

51 CRESSINGHAM ROAD, READING

BAT SURVEYS

A Report to: Morningwood Developments Ltd

Report No: RT-MME-125512-01

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REPORT VERIFICATION AND DECLARATION OF COMPLIANCE

Report Version	Date	Completed by:	Checked by:	Approved by:
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The information which we have prepared is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

DISCLAIMER

The contents of this report are the responsibility of Middlemarch Environmental Ltd. It should be noted that, whilst every effort is made to meet the client's brief, no site investigation can ensure complete assessment or prediction of the natural environment.

Middlemarch Environmental Ltd accepts no responsibility or liability for any use that is made of this document other than by the client for the purposes for which it was originally commissioned and prepared.

VALIDITY OF DATA

The findings of this study are valid for a period of 12 months from the date of survey. If works have not commenced by this date, an updated site visit should be carried out by a suitably qualified ecologist to assess any changes in the habitats present on site, and to inform a review of the conclusions and recommendations made.

NON-TECHNICAL SUMMARY

In June 2017, Middlemarch Environmental Ltd were commissioned by Morningwood Developments Ltd to undertake Bat Surveys at 51 Cressingham Road, Reading. This assessment is required to inform a planning application; however full details of the proposed works are unknown at this stage.

Middlemarch Environmental Ltd previously undertook a Daytime Bat Survey and single Nocturnal Emergence Survey at the site on the 15th September 2015 (Report RT-MME-120787). Following the surveys the building was classed as having moderate to high bat roosting potential. A subsequent Endoscope Survey was undertaken on the 23rd October 2015 (Report RT-MME-120902). All features were fully inspected within no evidence of bats identified. It was therefore confirmed that the building did not contain a bat roost at the time of the survey.

Due to the time that has elapsed since the 2015 survey were undertaken it was recommended that updated surveys were undertaken at the site to determine presence/absence of bats within the buildings.

An updated Preliminary Roost Assessment was undertaken on the 26th June 2017, the building was classed as having high potential to support roosting bats due to the numerous features of potential interest to roosting bats identified during the survey. No evidence of bats (e.g. droppings, feeding remains, scratch marks or urine staining) were identified during the internal and external assessment.

Nocturnal emergence and dawn re-entry bat surveys were undertaken between 26th June 2017 and 26th July 2017. Three bat species were recorded during the nocturnal and dawn re-entry surveys. None emerged from either the main house or garage buildings. Commuting and foraging activity was recorded during the survey period. This was predominantly across the rear garden. The bats were utilising the boundary hedge trees and the trees in the garden adjacent.

Following the suite of survey work undertaken on site it can be confirmed that neither of the buildings on site contain a bat roost.

Following the results of the nocturnal emergence and dawn re-entry surveys, the following recommendations have been made:

R1 Main House and Garage

The survey data obtained for the site is valid for 12 months from the survey date. If development works to the surveyed building have not commenced within this timeframe it will be essential to update the survey effort to establish if bats have colonised the buildings in the interim.

R2 Lighting

Bats are likely to use trees/hedgerows for foraging and commuting. Therefore, in line with paragraph 125 of the National Planning Policy Framework, the development should aim to limit the impact of light pollution on bats through the careful use of lighting in critical areas only and at a low level with minimum spillage. Any lighting, either temporary or permanent, along the site boundaries especially along the southern and eastern boundary in the rear garden, which would provide suitable foraging/commuting habitat should be kept to a minimum and directed away from the boundary features to maintain dark areas and corridors.

Due to the proposed works being unknown at this stage. When the proposed works have been finalised, the conclusions and recommendations made in the report should be reviewed to ensure that they remain appropriate.

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1. INTRODUCTION

1.1 PROJECT BACKGROUND

In June 2017, Middlemarch Environmental Ltd were commissioned by Morningwood Developments Ltd to undertake Bat Surveys at 51 Cressingham Road, Reading. This assessment is required to inform a planning application; however full details of the proposed works are unknown at this stage.

Middlemarch Environmental Ltd previously undertook a Daytime Bat Survey and single Nocturnal Emergence Survey at the site on the 15th September 2015 (Report RT-MME-120787). A subsequent Endoscope Survey was undertaken on the 23rd October 2015 (Report RT-MME-120902). The building was deemed to have moderate/ high bat roost potential, although no bat roosts were identified in 2015.

Due to the time that has elapsed since the 2015 survey were undertaken it was recommended that updated surveys were undertaken at the site to determine presence/absence of bats within the buildings.

Therefore, a Preliminary Bat Roost Assessment nocturnal emergence and dawn re-entry bat surveys were recommended. This report details the results of the surveys undertaken between 26th June 2017 and 26th July 2017.

All UK bat species are European protected species and they are capable of being material considerations in the planning process. A summary of the legislation protecting bats is included within Appendix 1. This section also provides some brief information on the ecology of British bat species.

1.2 SITE DESCRIPTION AND CONTEXT

The site is located in Reading, at the junction of Cressingham Road and Birdhill Avenue and comprises a single storey detached house with associated garden area. The site covers an area of approximately 0.1 ha and is centred at National Grid Reference SU 726 709.

At the time of survey, the site was dominated by a relatively large building, areas of amenity grassland, scrub and scattered trees.

The site lies to the south of Cressingham Road and is bounded to the east by Birdhill Avenue. To the south and west are residential buildings with their associated gardens.

The wider landscape is dominated by residential units and their gardens.

1.3 DOCUMENTATION PROVIDED

The conclusions and recommendations made in this report are based on information provided by the client regarding the scope of the project. Documentation made available by the client is listed in Table 1.1.

Document Name / Drawing Number	Author
Title Plan / BK72427	HM Land Registry

Table 1.1: Documentation Provided by Client

2. METHODOLOGY

2.1 PRELIMINARY BAT ROOST ASSESSMENT

In line with the specifications detailed in Bat Mitigation Guidelines (English Nature, 2004) and Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016), a Preliminary Bat Roost Assessment of the building was conducted during daylight hours. A visual assessment was undertaken to determine the presence of any Potential Roost Features (PRFs), together with a general appraisal of the suitability of the site for foraging and commuting. Table 2.1 provides examples of PRFs. Any accessible PRFs were inspected using binoculars, a torch and endoscope for evidence of possible bat presence. Buildings were surveyed externally and internally.

For reasons of health and safety, the survey was only undertaken in areas accessible from 3.5 m ladders.

Based on the PRF's present, the survey area was assessed using the suitability classes detailed within Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016), as detailed in Table 2.2.

Example of Potential Roost Features	
<u>Externally</u>	
• Access through window panes, doors and walls; • behind peeling paintwork or lifted rendering; • behind hanging tiles; • weatherboarding; • eaves; • soffit boxes; • fascias; • lead flashing; • gaps under felt (even including those of flat roofs); • under tiles/slates; • existing bat and bird boxes; and, • any gaps in brickwork or stonework permitting access into access to cavity- or rubble-filled walls.	
<u>Internally</u>	
• behind wooden panelling; • in lintels above doors and windows; • behind window shutters and curtains; • behind pictures, posters, furniture, peeling paintwork; • peeling wallpaper, lifted plaster and boarded-up windows; • inside cupboards and in chimneys accessible from fireplaces. • within attic voids: • the top of gable end or dividing walls; • the top of chimney breasts; • ridge and hip beams and other roof beams; • mortise and tenon joints; • all beams (free-hanging bats); • the junction of roof timbers, especially where ridge and hip beams meet; and, • between tiles and the roof lining.	

Table 2.1: Potential Roost Features (Adapted from Collins, 2016)

Suitability	Description
High	A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.
Moderate	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation).
Negligible	Negligible habitat features on site likely to be used by roosting bats.

Table 2.2: Classification of Structures with Bat Potential (Adapted from Collins, 2016)

2.2 NOCTURNAL EMERGENCE AND DAWN RE-ENTRY SURVEYS

2.2.1 Overview of Nocturnal Emergence and Dawn Re-entry Surveys

The building was classed as having high potential to support roosting bats due to the numerous features of potential interest to roosting bats identified during the Preliminary Roost Assessment. In line with Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016), three bat surveys were carried out consisting of one/two nocturnal emergence bat survey/s and one/two dawn re-entry bat survey/s. The aim of these surveys was to detect whether bats are roosting within the buildings, and to enable a profile of site utilisation by bats to be compiled.

2.2.2 Nocturnal Emergence Bat Surveys

In line with the specifications detailed Bat Surveys: Good Practice Guidelines (Collins, 2016), two nocturnal emergence bat surveys were conducted on site. The surveys commenced 20 minutes prior to sunset and continued until 120 minutes after sunset. The nocturnal emergence surveys were conducted using electronic bat detectors (Echo Meter Touch and Bat Box Duet with associated recording devices) to facilitate the detection of bats and to aid in the determination of species of bat using the site. Subsequent computer analysis of recordings allowed all species of bat using the site to be identified.

2.2.3 Dawn Re-entry Bat Survey

Bats swarm at their roost site 10-90 minutes prior to entering the roost at dawn (Mitchell-Jones & McLeish, 2004). Surveying for dawn swarming by bats is an efficient way of detecting bat roosts. In line with the specifications detailed by Bat Surveys: Good Practice Guidelines (Collins, 2016) the dawn survey commenced 120 minutes prior to sunrise and continued until 15 minutes after sunrise. To facilitate the detection of bats and to aid in the determination of species of bat using the site, the dawn survey was conducted using electronic bat detectors (Echo Meter Touch and Bat Box Duet with associated recording devices). Computer analysis of bat detector information collected was utilised to identify all species recorded on the site.

3. DESK STUDY

3.1 PREVIOUS BAT SURVEYS

Middlemarch Environmental Ltd previously undertook a Daytime Bat Survey and single Nocturnal Emergence Survey at the site on the 15th September 2015 (Report RT-MME-120787). The building was classed as having moderate to high bat roosting potential.

During the previous nocturnal emergence survey undertaken in September 2015, two species of bat were recorded; common pipistrelle and noctule. No bats were observed emerging from the building and the activities recorded belonged to commuting and foraging bats. However, due to insufficient survey data (for buildings with moderate to high potential three dusk and/or dawn surveys are required) the presence/absence of bats within the building could not be determined following this survey.

A subsequent Endoscope Survey was undertaken on the 23rd October 2015 (Report RT-MME-120902). During this survey a Mobile Elevation Working Platform (MEWP) was used to access features that could not be fully inspected during the daytime assessment undertaken on the 15th September 2015. All features were fully inspected within no evidence of bats identified. It was therefore confirmed that the building did not contain a bat roost at the time of the survey. The report highlighted that the survey data would be valid until September 2016.

4. SURVEY RESULTS

4.1 PRELIMINARY BAT ROOST ASSESSMENT

4.1.1 Introduction

The Preliminary Bat Roost Assessment was conducted on 26th June 2017 by Jemma Gaskin MSc MCIEEM (Principal Technical Ecological Consultant and Natural England Licensed Bat Surveyor: CLS18) and Sophie Meredith MSc MCIEEM (Principal Ecological Consultant and Natural England Licensed Bat Surveyor: CLS18).

Weather conditions were recorded and are presented in Table 4.1.

Parameter	Conditions
Temperature (°C)	18
Cloud Cover (%)	40
Precipitation	None
Wind Speed (Beaufort)	F1

Table 4.1: Weather Conditions During the Preliminary Bat Roost Assessment

4.1.2 Constraints

Due to the poor structural condition of the roof it was considered unsafe to access the loft space. The loft space could therefore only be visually assessed from the loft hatch.

4.1.3 Survey Results

4.1.3.1 Building 1: Main House

External Assessment

51 Cressingham Road is a vacant single-storey building. The structure is of brick construction with a hipped clay tiled roof (Plate 4.1). The roof supported four dormer windows and three brick chimneys which had been sealed to the main roof with lead flashing. Hanging tiles covered the sides of the dormer windows. The building has been subject to vandalism with all the dormer windows having been smashed so that only the wooden frames remained. The lower windows had been boarded up. Areas of the roof tiles had been damaged where vandals had attempted to access the roof to remove sections of the lead flashing (Plate 4.2).



Plate 4.1: Northern Elevation of Main House



Plate 4.2: Southern Elevation of Main House

Numerous features were recorded around the building which could be utilised by bats to gain entry into the building and potential roost locations. These features included:

- Missing/damaged/slipped roof tiles.
- Gaps under the ridge tiles where the mortar is missing.
- Missing tiles around the dormer windows.
- Vent feature.
- Gaps behind the hanging tiles of the dormer windows.

It was not possible to inspect the features listed above due to the height at which they were located and health and safety concerns and as such it was not possible to establish if bats had used these features to enter a roost location at the time of surveying. No evidence of roosting bats, e.g. droppings, urine staining, feeding remains or scratch marks, was recorded within the features that could be fully inspected during the survey.

Internal Assessment

The internal assessment revealed that the majority of the roof space had been built into to provide a first floor living space. A single loft space and coomb space were however present.

The loft space was approximately 7 m long and 1 m wide. The roof tiles were fitted directly onto the timber rafters and beams (Plate 4.3). A ridge beam was present and the apex height was <1 m. Old loft insulation was present in some areas. The coomb space was of similar construction but lacked a ridge beam (Plate 4.4).



Plate 4.3: Loft Space Within Main House



Plate 4.4: Coomb Space Around Perimeter of Roof

No evidence of bats (e.g. droppings, feeding remains, scratch marks or urine staining) was identified during the internal assessment. However, as detailed in Section 4.1.2 a full assessment of could not be undertaken due to health and safety considerations.

4.1.3.2 Building 2: Garage

External Assessment

The garage was located to the immediate east of the main house. This was a single-storey structure of brick construction with a hipped clay tiled roof. The garage had windows set in wooden frames and a wooden door. The windows had been smashed and the door was open providing direct flight access into the internal part of the building. The building was generally in good condition with only occasional lifted roof tiles noted (Plate 4.5). Vents were present on the southern gable end which were big enough to allow bats access into the building (Plate 4.6).



Plate 4.5: Example of Damaged/Lifted Tiles



Plate 4.6: Vent Features on Southern Gable End

The only features recorded around the building which could be utilised by bats to gain entry into the building and potential roost locations were:

- Lifted roof tiles; and
- Air vents.

It was not possible to inspect the features listed above due to the height at which they were located and health and safety concerns and as such it was not possible to establish if bats had used these features to enter a roost location at the time of surveying. No evidence of roosting bats, e.g. droppings, urine staining, feeding remains or scratch marks, was recorded within the features that could be fully inspected during the survey.

Internal Assessment

Internally, the garage had two sections, the larger of the two contained two broken windows and door (Plate 4.7 and 4.8) The smaller of the two had a separate door with no windows. There were also wooden beams within the roof voids which were covered in cobwebs, and therefore there is no evidence of recent activity (Plate 4.9).



Plate 4.7 Broken Garage Door

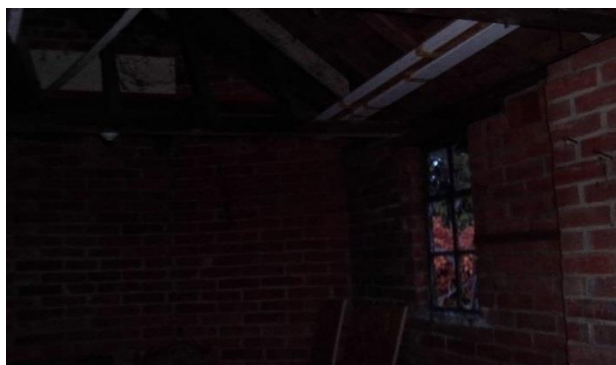


Plate 4.8: Broken Window in Garage



Plate 4.9: Cobwebs and Beams in Roof Void.

No evidence of bats (e.g. droppings, feeding remains, scratch marks or urine staining) was identified during the internal assessment of the garage.

4.1.4 Site and Surrounding Habitats

The site is dominated by the residential buildings with surrounding garden, hedges and scattered trees. The surrounding landscape is predominantly urban with neighbouring properties and gardens.

Habitats within 1 km of the site suitable for roosting, commuting and foraging include:

- Residential houses and associated gardens;
- Pockets of woodland;
- Churches, schools, and associated grounds; and,
- Recreational grounds with bordering trees and hedges.

There is some connectivity between the site and larger patches of woodland along hedges and treelines.

4.2 FIRST NOCTURNAL EMERGENCE SURVEY

The first nocturnal emergence survey was undertaken on 26th June 2017 by Jemma Gaskin MSc MCIEEM (Principal Technical Ecological Consultant and Natural England Licensed Bat Surveyor: CLS18) and Sophie Meredith MSc MCIEEM (Principal Ecological Consultant and Natural England Licensed Bat Surveyor: CLS18). The weather conditions recorded at the time of the survey are detailed in Table 4.2.

Parameter	Conditions	
	Start	Finish
Temperature (°C)	18	16
Cloud Cover (%)	40	80
Precipitation	0	0
Wind Speed (Beaufort)	1	1

Table 4.2: Weather Conditions During First Nocturnal Emergence Survey

The nocturnal emergence survey commenced 20 minutes prior to sunset and continued until 120 minutes after sunset. Sunset was at 21:25hrs (BBC Weather Centre Data for Reading). Three species of bat, noctule *Nyctalus noctula*, common pipistrelle *Pipistrellus pipistrellus* and soprano pipistrelle *Pipistrellus pygmaeus*, were recorded during the survey. No bats were observed emerging from any of the buildings.

Noctule

A noctule was seen at 21:38 (13 minutes after sunset) commuting south to north over the main house. A second noctule was heard, but not seen at 22:11 near the south of the site.

Common pipistrelle

The first common pipistrelle was detected at 21:43 (18 minutes after sunset) commuting from the adjacent garden to the west onto the south of the site, then exited west. A second common pipistrelle was seen doing the same commute at 21:45.

At 21:54, a common pipistrelle was heard, but not seen in the distance to the south of the site.

Between 21:56 and 22:02, a common pipistrelle was observed foraging in the adjacent garden to the east, occasionally entering the site. Between 22:04 and 22:11 a common pipistrelle was recorded occasionally foraging in the rear garden along boundaries and the adjacent property.

At 22:16 a common pipistrelle was recorded commuting over the site and at 22:20 a common pipistrelle was heard social calling.

Soprano Pipistrelle

The first soprano pipistrelle was detected at 21:54 (29 minutes after sunset) and was heard, but not seen foraging near the south of the site. At 21:55 a soprano pipistrelle was seen commuting west to east across the rear garden to the south of the site.

Between 22:04 and 22:11, a soprano pipistrelle was seen intermittently foraging within the rear garden, along boundaries and the adjacent property.

No other species of bat were detected or observed during this survey. Analysis of the sound recordings did not identify any further species of bat.

4.3 SECOND NOCTURNAL EMERGENCE SURVEY

The second nocturnal emergence survey was undertaken on 12th July 2017 by Marie Steggall, Principal Consultant and Sinéad McCarthy, Ecological Project Officer. The weather conditions recorded at the time of the survey are detailed in Table 4.3.

Parameter	Conditions	
	Start	Finish
Temperature (°C)	21	19
Cloud Cover (%)	60	50
Precipitation	0	0
Wind Speed (Beaufort)	3	3

Table 4.3: Weather Conditions During Second Nocturnal Emergence Survey

The nocturnal emergence survey commenced 20 minutes prior to sunset and continued until 120 minutes after sunset. Sunset was at 21:18hrs (BBC Weather Centre Data for Reading). Three species of bat, noctule *Nyctalus noctula*, common pipistrelle *Pipistrellus pipistrellus* and soprano pipistrelle *Pipistrellus pygmaeus*, were recorded during the survey. No bats were observed emerging from any of the buildings.

Noctule

The first noctule was detected at 21:28 (10 minutes after sunset) and was heard, but not seen in the distance. At 21:31, a noctule was seen commuting north-west over the site.

At 21:57, a Noctule was seen entering the rear garden from the south and observed foraging in the rear garden then exited west.

Soprano Pipistrelle

At 21:52, two soprano pipistrelles were seen foraging in a tree on the eastern boundary of site.

Common Pipistrelle

At 22:08, a common pipistrelle was heard to the west of the site, but not seen.

No other species of bat were detected or observed during this survey. Analysis of the sound recordings did not identify any further species of bat.

4.4 DAWN RE-ENTRY SURVEY

The dawn re-entry bat survey was undertaken on 26th July 2017 by Sinéad McCarthy (Ecological Project Officer) and Rodrigo Batistela (Ecological Project Assistant). The weather conditions recorded at the time of the survey are detailed in Table 4.4.

Parameter	Conditions	
	Start	Finish
Temperature (°C)	15	14
Cloud Cover (%)	10	40
Precipitation	0	0
Wind Speed (Beaufort)	0	0

Table 4.4: Weather Conditions During Dawn Re-entry Survey

The dawn re-entry survey commenced 120 minutes prior to sunrise and continued until sunrise. Sunrise was at 05:19 hrs (BBC Weather Centre Data for Reading. One species of bat common pipistrelle, *Pipistrellus pipistrellus* was recorded during the survey. No bats were observed re-entering any of the buildings.

Common pipistrelle

At 04:51 (28 minutes before sunrise) a common pipistrelle was seen commuting east to west across the rear garden.

No other species of bat were detected or observed during this survey. Analysis of the sound recordings did not detect any further species of bat.

5. DISCUSSION AND CONCLUSIONS

5.1 DISCUSSION

5.1.1 Summary of Proposals

Full details of the proposed works are unknown at this stage and it is unknown whether the existing building will be demolished or refurbished and extended.

5.1.2 Summary of Nocturnal Emergence and Dawn Re-entry Surveys

Nocturnal Emergence Surveys

Three bat species were recorded during the nocturnal surveys. No bats were observed emerging from either the main house or garage buildings. Commuting and foraging activity was recorded during the survey period, predominantly across the rear garden. The bats were found to be utilising the boundary hedge trees and the trees in the adjacent garden.

Dawn Re-entry Survey

One species of bat was recorded during the dawn re-entry survey and was observed commuting only. No bats were observed re-entering any of the buildings.

5.2 CONCLUSIONS

Following the suite of survey work undertaken on site it can be confirmed that neither of the buildings on site contain a bat roost.

Commuting and foraging was recorded on site, predominantly across the rear garden to the south of the main house.

6. RECOMMENDATIONS

All recommendations provided in this section are based on Middlemarch Environmental Ltd's current understanding that full details of the proposed works are unknown at this stage. When the proposed works have been finalised, the conclusions and recommendations made in the report should be reviewed to ensure that they remain appropriate.

R1 The Main House and Garage

The main house and garage have been subject to a full suite of activity surveys in line with Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016), and no bat roost was identified. The survey data obtained for the site is valid for 12 months from the survey date. If development works to the surveyed building have not commenced within this timeframe it will be essential to update the survey effort to establish if bats have colonised the buildings in the interim. Updated Preliminary Bat Roost Assessments can be undertaken at any time of year. Updated surveys requiring nocturnal or dawn assessment will need to adhere to the Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016) with the surveys undertaken between April and September inclusive. In the unlikely event that a bat is found during site works all works in that area must immediately cease and a suitably qualified ecologist should be contacted.

R2 Lighting

Bats are likely to use trees/hedgerows for foraging and commuting. Therefore, in line with paragraph 125 of the National Planning Policy Framework, the development should aim to limit the impact of light pollution on bats through the careful use of lighting in critical areas only and at a low level with minimum spillage. Any lighting, either temporary or permanent, along the site boundaries especially along the southern and eastern boundary in the rear garden, which would provide suitable foraging/commuting habitat should be kept to a minimum and directed away from the boundary features to maintain dark areas and corridors. A lighting strategy should be designed and implemented on site to avoid impacting bat usage of the site and wider area. The strategy should be designed in accordance with the principles of 'Landscape and urban design for bats and biodiversity' as published by the Bat Conservation Trust (Gunnell *et al*, 2012).

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APPENDIX 1

LEGISLATION

Bats and the places they use for shelter or protection (i.e. roosts) receive European protection under The Conservation of Habitats and Species Regulations 2010, as amended (Habitats Regulations 2010, as amended). They receive further legal protection under the Wildlife and Countryside Act (WCA) 1981, as amended. This protection means that bats, and the places they use for shelter or protection, are capable of being a material consideration in the planning process.

Regulation 41 of the Habitats Regulations 2010 (as amended), states that a person commits an offence if they:

- deliberately capture, injure or kill a bat;
- deliberately disturb bats; or
- damage or destroy a bat roost (breeding site or resting place).

Disturbance of animals includes in particular any disturbance which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young, or 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.

It is an offence under the Habitats Regulations 2010 (as amended) for any person to have in his possession or control, to transport, to sell or exchange or to offer for sale, any live or dead bats, part of a bat or anything derived from bats, which has been unlawfully taken from the wild.

Whilst broadly similar to the above legislation, the WCA 1981 (as amended) differs in the following ways:

- Section 9(1) of the WCA makes it an offence to *intentionally* kill, injure or take any protected species.
- Section 9(4)(a) of the WCA makes it an offence to *intentionally or recklessly** damage or destroy, or *obstruct access to*, any structure or place which a protected species uses for shelter or protection.
- Section 9(4)(b) of the WCA makes it an offence to *intentionally or recklessly** disturb any protected species *while it is occupying a structure or place which it uses for shelter or protection*.

*Reckless offences were added by the Countryside and Rights of Way (CROW) Act 2000.

As bats re-use the same roosts (breeding site or resting place) after periods of vacancy, legal opinion is that roosts are protected whether or not bats are present.

For England:

The following bat species are Species of Principal Importance for Nature Conservation in England: barbastelle bat *Barbastella barbastellus*, Bechstein's bat *Myotis bechsteinii*, noctule *Nyctalus noctula*, soprano pipistrelle *Pipistrellus pygmaeus*, brown long-eared bat *Plecotus auritus*, greater horseshoe bat *Rhinolophus ferrumequinum* and lesser horseshoe bat *Rhinolophus hipposideros*.

The reader should refer to the original legislation for the definitive interpretation.

ECOLOGY

At present, 18 species of bats are known to live within the United Kingdom, of which 17 species are confirmed as breeding. All UK bat species are classed as insectivorous, feeding on a variety of invertebrates including midges, mosquitoes, lacewings, moths, beetles and small spiders.

Bats will roost within a variety of different roosting locations, included houses, farm buildings, churches, bridges, walls, trees, culverts, caves and tunnels. At different times of the year the bats roosting requirements alter and they can have different roosting locations for maternity roosts, mating roosts and hibernation roosts. Certain bat species will also change roosts throughout the bat activity season with the bat colony using the site to roost for a few days, abandoning the roost and then returning a few days or weeks later. This change can be for a variety of reasons including climatic conditions and prey availability. Bats are known live for several years and if the climatic conditions are unfavourable at a particular roost, they may abandon it for a number of years, before returning when conditions change. Due to the matriarchal nature of bat colonies, the locations of these roosts can be passed down through the generations.

Bats usually start to come out of hibernation in March and early April (weather dependent), when they start to forage and replenish the body weight lost during the hibernation period. The female bats then start to congregate together in maternity roosts prior to giving birth and a single baby is born in June or July. The female then works hard to feed her young so that they can become independent and of a sufficient weight to survive the winter before the weather gets too cold and invertebrate activity reduces. Males generally live solitary lives, or in small groups with other males, although in some species the males can be found living with the females all year. The mating season begins in the autumn. During the winter bats hibernate in safe locations which provide relatively constant conditions, although they may venture outside to forage on warmer winter nights.