

From: Julie Shannon [REDACTED]
Sent: 14 May 2019 14:40
To: Andrew Wood
Cc: Sally Gardiner; Peter James
Subject: Re: EP/36/19/HH - 9 Myrtle Grove - Bat survey request

Hi Andrew

Thank you for taking my call today.

I have since spoken with my client Sally and she has forwarded the bat survey report they have received.

They found no evidence of bats, "the building was deemed to be of negligible potential to support roosting bats", the surveyor has recommended a bat box be positioned on the eastern elevation. There is also a request to position bird boxes around the garden.

Both of these will be undertaken by my client should the scheme be given planning permission and after completion of the works.

I will draw her attention also to the WSCC ecologists requirements on careful artificial lighting to the project and restrictions to the works to the vegetation in their garden.

Thank you again for your time today,

Kind Regards

Julie Shannon

On Wed, 24 Apr 2019 at 15:03, Andrew Wood <Andrew.Wood@arun.gov.uk> wrote:

Ms. Shannon

EP/36/19/HH - 9 Myrtle Grove - Bat survey request

Please see attached comments from the Council's ecologist and provide a bat survey as requested.

Thank you,

Andrew Wood MRTPI

Andrew Wood MRTPI | Senior Planning Officer, Planning Department, Arun District Council |

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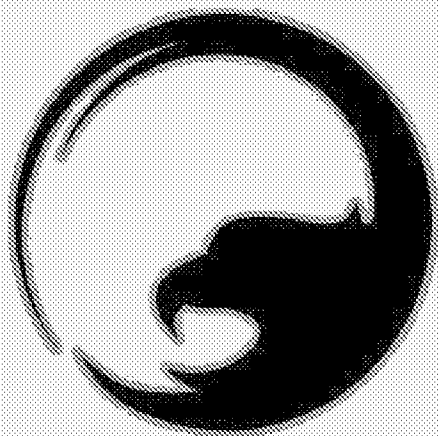
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Elite Ecology

Passionate about Ecology

**9 Myrtle Grove,
East Preston**



Preliminary Roost Assessment

May 2019



Hollinscroft House, Ultoxeter Road,
Lower Tean, Staffordshire, ST10 4LJ



0. Executive Summary

0.1 This report has been prepared at the request of Ms. Sally Gardiner (Proprietor). It relates to the potential presence of bats and birds at the proposed re-development site located at Myrtle Grove, East Preston, Rustington, West Sussex, BN16 2SP (Central OS Grid Reference: TQ 06565 02398). To fulfill this brief, Elite Ecology undertook a field survey.

0.2 The proposals for the surveyed structure are for a residential loft extension.

0.3 Due to the amount of potential ingress/egress points and suitable roosting features, the structure at 9 Myrtle Grove, East Preston was deemed to be of '**negligible**' potential for bats to roost and '**negligible**' potential for birds to nest. Therefore, no further activity surveys are required during the bat survey season (May to September, inclusive).

0.4 Summary

Bat presence/absence

From the survey visit undertaken on the site, it has been established that no bat roosts are present within the structure. However, foraging and commuting bats are anticipated within the local landscape, and their presence can be assumed.

Bird presence/absence

From the survey visit undertaken on the site, it can be concluded that the surveyed structure contains no evidence of nesting birds. However, the surrounding landscape provides all of the necessary habitat elements that birds require, and their presence can be assumed.

Ecological value of building units

The ecological value of the buildings has been deemed as 'negligible' to bats due to no potential access points around the structure. The ecological value of the buildings to birds has been deemed 'negligible' due to the absence of any nesting specimens.

0.5 Recommendations

The recommendations for '9 Myrtle Grove' can be summarised as follows (please refer to section '5 – Recommendations' for a more in-depth description):

- Enhance the site for bats by included one Eco Bat Box on the eastern elevation.
- Install a variety of bird boxes around the site post development to enhance the site for the local bird populations.

Contents

0. Executive Summary	1
1.1 Report rationale	3
1.2 Site description	3
1.3 Proposed works	4
1.4 Aims of surveys	4
2 Survey Methodology	5
2.1 Desktop Survey Methodology	5
2.2 Field Survey Methodology	5
2.3 Surveyors Information	8
2.4 Field surveys	8
3 Results	10
3.1 Desktop Survey Results	10
3.2 Field surveys	10
3.2.1 Habitat description	10
3.2.2 Building survey	11
3.2.3 Summary of the building inspection	12
3.2.4 DNA Results	12
3.2.5 Activity surveys	12
4 Impact Assessment	13
4.1 Constraints	13
4.2 Potential Impacts of the re-development	13
5 Recommendations	15
6 Summary	16
7 References	17
8 Appendices	18
Appendix A: Site Plans	19
Appendix B: The Ecological Data Search Maps	20
Appendix C: Artificial Lighting and Bats	21
Appendix D: Photographic Records	22
Appendix E: The Annual Bat Year (BCT)	24
Appendix F: Legislation and Policy	26
9 Notice to Readers: Conditions of this Report	27

1 Introduction

1.1 Report rationale

This This report has been prepared at the request of Ms. Sally Gardiner (Proprietor). It relates to the potential presence of bats and birds at the proposed re-development site located at Myrtle Grove, East Preston, Rustington, West Sussex, BN16 2SP (Central OS Grid Reference: TQ 06565 02398). To fulfill this brief, Elite Ecology undertook a field survey.

1.2 Site description

The site itself is situated within a rural setting within the West Sussex village of East Preston. Hard standing ground, amenity grassland and scattered trees are situated in the immediate vicinity of the building, as well as a conglomeration of other buildings (residential dwellings and their associated gardens). This report relates to one residential dwelling which measures approximately 350m². The habitats on site considered to contain potential to support the local bat and bird populations by offering roosting/nesting, commuting and foraging opportunities.

Figure 1: An aerial photograph of the surveyed structures at 9 Myrtle Grove, East Preston (as shown by the red outline).



1.3 **Proposed works**

The proposals for the surveyed structure are for a residential loft extension.

1.4 **Aims of surveys**

The aims of the surveys were to undertake an assessment of the building(s), vegetation and surrounding area to establish whether any bats and birds may be present and, if so, in what way they are using the site. The actions of the surveyors on the site and during the production of this report were conducted in accordance with Bat Conservation Trust (BCT) guidelines (3rd edition).

1.4.1 This survey effort considered the potential for all **bat and bird species (including barn owls)** onsite:

- To establish the possibility of bat roosts and bird nests being present at the proposed development site.
- To assess any roost/nest status (i.e. what type and numbers of individuals).
- To assess suitable food, resources and habitat requirements on site and in the local landscape.

1.4.2 The information will subsequently be used in conjunction with the knowledge of the proposed works at the site to determine the potential need for further survey effort, the impacts of the proposed scheme of works, to establish whether a Natural England Development Licence is required along with species-specific mitigation and compensation. This is done in order to keep any protected species at a favourable conservation status on site.

2 Survey Methodology

2.1 Desktop Survey Methodology

- 2.1.1 A variety of resources were independently consulted to assess the known local records within the nearby area and the importance of the site within the local landscape from an ecological perspective. The resources used were the Local Records Centre, www.naturalengland.org.uk, www.ordnancesurvey.co.uk, Google Maps, Google Earth and Bing Maps. A search of other relevant nature conservation information was made through the use of the Multi-Agency Geographic Information for the Countryside (MAGIC) database.
- 2.1.2 The local records centre were not contacted to provide data on all protected bat species within 2km of the proposed development site at this point. Sussex Wildlife Trust (SWT) were the relevant local record centre for this project.

2.2 Field Survey Methodology

2.2.1 Initial Site Survey

This is done by assessing the site by visually inspecting all building/s/structures and any trees/vegetation to be impacted by the proposed works. This is done to assess the resource availability for protected species on site and in the immediate area. Particular reference is made to:

- The presence or absence of bats and birds' onsite.
- Any evidence of potential bat roosts and birds' nests onsite.
- Whether any additional survey effort will be required.

During the initial survey, an internal and external inspection of the building(s) is undertaken to look for signs of bat activity. This is done in accordance with BCT guidelines for the assessment of building(s) and built structures.

2.2.2 External Inspection

This survey method is used to locate potential ingress and egress points around the structures that both bats and birds could use to gain access into the building. It also aims to identify any areas where cracks and crevices are present to be used as roosting/nesting features. This visual inspection is carried out in full daylight using binoculars, endoscope, torches and ladders.

This will allow for the determination of the following information:

- The type of building(s) surveyed.
- The approximate age of building(s) surveyed.
- The construction type and materials used.
- The presence of potential roost features (e.g. missing roof tiles, raised ridge tiles, air vents, cracks and crevices within the mortar).
- The presence of suitable ingress and egress points (e.g. missing windows and doors, missing mortar, lifted tiles).
- The location of any anecdotal evidence for the presence of protected species (e.g. nests, droppings or food remains).

2.2.3 Internal Inspection

This survey method aims to locate and examine areas which potentially provide suitable environmental conditions for bats. This visual inspection was undertaken by using binoculars, endoscope, torches, ladders and bat detectors to inspect internal features of the building(s).

This will allow for the determination of the following information:

- The presence of warm areas, dark areas, joints, crevices, beams and cavities that could be used for roosting and nesting purposes by bats and birds.
- To locate possible bat roost and bird nest sites.
- To listen for social calling bats.
- To locate any evidence of bat and bird presence through the identification of live or dead specimens, grease marks, droppings, food remnants, urine stains and/or the characteristic smell of bats.

2.2.4 Building/Vegetation Classification

A building/vegetation classification will be assigned to each surveyed feature that is proposed to be impacted by the scheme of works. This classification is based on the features potential to support roosting bats. The rating is also influenced by the location of the structure(s) in the local landscape, along with the number of suitable alternative roosting features, the type of features present in the landscape and the surveyor's experience. For example:

A structure that has a high level of anthropogenic disturbance with limited opportunities for access by bats, that is also situated within an urbanised area with few or no mature trees, parkland, woodland or wetland would generally equate to having negligible/low potential.

Conversely, an older structure (e.g. pre 20th century or early 20th century) with multiple features suitable for use by bats that is close to optimal foraging habitat would equate to having high potential.

The amount of additional survey effort required for each feature will depend on its rating:

- Negligible – No further survey effort is required
- Low – One further activity survey is required (structures only).
- Moderate – Two further activity surveys are required.
- High – Three further activity surveys are required.

2.2.5 Roost Categories

Any structures with evidence of bats will be further evaluated to assess which of the following roost categories may be present onsite:

- **Day Roost:**
A place where individual bats or small groups of males, rest or shelter during the daytime. These bats are rarely found at night at these sites.
- **Feeding Roost:**
A place where individual bats rest or feed during the night, but are rarely present in the day.
- **Hibernation Roost:**
A place where bats may be found either individually or together during the winter months. These roosts often have a constant cool temperature and high humidity.
- **Maternity Roost:**
A place where female bats give birth and raise their young to independence.
- **Mating Roost:**
A place where mating/copulation takes place between male and female bats. These can continue through the winter months.
- **Night Roost:**
A place where bats rest and/or shelter during the night, but will rarely be found here during the day. These can be used colonially or individually by the bats.
- **Satellite Roost:**
These are alternative roosting sites that are found within close proximity to the main nursery colony within the maternity roost. These are used throughout the breeding season by individual or small groups of female bats.
- **Swarming Site:**
A place where large numbers of bats come together during the latter summer months through until Autumn. These sites are classed as being important mating areas.
- **Transitional/Occasional Roost:**
A place that is used by individuals or small groups of bats for a small period of time. These are used by the bats prior to hibernation and/or shortly after hibernation.

2.2.6 Bat Detector Survey (presence/absence survey)

If required, the object for this survey method is to detect any bats leaving or returning to their roost sites within the surveyed features. This is achieved by undertaking dusk and dawn activity surveys under the following protocol:

- Commencing the survey 15 minutes before sunset (dusk survey) and 2 hours before sunrise (dawn survey).
- Listening for any social calls at potential roost sites using bat detectors.
- Standing at different survey points around the building(s) and/or vegetation using bat detectors to hear the bat echolocation.
- The survey will attempt to witness the first bats emerging (dusk) and the bats returning (dawn) to their roosts.
- Standing at different transect points at foraging/commuting areas around the site.
- Carrying out this survey methodology for up to two hours after sunset (dusk) and up to 15 minutes after sunrise (dawn). This will cover the emergence and re-entry of the bats at the potential roost site, for some bat species.

2.2.7 In order to comply with the required legislation, the results from the surveys will be collated to establish whether a European Protected Species (EPS) development licence will be required. If required, project appropriate species-specific compensation and mitigation measures will be devised to ensure the species remains at a favourable conservation status at the impacted site.

2.3 Surveyors Information

2.3.1 The survey was undertaken by licensed bat ecologist/s and members of the Chartered Institute of Ecology & Environmental Management (CIEEM) and Elite Ecology staff members:

Mr. Richard Millington BSc (Hons), ACIEEM, Senior Ecologist, Natural England Bat Survey Licence Number: 2016-26861-CLS-CLS Bat Survey Level 2.

Mr. Adam Harper BSc, Ecologist

2.4 Field surveys

2.4.1 Site Surveys

Elite Ecology were not made aware of any previous site surveys.

2.4.2 Roost Surveys

The building at 9 Myrtle Grove, East Preston were externally and internally inspected for the presence of bats and birds with the use of various types of equipment (including binoculars, torches, endoscope and ladders) in full daylight. Subsequent activity surveys use a variety of bat detectors that include Bat Box Duet, SSF Bat2 and the EcoObs Batcorder. The following table outlines the environmental variables from the survey visits:

Preliminary Roost Assessment

Environmental variables	PRA Survey of the Building - 14 th March 2019, Daytime
Temp Start:	10°C
Temp Finish:	11°C
Humidity Start:	87%
Humidity Finish:	84%
Cloud Cover Start:	90%
Cloud Cover Finish:	90%
Wind Speed Average:	Low
Precipitation:	None

3 Results

3.1 Desktop Survey Results

The ecological data search provided by SWT revealed a few bat species within the 2km search radius of the structure at 9 Myrtle Grove, East Preston.

3.1.1 Bats:

The ecological data search revealed several bat records within the 2km search radius. The UKBAP species revealed in the search were of brown long-eared (*Plecotus auritus*) bats. The non-BAP species recorded in the search were common pipistrelle (*Pipistrellus pipistrellus*), noctule (*Nyctalus noctula*), serotine (*Eptesicus serotinus*), western barbastelle (*Barbastella barbastellus*) bats. In addition to these, there were a few records of unidentified bat (*Chiroptera* sp.) specimens also revealed in the search.

The nearest records to the proposed development site were of brown long-eared (*Plecotus auritus*) specimens that were located approximately 748m to the south-west in 1990.

3.1.2 Birds:

No bird data has been ordered by Elite Ecology for this project. All UK birds can be split into three categories of conservation importance (red, amber and green – please see [RSPB](#) for more information). Elite Ecology feels that this survey effort accurately represents the site's utilisation by the local bird populations.

3.1.3 Designated sites

As the current proposals remain within the site boundary, it was not necessary to obtain any further information regarding both Statutory and Non-Statutory Nature Conservation Designations. This is due to the proposed works not altering any of the landscape surrounding the site.

3.2 Field surveys

3.2.1 Habitat description

9 Myrtle Grove is located in the West Sussex village of East Preston. On site, there are buildings, hard standing ground and amenity grassland. Within the wider landscape, further habitats are present. These come in the form of additional structures (with their associated gardens and yards), hard standing ground, scattered trees, hedgerows and woodland. Therefore, the habitats that are present in and around the site contains all of the elements that are considered to be critical in both bat and bird life cycles.

Figure 2: An aerial photograph of the surveyed site (yellow star) and some of the nearby habitats to the structure at 9 Myrtle Grove, East Preston



3.2.2 Building survey

External Inspection:

The structure is constructed of solid brick walls that have been rendered, with a pitch clay tile roof. The building also has an adjoining flat-roof section to the east. As the structure has been lived in recently, there are no broken or missing windows, with all doors still in place. All of the roof tiles sat flush to each other, with no gaps underneath for bats and birds to gain access into the property. There are no gaps around the fascia boards, with all of the mortar in good condition. No evidence of nesting birds was found externally.

Internal Inspection:

The property did have one loft space that was supported by timber beams and underlain with bitumen felt but the ceiling has recently been removed. Very few ecological features were present here, with some cobwebs visible. There is no anecdotal evidence of bats, with no evidence of nesting birds apparent.

3.2.3 Summary of the building inspection

Due to the amount of potential ingress/egress points and suitable roosting features, the structure at 9 Myrtle Grove, East Preston was deemed to be of **'negligible'** potential for bats to roost and **'negligible'** potential for birds to nest.

Therefore, no further activity surveys are required during the bat survey season (May to September, inclusive).

Table 1: Low/Moderate/High potential building(s) survey recommendations. The full guidance can be found in the Bat Conservation Trust Good Practice Survey Guidelines. These guidelines are what all local authorities abide by.

Bat Conservation Trust

Table 7.1 Recommended minimum number of survey visits for presence/absence surveys to give confidence in a negative result for structures (also recommended for trees but unlikely to give confidence in a negative result).		
Low roost suitability	Moderate roost suitability	High roost suitability
One survey visit. One dusk emergence or dawn re-entry survey ^a (structures). No further surveys required (trees).	Two separate survey visits. One dusk emergence and a separate dawn re-entry survey ^b	Three separate survey visits. At least one dusk emergence and a separate dawn re-entry survey. The third visit could be either dusk or dawn. ^b

^a Structures that have been categorised as low potential can be problematic and the number of surveys required should be judged on a case-by-case basis (see Section 5.2.9). If there is a possibility that quiet cooing, late-emerging species are present then a dawn survey may be more appropriate, providing weather conditions are suitable. In some cases, more than one survey may be needed, particularly where there are several buildings in this category.

^b Multiple survey visits should be spread out to sample as much of the recommended survey period (see Table 7.1) as possible; it is recommended that surveys are spaced at least two weeks apart, preferably more. A dawn survey immediately after a dusk one is considered only one visit.

3.2.4 DNA Results

No DNA Results were obtained for the site as no droppings were identified to be sent off for analysis.

3.2.5 Activity surveys

No activity surveys were undertaken on the structure at 9 Myrtle Grove, East Preston as the building was deemed to be of **'negligible'** potential to support roosting bats.

4 Impact Assessment

4.1 Constraints

Constraints on:	Survey Information	Equipment Used
Constraint (Yes or No):	No	No
Explanation of Constraints:	N/A	N/A
Action Taken:	N/A	N/A

4.2 Potential Impacts of the re-development

The current planning proposal will see a residential loft extension at the structure at 9 Myrtle Grove. The potential impacts of these works have been identified as follows:

4.2.1 Designated sites

As the proposed works are due to remain within the site boundary, the presence of any designated sites nearby is not applicable to this project. This, therefore, means that any building works would be of no detriment to the surrounding habitats and landscape.

4.2.2 Bat Roosts

Impact	Short-term Impacts: Disturbance	Long-term Impacts: Roost Modification	Long-term Impacts: Roost Loss
Classification:	Negligible	Negligible	Negligible
Justification:	The structure was deemed to be of 'negligible' potential to support roosting bats.	The structure was deemed to be of 'negligible' potential to support roosting bats.	The structure was deemed to be of 'negligible' potential to support roosting bats.
Any further action:	No further action is necessary.	No further action is necessary.	No further action is necessary.

4.2.3 Bird Nests

Due to the absence of previous bird nests on or within the residential dwelling, the proposed scheme of works will be of a '**negligible**' effect to the local bird populations.

4.2.4 Foraging and commuting habitat

It is considered that the re-development of the site would have a '**negligible**' effect on potential foraging and commuting habitat. The site itself offers little foraging habitat, with the adjacent land containing better opportunities for bats and birds to use. Post development, all foraging and commuting habitats will be maintained, thus not negatively affecting the local landscape.

5 Recommendations

From the site survey, it has been established that 9 Myrtle Grove is of negligible bat roosting potential due to the absence of any potential access points around the property. Therefore, no further activity surveys are recommended for the project.

To enhance the site for bats, it is recommended that one Eco Bat Box is installed on the eastern elevation upon completion of the project (this bat box is to be placed away from any artificial lighting).

No evidence of nesting birds was found on or within the structure. Therefore, there are no compulsory recommendations for this project. However, a variety of bird boxes can be installed around the site to enhance the nesting opportunities for a variety of additional species within the local landscape.

6 Summary

6.1 Bat presence/absence

From the survey visit undertaken on the site, it has been established that no bat roosts are present within the structure. However, foraging and commuting bats are anticipated within the local landscape, and their presence can be assumed.

6.2 Bird presence/absence

From the survey visit undertaken on the site, it can be concluded that the surveyed structure contains no evidence of nesting birds. However, the surrounding landscape provides all of the necessary habitat elements that birds require, and their presence can be assumed.

6.3 Ecological value of building units

The ecological value of the buildings has been deemed as 'negligible' to bats due to no potential access points around the structure. The ecological value of the buildings to birds has been deemed 'negligible' due to the absence of any nesting specimens.

6.4 Recommendations

The recommendations for '9 Myrtle Grove, East Preston' can be summarised as follows (please refer to section '5 – Recommendations' for a more in-depth description):

- Enhance the site for bats by included one Eco Bat Box on the eastern elevation.
- Install a variety of bird boxes around the site post development to enhance the site for the local bird populations.

7 References

Bat Conservation Trust (2016). *Bat Surveys – Good Practice Guidelines*. 3rd Edition. Bat Conservation Trust: London.

Berthinussen, A. & Altringham, J.D. (2012). The effect of a major road on bat diversity. *Journal of Applied Ecology* 49: p.p. 82–89.

Biodiversity Action Reporting System (2010). *Biodiversity Action in Staffordshire*. BARS. [Online]. Available at: http://ukbap-reporting.org.uk/plans/map_county.asp [accessed on 20th October 2010].

BSBI (2008). *BSBI 2007 List*. [Online]. Available at: <http://www.bsbi.org.uk/html/database.html> [accessed on 6TH January 2013].

The Conservation of Habitats and Species Regulations 2017 (Amendment). SI 2017/1012.

The Conservation (Natural Habitats, &c.) (Amendment) Regulations 2007. SI 2007/1843, London: HMSO.

Countryside and Rights of Way Act 2000 (c.37). London: HMSO.

Dietz, C., von Helversen, O. & Nill, D. (2009) *Bats of Britain, Europe and Northwest Africa*. London: A. C. Black

Hutson, A.M., Spitzenberger, F., Aulagnier, S., Coroiu, I., Karataş, A., Juste, J., Paunovic, M., Palmeirim, J. & Benda, P. (2008) *Pipistrellus pipistrellus*. In: IUCN 2012. IUCN Red List of Threatened Species. Version 2012.1

RSPB (2002). *The Population Status of Birds in the UK 2002-2007*

Rydell J & Racey, P A (1993). Street lamps and the feeding ecology of insectivorous bats. Recent Advances in Bat Biology, *Zool Soc Lond Symposium abstracts*.

UK Biodiversity Action Plan (2007). *UK List of Priority Species*. Joint Nature Conservation Committee. [Online]. Available at: <http://www.ukbap.org.uk/NewPriorityList.aspx> [accessed on 20th October 2010].

Wildlife and Countryside Act 1981 (and amendments) (c.69). London: HMSO.

8 Appendices

Appendix A: Site Plans

Appendix B: Eco Data Map

Appendix C: Artificial Light and Bats

Appendix D: Photographic Records

Appendix E: The Annual Bat Year (BCT)

Appendix F: Legislation

Appendix A: Site Plans

No site plans have been made available to Elite Ecology. For a copy of the plans, please contact Ms. Sally Gardiner (proprietor) on [REDACTED]

Appendix B: The Ecological Data Search Maps

No ecological data search map was provided to Elite Ecology for this search.

Appendix C: Artificial Lighting and Bats

Artificial lighting is known to affect bat's roosting and foraging behaviour, with lighting resulting in a range of impacts that includes roost desertion (BCT, 2009), delayed emergence of roosting bats (Downs et al., 2003), increased activity of some bat species and decreased activity by others (Stone et al., 2012).

An experimental approach using LED units, demonstrated that relatively fast-flying bat species, including the common pipistrelle, showed no significant impacts as a result of new artificial lighting, even when lighting was set at relatively high levels close to 50 lux.

In contrast, slow flying bats such as the myotis bats (*Myotis* spp.) showed sharp reductions in presence, even at low light levels of 3.6 lux (Stone et al., 2012).

Current recommendations for all bat species specifies that no bat roost should be directly illuminated.

Due to the impacts of lighting, mitigation and sensitive lighting design schemes are required for projects where bats are present. These should include bat friendly lighting plans that should aim to avoid lighting wherever possible. If this is not possible, then the minimisation of any lighting impacts is required by adopting the following measures:

➤ **To introduce lighting curfews or use of PIR sensors.**

Lighting curfews can be an effective way of avoiding impacts on bats. These curfews may involve either turning off lighting or dimming light units at specific times of the night, dimming units at key times of the year, providing the luminaire allows for this option via a control unit. Lighting to be triggered by PIR sensors can be expected to be illuminated only when required and for a low proportion of time.

➤ **To consider no lighting solutions where possible.**

Options such as white lining, good signage and LED cat's eyes should be considered as preferable. Reflective fittings may help make use of headlights to provide any necessary illumination in some areas.

➤ **To use only high pressure sodium or warm white LED lamps where possible.**

High pressure sodium and warm white LED lamps emit lower proportions of insect attracting UV light than mercury, metal halide lamps and white LED lighting. Generally, lamps should have a lower proportion of white or blue wavelengths, with a colour temperature <4200 kelvin recommended (BCT, 2014).

➤ **To minimise the spread of light.**

The light spread should be kept at or near horizontal to ensure that only the task area is lit. Flat cut-off lanterns or accessories should be used to shield or direct light to where it is required. Baffles, hoods, louvres and shields should be used where necessary to reduce light spill.

➤ **To consider the height of the lighting column.**

While downward facing bollard lighting is often preferable, it should be noted that a lower mounting height does not automatically reduce impacts to bats as bollard lighting can often be designed to provide up-lighting. Where bollard lighting is considered to be the most appropriate system, bollard spacing or unit density should be kept to a minimum and units should be fitted with the appropriate hoods/deflectors to reduce any up-lighting.

➤ **To avoid reflective surfaces below lights.**

The polarisation of light by shiny surfaces attracts insects increasing bat activity (BCT, 2012). Consequently, surface materials around lighting require consideration.

Appendix D: Photographic Records

Plate 1: A photograph of the eastern site where the extension is proposed to take place.



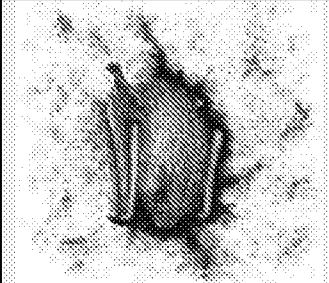
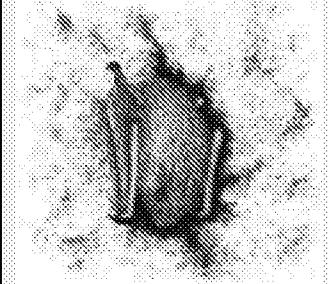
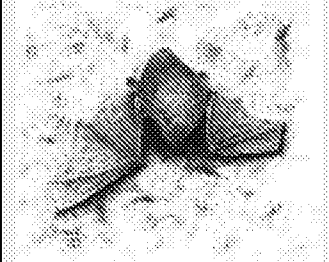
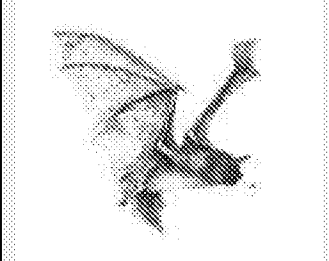
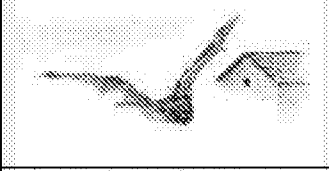
Plate 2: An image of the rear of the property.



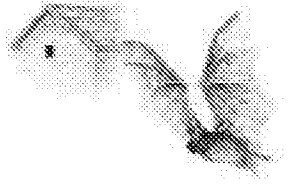
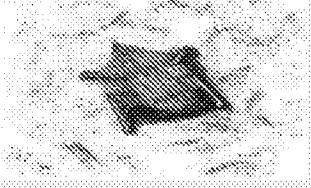
Plate 3: A photograph showing the felt underneath the tiles.



Appendix E: The Annual Bat Year (BCT)

A Year in the Life of a Bat		
	January	Hibernating; using up fat reserves.
	February	Still hibernating; few fat reserves left.
	March	Some activity; occasional bat seen feeding.
	April	Awake and feeding at night.
	May	Females looking for nursery sites.
	June	Young born, usually only one.

Preliminary Roost Assessment

	July	Young still suckling.
	August	Young start catching insects; females leave nursery to find males.
	September	Mating season begins; start building fat reserves for hibernation.
	October	Search for suitable hibernation site.
	November	Hibernation begins although still some activity in warm weather.
	December	Hibernating.

Appendix F: Legislation and Policy

All species of bat are fully protected under a variety of domestic, European and international legislation and conventions. These include:

- Bern Convention (Appendix II)
- Bonn Convention (Appendix II)
- Conservation Regulations (Northern Ireland) 1995
- Conservation of Habitats and Species Regulations 2017
- Countryside Rights of Way Act 2000
- Eurobats Agreement
- Habitats Directive (Annexes IV and II)
- Habitats Regulations 1994 (as amended) Scotland
- NERC Act 2006
- Wildlife and Countryside Act 1981 (as amended)
- Wild Mammals Protection Act

In addition to this, some species have additional protection by being listed on the UK Biodiversity Action Plan (UKBAP).

The legislation afforded to bats makes it illegal to possess or control any live or dead specimens, to damage, destroy or obstruct access to any structure or place used for shelter, protection or breeding, and to intentionally disturb a bat while it is occupying a structure or place which it uses for that purpose.

All nesting birds are protected under the Wildlife and Countryside Act 1981 (as amended), which protects birds, nests, eggs and nestlings from harm. In addition to this, some rarer species, such as barn owls are afforded extra protection.

National Planning Policy Framework, Section 15:

In early 2012, the National Planning Policy Framework (NPPF) replaced much previous planning policy guidance, including Planning Policy Statement 9: Biological and Geological Conservation. The government circular 06/05: Biodiversity and Geological Conservation - Statutory Obligations and Their Impact within the Planning System, which accompanied PPS9, still remains valid. A presumption towards sustainable development is at the heart of the NPPF. This presumption does not apply however where developments require appropriate assessment under the Birds or Habitats Directives. The latest National Planning Policy Framework was updated in July 2018, with the section in relation to conserving the natural environment being located within section 15.

Section 15, on conserving and enhancing the natural environment, sets out how the planning system should contribute to and enhance the natural and local environment by minimising impacts on biodiversity and, where possible, provide net gains in biodiversity. Opportunities to incorporate biodiversity gains into a development should be encouraged.

Biodiversity 2020:

This sets out to halt overall biodiversity loss and support healthy well-functioning ecosystems by establishing coherent ecological networks, with more and better places for nature, to the benefit of wildlife and people. The government's policy is aimed at individuals, communities, local authorities, charities, business and government, which all have a role to play in delivering Biodiversity 2020.

9 Notice to Readers: Conditions of this Report

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Elite Ecology agrees to supply ecological consulting services and advice of a preliminary or thorough nature as advised or commissioned. Upon commissioning Elite Ecology to undertake the work, the client(s) grant access to the site upon the agreed date. If no site access is available upon this date, Elite Ecology holds the right to charge the client(s) for lost staffing time and additional travel costs.

Elite Ecology undertake all site surveys with reasonable skill, care and diligence, within the terms of the contract that has been agreed with the client and abiding by the Elite Ecology Terms and Conditions. The actions of the surveyors on site, and during the production of the report, were undertaken in accordance with the Code of Professional Conduct for the Chartered Institute of Ecology and Environmental Management.

The latest good practice guidelines put in place by Natural England or the relevant statutory conservation bodies have been followed by the surveyors on site. If those methodologies fail to identify a protected species during the survey efforts, no responsibility can be attributed to Elite Ecology. If any of these guidelines are adapted between the date(s) of the surveys being undertaken and the submission of this report, then Elite Ecology takes no responsibility for this.

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The survey results purport the current status of the site and its potential for protected species utilisation at the time of surveying. It should not be viewed as a complete list of the possible flora and fauna species that could be using the site at different times of the year.

Elite Ecology has been provided with full payment for this report and thus the product has been released to the client(s) for the purpose of their planning application. If any part of the report is lost or altered without the written permission of Elite Ecology, then the entire report becomes invalid. Due to the potential for continual change within the natural world, this report is valid for **2 years only** from the date of the last survey visit. If this report is submitted after the 2 year deadline, then a further updated inspection will be required to ascertain whether the site remains in the same condition as it was when initially inspected.

No reliance should be made on any such comments in relation to the structural integrity of the features located on the surveyed site. All information within the report is based solely on evidence that has been found on site during the service provided. No individual opinion or inference will be made other than that of the suitably qualified ecologist appointed to the project.