstein's, are afforded greater protection under European legislation, being listed under Annex II of the EC Habitats Directive which lists species whose conservation requires the designation of Special Areas of Conservation (SACs).

2.0 Methodology

Personnel

2.1 The surveys were carried out by Daniel Roberts BSc Hons QCIEEM and experienced bat surveyors, overseen by James Godbeer BSc Hons MCIEEM, an ecologist with over 14 years' experience working as a consultant. James has extensive experience of managing environmental contracts, and particular experience in surveying, assessment and mitigation for rare and protected species. He has considerable knowledge of the development and planning process including Ecological Impact Assessments, sustainable ecological design and he has completed ecology chapters of Environmental Statements. James holds a number of protected species licences including bats (all species, all counties, Class Licence Registration No. 2015-12313-CLS-CLS), and Great Crested Newts (Class Licence Registration No. 2019-44282-CLS-CLS). He has successfully obtained European Protected Species mitigation licences for a number of bat species including Lesser Horseshoe, Greater Horseshoe, Serotine, Brown Long-eared, Common Pipistrelle and Natterer's bats, for a number of roost types including maternity and hibernation sites

Dusk Emergence and Pre-dawn Re-entry Surveys

2.2 The surveys were carried out across the following dates:

- 10th August 2021 – Dusk Emergence Survey
- 24th August 2021 – Dusk Emergence Survey
- 24th September 2021 – Pre-dawn Re-entry Survey

2.3 In order to adequately cover the building, four surveyor positions were required.

2.4 In accordance with Bat Conservation Trust – Bat Surveys for Professional Ecologists: Good Practice Guidelines. 3rd Ed (Collins, 2016), dusk surveys should begin 15 minutes before sunset and continue for 1.5 – 2 hours after sunset with the survey start time adjusted on subsequent surveys or a repeat of the survey should bats already be in flight at 15 minutes before sunset. The dusk surveys therefore began 30 minutes before sunset to avoid the risk of having to repeat the survey as species such as pipistrelles will often emerge well before sunset.

2.5 Pre-dawn surveys begin at 2 hours before sunrise and continue until 15 minutes after sunrise or until all bats have entered their roosts.

Equipment

2.6 Surveyors were equipped with either Echo Meter Touch 2 Pro or Echo Meter Touch bat detectors. Registrations were recorded on the devices and notes were made on species recorded, behaviour, time of registration, location and direction of flight where possible, including incidental observations from surrounding habitats. Where it was not possible to identify a bat species on site, audio recordings were later analysed using Wildlife Acoustics' Kaleidoscope software. A Canon XA20 camcorder was used in infrared mode to assist with the survey.

Assessment

2.7 The surveyed building has been evaluated to assess which of the following categories it falls into, if any (Mitchell-Jones, 2004 & Collins, 2016):

- Transitional roost (April-September/October) - On waking from hibernation or in the period prior to hibernation, bats search for roosts in which they stay for only a few days or on some occasions several weeks. These transitional roosts can be occupied by a few individuals or occasionally small groups. The transitional roosts used prior to hibernation are generally cool and thus may allow bats to reduce their energy requirements before going into hibernation.
- Maternity roost (May-August) - Breeding females gather together around the beginning of May to form nursery colonies. During this period gestation begins with births typically occurring between June and July. The females and their young remain within the maternity roost until the young are weaned and independent (late July-August). These roosts tend to break up between August and September. Adult males are rarely found within these colonies. However, the adult males of long-eared bats, Daubenton's, Natterer's, and horseshoe bats can be found roosting within maternity colonies with their numbers increasing throughout the active season.
- Satellite roost (May-August) - Breeding females may have alternative roost sites in close proximity to the main nursery colony. These are referred to as 'satellite roosts'. The numbers of bats using these roosts can vary greatly, from a few individuals, to small groups.
- Mating roost (September-November) - All British bats are polygynous i.e. males mate with several females. Mating generally takes place from late summer and can continue through the winter. A number of different mating strategies are used by bats, though males of some species establish mating roosts, whereby they defend territory and display/call to females to mate.
- Hibernation roost (October-March) - Depending on the weather and food availability, bats tend to move to hibernation sites from October. Hibernation roosts can vary greatly in terms of the number of individuals and the diversity of species that occupy them. However, they tend to have a constant cool temperature and high humidity, which allows the bats to use less energy regulating their temperature. Bats will wake occasionally during hibernation to drink and feed.
- Night roost (March-November) - Bats may use roosts other than traditional day roosting sites to rest in during the night. These roosts vary in their conservation significance. Night roosts may be used by a single individual on occasion or they could be used regularly by the whole colony. Studies have shown that night roosts may be of particular importance to some species i.e. the Lesser Horseshoe, providing key resting places within core foraging areas.
- Day roost (March-November) - These roosts are used during the day to rest in. Males of most British species spend the summer roosting alone or in small groups with other males in such roosts. Bats may regularly use a number of day roosts, switching between them on a daily basis, though conversely they may occupy the same roosting site for several weeks.

- Feeding roost (May-November) - These roosts can be occupied by a single animal or a few individuals throughout the active season. They vary in their significance as they may be used by the whole colony or just a few individuals to feed, to shelter from the weather or to rest temporarily. Feeding roosts are often used by long-eared and horseshoe species.
- Other considerations, Swarming sites - Swarming takes place between August and November, whereby large numbers of bats from several species gather, generally around caves and mines. They are often dominated by the *Myotis* species and appear to be important mating sites with some bats travelling several kilometres to reach these areas. A proportion of the bats that travel to these sites will remain to hibernate.

Limitations

2.8 There were no limitations to carrying out the dusk emergence and pre-dawn re-entry surveys in accordance with the Bat Conservation Trust – Bat Surveys for Professional Ecologists: Good Practice Guidelines. 3rd Ed (Collins, 2016).

2.9 The surveys only provide a 'snapshot' of the bat activity associated with the building and immediate surroundings and although the statuses of the roosts can be established with a high level of confidence, as well as an absence of other roost types at the time of the surveys, it is possible that bats could roost at other times of the year.

3.0 Results

Dusk Emergence and Pre-dawn Re-entry Surveys

3.1 Three bat roosts were recorded over the course of the surveys. These were as follows:

- Roost 1 – Brown Long-eared day roost
- Roost 2 – Soprano Pipistrelle day roost
- Roost 3 – Common Pipistrelle day roost



Figure 2: Surveyed building.

- Roost 1 – Brown Long-eared bat day roost. The initial building inspection recorded a single Brown Long-eared bat roosting within the garage roof void. During each survey single brief recordings of a Brown Long-eared bat were recorded by the surveyor located to the west of the building. No observations were made of this bat but it is deemed highly likely that recordings were that of the bat initially recorded roosting within the roof space of the garage, leaving and re-entering its roost.

Table 1. Roost 1 – Brown Long-eared Emergence/Re-entry Counts

Date	No. of Emerging/ Entering Bats	Time of First Emergence after Sunset/Re-entry before Sunrise	Time of Last Emergence after Sunset/Re-entry before Sunrise
10/08/21 (dusk)	1*	27 minutes	-
24/08/21 (dusk)	1*	33 minutes	-
24/09/21 (dawn)	1*	40 minutes	-

* Brown Long-eared bat detected but unseen.



Photograph 1: Roosting Brown Long-eared bat within the garage roof space.

- **Roost 2** – Soprano Pipistrelle day roost. During the initial dusk survey four bats were observed exiting a small gap between timber fascia boards on the western corner of the south facing gable end. Two bats were recorded exiting the same gap during the subsequent dusk survey with one bat recorded re-entering the roost prior to sunrise during the pre-dawn re-entry survey.

Table 2. Roost 2 – Soprano Pipistrelle Emergence/Re-entry Counts

Date	No. of Emerging/ Entering Bats	Time of First Emergence after Sunset/Re-entry before Sunrise	Time of Last Emergence after Sunset/Re-entry before Sunrise
10/08/21 (dusk)	4	5 minutes	20 minutes
24/08/21 (dusk)	2	17 minutes	18 minutes

24/09/21 (dawn)	1	28 minutes	-



Photograph 2: Bat access point.

- **Roost 3** – Common Pipistrelle day roost. A single Common Pipistrelle was observed exiting a gap between timber fascia boards on the eastern corner of the south facing gable end wall. A single bat was recorded re-entering the same gap during the pre-dawn re-entry survey.

Table 3. Roost 3 – Common Pipistrelle Emergence/Re-entry Counts

Date	No. of Emerging/ Entering Bats	Time of First Emergence after Sunset/Re-entry before Sunrise	Time of Last Emergence after Sunset/Re-entry before Sunrise
10/08/21 (dusk)	1	1 minute*	-
24/08/21 (dusk)	0	22 minutes	-
24/09/21 (dawn)	1	35 minutes	-

* Before sunset



Photograph 3: Bat access point.

3.2 No other bat roosts were recorded within the building over the course of the surveys.

Activity

3.3 Other than bats leaving and entering the roosts, foraging activity over the site was dominated by Soprano and Common Pipistrelle bats foraging over gardens and trees on the outer boundaries of the site. Single brief recordings of a Serotine foraging over the rear gardens of the property were noted during each of the dusk surveys. Occasional recordings were made of Noctule bats passing overhead with no direct association with the site.

Table 4: Weather conditions and sunset/sunrise times.

Date	Temperature (°C)	Sunset/Sunrise Times	Wind	Cloud Cover (%)
10/08/21 (dusk)	15	20:40	None	10
24/08/21 (dusk)	19	20:11	Light	0
24/09/21 (dawn)	11	06:55	None	0

4.0 Evaluation

Dusk Emergence and Pre-dawn Re-entry Surveys

4.1 A Brown Long-eared bat day roost (Roost 1) occupied by an individual bat was discovered in the garage roof space during the surveys. The bat was observed roosting on the underside of the roof structure and adjacent to a timber rafter during the initial building inspection with two small clusters of droppings found. Evidence gathered during the building inspection and subsequent dusk and pre-dawn surveys indicated this is a roost which is highly likely to be used by an individual bat.

4.2 Brown Long-eared bats are one of the most common bat species in England, Britain and the UK. Their distribution extends across the UK wherever there is suitable woodland. They are listed as a NERC Priority Species. This species typically roosts in older buildings with large uncluttered roof spaces, roosting along the ridge beam, in mortise joints, gable ends and around chimneybreasts (BCT,2010).

4.3 A peak count of four Soprano Pipistrelles were recorded from emerging from Roost 2, with one Common Pipistrelle bat recorded emerging from and re-entering Roost 3. Pipistrelle bats are the most common species of bat in the UK with widespread distributions and roosting in a wide range of habitats and building types (BCT, 2010a, BCT,2010b). The precise roosting locations of crevice roosts (Roosts 2 and 3) could not be determined and bats will often crawl some distance to access their roost locations.

4.4 All roosts were occupied by low numbers or individual bats. Although bats of many species have been recorded giving birth to young alone or in smaller groups, the use of these roosts by individual and low numbers of bats, suggest the roosts are used by males, which usually roost singly or in small groups, and/or a non-breeding females. The consistently low numbers are not indicative of main maternity roosts and can be classified as 'day roosts'. This type of roost used can be classified as being of low conservation significance (Mitchell-Jones, 2004).

4.5 Any potential for hibernation would appear to be low given the open nature of the building and likely significant temperature changes within the building over the winter months and lack of any areas that would be well insulated against external changes in temperature. However, the presence of hibernating bats cannot be ruled out, especially pipistrelle bats which are known to hibernate in relatively exposed places to take advantage of warmer winter days to forage.

4.6 Activity recorded on and around the site was dominated by Common and Soprano Pipistrelles making regular foraging passes. A recording of a Serotine bat briefly foraging over the site was noted during each of the dusk surveys. Serotines mainly roost in buildings with high gables and cavity walls and is rarely found roosting in trees (BCT, 2010bc). This species tends to forage at tree-top height and in a variety of habitats including pasture, parkland, open woodland edge, tall hedgerows and gardens. The brief foraging activity observed had no association with building on site with the bat seen entering the site from the west before flying south and off site.

4.7 A small number of Noctules were observed and recorded passing overhead. Noctules tend to feed over habitats rich in invertebrate fauna such as permanent pasture, woodland edge and hedgerows. It is still a relatively widespread species in much of England, Wales and to southwest

Scotland, but has become scarce in some areas of intensive agriculture. Noctule bats are primarily tree dwellers and live mainly in rot holes and woodpecker holes. They occur rarely in buildings; most Noctule roosts in buildings are only gathering roosts, the colonies moving off at the end of May and early June (BCT, 2010d).

4.8 The level of activity recorded on the site was not considered significant and indicates it is likely that the site is of **low conservation significance** for these species and there was no indication that the site or adjacent areas were important commuting routes for any nearby larger roosts.

Table 5: Status of the building in relation to roosting bats.

Building	Roosting Bats
House	Brown Long-eared bat day roost use by a single bat – **low conservation significance.**
House	Soprano Pipistrelle day roost used by a maximum of four bats – **low conservation significance.**
House	Common Pipistrelle day roost used by a single bat – **low conservation significance.**

5.0 Impacts and Recommendations

Impacts

5.1 The house is the subject of a potential planning application to permit its demolition and the erection of a new dwelling in its place. In the **absence of mitigation** or any consideration of bats the following impacts and potential impacts have been determined.

- Demolition of the house resulting in the destruction of Brown Long-eared, Soprano Pipistrelle and Common Pipistrelle day roosts. **Low impact** to local bat populations.
- Disturbance of bats within known roosts with potential for injury in the event they are present when works take place from March – October. **Low impact** with regards to local bat populations.
- Possibility of the disturbance of other bat roosts used by bats at other times of the year than those recorded during the surveys, with potential for injury or cause to make them fly during the day making them vulnerable to predation. **Low impact** with regards to local bat populations.
- Temporary/permanent minor disruption of small areas of bat foraging habitat through changes in building layout, increase/changes in external lighting and increases in human activity across the site. **Unknown but likely low impact** with regards to local bat populations and precautionary mitigation possible.

5.2 The mitigation below has been determined to reduce or remove the likelihood of the impacts above.

Further Surveys

5.3 No further surveys are required at this time. Sufficient surveys have been carried out to determine the types of roosts present and the likely absence of roosting bats from other parts of the buildings at the time of the surveys. Repeat surveys would only be required should the works be delayed by a year or more in order to establish that the status of the building remains the same as that presented in this report.

Legal Compliance

5.4 The Wildlife and Countryside Act 1981 as amended by The CRoW Act 2000 and The Conservation of Habitats and Species Regulations 2010 makes it illegal to recklessly damage, destroy or obstruct access to any place that a wild bat uses for shelter or protection, whether the bat is occupying the shelter at the time or not. The destruction of bat roosts is usually only possible under a European Protected Species (EPS) Licence, which will require adequate compensation/mitigation.

5.5 European Protected Species (EPS) Licences to permit the above for the purposes of development must be obtained from Natural England. To gain a licence the scheme must have been issued with detailed planning permission and must not result in a loss of conservation status of the species concerned. It has been concluded that proposed works will result in the loss of Brown Long-eared, Soprano and Common Pipistrelle day roosts. Therefore, a licence to permit the demolition of the house **will** be required.

Mitigation

Timing of Works

5.6 A formal timetable of works is yet to be devised.

5.7 The roosts recorded are of low conservation status, restrictions on timing of works are not usually required; however, works between May and October inclusive will usually require bats to be excluded prior to works commencing. Exclusion of the Brown Long-eared from the building (Roost 1) is likely to be problematic given that the entrance to the roost was not identified. In this instance supervision and capture of the bat during the roof works is a more realistic approach.

5.8 To take into the possibility of discovering any hibernating bats, works that could expose these bats e.g. removal of roof materials, will not take place on days where the temperatures do not rise above 5 (^{0}C).

Pre-works Checks and Precautionary Methods of Working

5.9 A licensed ecologist will inspect the garage roof space prior to works commencing and be present to oversee the stripping of roof materials from the garage and the house. Any tiles and timber fascia boards would be carefully removed by hand with each turned over and inspected before being passed down. Any bats found would be removed to a bat box installed on a nearby tree within the site, from which they would be allowed to relocate of their own accord at dusk.

5.10 The ecologist will brief contractors who will be advised to adhere to the following procedures in the event that any other bats are found during works once the supervised works have been completed:

- If the roost is still in the structure and bats are not injured, stop work and contact a licensed ecologist. If help is not available, allow bats to fly out of harm's way.
- If material containing a roost has been removed, the roost is not exposed and the bats are not injured, temporarily seal and isolate the roost, stop work and seek advice from a licensed ecologist. If advice is not readily available, re-open it and allow bats to relocate of their own accord.
- If the roost has been exposed, and especially if bats have been injured, stop work, collect bats in a secure box or bag (using a glove) and contact a licensed ecologist.

5.11 Security lighting will not be used.

Habitat Creation

5.12 The proposed mitigation strategy will be to construct a new dedicated bat loft within the roof structure of the new building with new entry points in the form of two 50 mm x 20 mm gaps within the ridge of the roof leading to the internal loft space. The new roost will measure a minimum of 5 m long, 4 m wide and at least 2 m high which will provide an alternative roosting site for Brown Long-eared bats. The roof will be lined with bitumen felt with rough sawn timber boards fixed in various locations around the roof space to provide additional crevices and hiding places for long-eared bats and other species of bat such as pipistrelles. Lighting will be avoided around the bat roost to allow for dark conditions around the roost entrance and a commuting route off

site. The new roost will create dark, undisturbed conditions that will not be subject to draughts or human disturbance.

Habitat/site Management and Maintenance

5.13 The existing building is surrounded by residential gardens comprising habitats of low ecological value. No significant loss of habitat is predicted and gardens will continue to provide some limited value to foraging bats.

Lighting

5.14 The majority of foraging activity recorded consisted of pipistrelles which are very tolerant of increased light levels. However, Brown Long-eared bats are known to roost on the site, a species that is highly susceptible to disturbance from lighting, and are likely to forage on or around the site at times. Any lighting around new roost entrances would be avoided. Where lighting is required, measures to limit the potential for impacts should include the use of lighting only where absolutely necessary utilising highly directional warm white LED lighting, an example being down spots at 2.5 m high using warm white (2700 K) 8W LED lamps, 550 lumens, 35 degree beam angle. These could be individually activated by PIR sensors on a 5 minute cut off to further reduce their impacts. These will assist in lighting only the areas where lighting is required and minimising light spill either directly or through reflected light

Population monitoring, roost usage etc.

5.15 No monitoring of the roosts, which are day roosts, has been proposed due to the status of the roosts and the corresponding requirements for monitoring defined in the Bat Mitigation Guidelines (2004).

Mechanism for ensuring delivery of post-development works

5.16 No post-development works are proposed. The responsibility for the long-term maintenance of the roost would be the responsibility of the owners and be associated with the general maintenance of the new building(s). The ecologist would supervise where necessary and in accordance with the requirements of the EPS Licence and ensure that works are carried out to the agreed specification.

6.0 References

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7.0 Plans

Survey results

