

Bat Survey



Queen Anne's School

On behalf of Boddington Planning

September 2019

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1 Executive Summary

Ecology by Design Ltd were commissioned by Boddington Planning to undertake a bat activity survey of land at Queen Anne's School, 6 Henley Rd, Reading, RG4 6DX (SU 72168 75190) to assess the sites usage by foraging and commuting bats. The client seeks to secure planning permission for the construction of a new sports pitch and flood lighting on land belonging to the school.

All surveys were conducted based on standard guidance for bat surveys (Collins, J. 2016).

Three bat activity surveys were conducted on site, encompassing the pitch area and immediate surrounds. An initial walkover of the site was undertaken in 2018 to determine the level of potential the site had for foraging and commuting bats. The site was considered to have low potential and therefore one survey per season was considered suitable survey effort across the site. The activity surveys were undertaken on 13th September 2018, 2nd May 2019 and 30th July 2019. An automated detector was positioned along the boundary to assess bat activity across a longer time frame for 5 consecutive nights during each season.

Bat activity was very low throughout the walked transect surveys. Six species of bat were recorded foraging and commuting across the site. No bat roosts were recorded during the transect surveys. A few pipistrelle passes were identified along the northern tree lined boundary of the site and occasional foraging behaviour in the south eastern corner. The static detectors identified five species of bats. September – October 2018 and May 2019 were very quiet with very little data recorded on the detectors. July and August 2019 had higher activity likely due both to the time of the year and a change in positioning of the detector to target the area where most bats had been detected previously.

The impact of the development on foraging and commuting bats is considered to be very low and the lighting for the project has already been designed to minimise the light spill as much as possible and for the lights to be on a timer system to further reduce any negative impact on bats. No further mitigation is required but an optional enhancement has been recommended which is outlined in Section 6 of this report.

2 Introduction

2.1 Background and Survey Objectives

Boddington Planning on behalf of Queen Anne's School seek to secure planning permission for the construction of a new sports pitch and flood lighting on land at Queen Anne's School, 6 Henley Rd, Reading, RG4 6DX (SU 72168 75190). Ecology by Design Ltd were commissioned by Boddington Planning to undertake a bat survey at Queen Anne's School between September 2018 and July 2019.

The objectives of this report are:

- Identify any potentially significant ecological constraints that may affect the proposed work;
- Identify the species of bat using the surveyed area;
- Assess the levels of activity of bats utilising the site; and
- Mitigation measures required ensuring any proposed works do not negatively affect bat populations.

2.2 Site Description

The main school was accessible from Henley road and formed a complex of Queen Anne's School buildings, associated parking, grounds and sports pitches. For the purposes of this report only the land around the tennis courts and grass sports field to the east of the main school building and car park were considered and will be referred to hereafter as "the site". The site itself supported ten hardcourt tennis courts and a grass sports field. The northern boundary of the site was a line of scattered mature trees, the eastern boundary a species poor hedge, occasional trees and a tennis pavilion, the southern boundary was comprised of a species poor hedgerow which bordered Henley Road and the school car park bordered the site to the west.

In the wider landscape the site is surrounded by residential development with mature gardens and is located in the centre of Caversham, Reading.

2.3 Proposed Works

The proposal will include the construction of a sports pitch and floodlighting around the tennis courts.

2.4 Limitations/ Constraints

The wildlife and wider ecological interest of a site can change. The report presented here is a statement of the findings of surveys carried out between September 2018 and July 2019. Any appreciable delay in making reference to this report may necessitate a re-survey.

Weather conditions were considered suitable to conduct the activity surveys.

3 Methods

3.1 Desk Study

A desk study was completed to identify bat records within 2km of the site. Sources used include:

- Thames Valley Environmental Records Centre (TVERC)

3.2 Activity Survey

To assess the sites usage by foraging and commuting bats, a walked dusk transect was carried out on 13th September 2018 and the 2nd of May 2019 and a dawn walked transect was carried on the 30th July 2019.

The surveys were based on the guidance included in the Bat Conservation Trusts Bat Surveys for Professional Ecologists - Good Practice Guidelines (Collins, J. 2016) and Bat Workers Manual (JNCC, 2010).

An Elekon Batlogger M detector was used to record any bats, which includes a GPS tag of the location bats are recorded.

The transect surveys commenced at sunset and lasted for at least 2 hours after sunset or commenced 2 hours before dawn and lasted until sunrise.

A surveyor walked a transect of the survey area, with fixed listening stops at intervals or features suitable for bats along the route for a period of 5 minutes.

The transect route was chosen to provide coverage of the whole survey area, with particular focus on areas most suitable for foraging and commuting bats.

A total of 12 listening stops were used during each transect. (Refer to Appendix 2 for Transect route and fixed listening stop locations). The direction the transect was walked varied was varied between survey visits.

3.3 Automated Survey

An Anabat Express detector was placed on a tree on the northern boundary for the first two survey periods and on a tree on the eastern boundary for the third survey period (refer to Appendix 2 for location of the Anabat Express detector). The detector was set to record on three occasions: 30th September to 4th October 2018, 10th May to 14th May 2019, and 31st July to 4th August 2019.

3.4 Site/ Species Valuation for Foraging/ Commuting Bats

Based upon the framework for Valuing Bats in Ecological Impact Assessment designed by Wray et al. (2010), the sites foraging and commuting habitats were assigned a value from International to Not Important (Tables 3 and 4).

Foraging and commuting values are calculated separately for each species. One score is taken from each column depending on the most accurate representation, it is then added together to determine the overall score for that species of bat (Tables 3 and 4). The overall site value is defined as the highest value for any individual species under either the foraging and commuting category.

Appendix 4 Table 7 explains the scoring system for assigning an appropriate geographic frame of reference for each bat species and applies to both commuting and foraging criteria which are explained in Appendix 4 Tables 5 and 6 respectively.

4 Results

4.1 Desk Study

Ten species of bat were recorded within 2km of the site. There were multiple aural bat detector records for many of the ten species. Listed below are the most recently recorded roosts or most recently recorded aural detector record if no roosts for that species have been recorded.

Table 1. Bat records. Records from a 2km radius around the site.

Species	Type	Distance (km)	Direction	Approx. Location	Most recent record
Serotine	Aural recording	2.0	W	Confidential	2017
Daubenton's	Aural recording	0.8	E	Henley Road	2016
Whiskered	Aural recording	1.7	NW	Surley Row, Emmer Green	2011
Natterer's	Aural recording	1.7	NW	Surley Row, Emmer Green	2011
Leisler's	Aural recording	1.6	NW	Kidmore Road	2017
Noctule	Aural recording	1.8	NW	Highdown Hill Road	2017

Nathusius's pipistrelle	Aural recording	1.6	NW	Kidmore Road	2017
Common pipistrelle	Roost	0.8, 1.6	E, NW	Henley Road, Kidmore Road	2016, 2017
Soprano pipistrelle	Roost	0.8, 1.6	E, NW	Henley Road, Kidmore Road	2016, 2017
Brown long-eared bat	Roost	0.8	N	Confidential	2016

4.2 Activity Survey

Table 2. Survey weather conditions

Date	Sunset/ sunrise	Start	End	Weather
13 th September	19:23	19:23	21:23	16/12°C, 2/8 cloud cover, 1 beaufort
02 nd May	20:28	20:28	22:28	14 °C- 10 °C 2/8 cloud cover, 1 beaufort
30 th July	05:24	03:24	05:24	18 °C, 2/8 cloud cover, 2 beaufort

4.2.1 Transect 13th September

There was generally low activity on the site. Common and soprano pipistrelle were recorded foraging and a single noctule bat was recorded overhead. There were slightly more common pipistrelle passes (13) than soprano pipistrelle (9). Pipistrelle foraging activity was most notable in the darker areas of the site away from the streetlights on the main road.

4.2.2 Transect 2nd May

This survey was very quiet. Soprano pipistrelle, common pipistrelle and noctule bat species were recorded. The first bat to be recorded was a soprano pipistrelle at 21:11 in the south eastern corner of the site which flew along the hedgerow towards the Henley Road. A common pipistrelle was also observed foraging at 21:20 in the south eastern corner. A noctule call was recorded at 21:45 but this was very distant, and the bat was not seen.

4.2.3 Transect 30th July

This survey was generally quiet with common pipistrelle, soprano pipistrelle and brown long-eared bats recorded. The first bat call identified was a common pipistrelle at 03:40am. Common pipistrelle were

observed foraging in the north western corner of the site and were heard along all boundaries but only very brief passes. A brown long-eared bat passed at 03:50am on the north eastern corner of the site and a myotis sp. at 04:36.

4.3 Automated Survey

The detectors recorded three sets of data between 30th September 2018 until 4th October 2018, May 10th until May 14th 2019 and July 31st until August 4th 2019. The three recording periods were all five days in length.

All data represents the number of bat passes rather than the number of bats. One bat could pass the detector hundreds of times during the night, therefore the numbers are an indication of activity level rather than numbers of bats.

For full survey results see Appendix 6.

4.3.1 Detector location 1 - Northern boundary of sports pitches – September - October 2018

Species recorded at detector 1 were: noctule, common pipistrelle, soprano pipistrelle and Nathusius' pipistrelle. Overall activity levels were very low with only 31 passes recorded in total during the 5 nights of recording. Across this sampling period soprano pipistrelle comprised 55% of all bat passes recorded followed by, in descending order of percentage occurrence, common pipistrelle (23%), unidentified pipistrelle (10%), Nathusius' pipistrelle (6%) and noctule (6%). Unidentified pipistrelle calls were those calls with a peak frequency of 50khz which could be attributable to either common or soprano pipistrelle.

4.3.2 Detector location 1 - Northern boundary of site – May 2019

Species recorded at detector 1 were: noctule, common pipistrelle and soprano pipistrelle. Overall activity levels were very low with only 32 passes recorded in total during the 5 nights of recording. Across the sampling periods common pipistrelle comprised 72% of all bat passes recorded followed by, in descending order of percentage occurrence, noctule (16%), unidentified pipistrelle (6%) and soprano pipistrelle (6%).

4.3.3 Detector location 2 – North-eastern corner of site – July - August 2019

Species recorded at detector 2 were: noctule, common pipistrelle, soprano pipistrelle and brown long-eared bat. Overall activity levels were higher than previous surveys although still relatively low with 127 passes recorded in total during the 5 nights of recording. Across the sampling periods common pipistrelle comprised 54% of all bat passes recorded followed by, in descending order of percentage occurrence, unidentified pipistrelle (21%) soprano pipistrelle (11%), noctule (9%) and brown long-eared bat (3%).

5 Discussion

The transect surveys detected only low levels of bat activity across the site. During the three transect surveys at least six different bat species were recorded: common pipistrelle, soprano pipistrelle, Nathusius's pipistrelle, noctule, a *Myotis* species and brown long-eared bat. The majority of passes on all surveys were from common and soprano pipistrelles with activity concentrated mostly in the north eastern and north western corners of the site, although on the September survey pipistrelle passes were recorded across the whole site. The highest level of bat activity was recorded during the first transect in September 2018 although this transect was still regarded as having generally low activity levels. Common pipistrelle, soprano pipistrelle and noctule were recorded on the first survey. During the second survey the same three species of bat were recorded. During the final survey four species were recorded. Bat activity was limited to the boundaries of the site with no activity detected in the centre of the field. The scattered trees along the boundaries provide commuting routes and poor-quality foraging areas.

The first and second transect surveys were undertaken at sunset and were carried out from listening points 1-12 on the first survey and on the second transect from points 12-1. The third transect survey was undertaken at sunrise and carried out from points 1-12. This was to ensure that different parts of the site were covered at different times in case a bat roost was present on the site. No roosts were found during the transect surveys.

The automated detector recorded a variety of different species. Across the three seasons the detector recorded common pipistrelle, soprano pipistrelle, noctule, Nathusius' pipistrelle and brown long-eared bat.

The majority of the activity recorded by the static detectors was from either common pipistrelles or soprano pipistrelles with very occasional passes from noctule, Nathusius' pipistrelle and brown long-eared bat recorded. Overall activity levels were low throughout the survey with only 31 and 32 passes recorded during the first two surveys. The detector was moved to the north-eastern corner for the last survey as this appeared to be the busiest area with regard to bat activity during the transects. Activity was higher in this area compared to the previous surveys with 127 passes recorded although this is likely to be partially due to the time of the year. In general, this is still regarded as a low number of passes as sites with high bat activity often get hundreds, if not thousands of passes in a single night.

The site is within the core sustenance zones of known roosts for brown long-eared bat, soprano pipistrelle and common pipistrelle (Collins, J. 2016). Core sustenance zones are the areas that bats are likely to forage

from a known roost. Overall the site provided commuting routes along the scattered tree and hedgerow boundaries and low potential foraging habitat along the boundaries.

Tables 3 and 4 below, detail the scoring criteria for commuting and foraging bats. Each species found on site is assigned a IEEM Geographic Frame of Reference score (scores based on Appendix 4; Table 5 and 6); results are based upon the level of activity recorded and the areas where bats were identified, the site was therefore overall scored/categorised 'District/ Local/ Parish' value. The highest species scores for both foraging and commuting bats were for noctule, the Myotis species and Nathusius's pipistrelle. as these are considered to be 'rarer' species. Although the Myotis bat that was heard cannot be identified to species, given the location of the site we feel it is appropriate to assume that it is from the 'rarer' assemblage such as Daubenton's or Whiskered bat and not the 'rarest' grouping which includes species such as Bechstein's and Alcahoie bat.

Table 3. Scoring Values for commuting routes

Species	Species Value	Number of bats	Roosts/ Potential Roosts	Type and complexity of linear features	Geographic Frame of Reference and score
Common pipistrelle	Common (2)	Individual bats (5)	None (1)	Walls, gappy or flailed hedgerows, isolated well- grown hedgerows, and moderate field sizes (3)	District/ Local/ Parish (11)
Soprano pipistrelle	Common (2)	Individual bats (5)	None (1)	Walls, gappy or flailed hedgerows, isolated well- grown hedgerows, and moderate field sizes (3)	District/ Local/ Parish (11)
Brown long-eared	Common (2)	Individual bats (5)	None (1)	Walls, gappy or flailed hedgerows, isolated well- grown hedgerows, and moderate field sizes (3)	District/ Local/ Parish (11)
Noctule	Rarer (5)	Individual bats (5)	None (1)	Walls, gappy or flailed hedgerows, isolated well- grown hedgerows, and moderate field sizes (3)	District/ Local/ Parish (14)
Nathusius's pipistrelle	Rarer (5)	Individual bats (5)	None (1)	Walls, gappy or flailed hedgerows, isolated well- grown hedgerows, and moderate field sizes (3)	District/ Local/ Parish (14)

Myotis sp.	Rarer (5)	Individual bats (5)	None (1)	Walls, gappy or flailed hedgerows, isolated well- grown hedgerows, and moderate field sizes (3)	District/ Local/ Parish (14)
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Table 4. Scoring Values for foraging

Species	Species Value	Number of bats	Roosts/ Potential Roosts	Foraging habitat characteristics	Geographic Frame of Reference and score
Common pipistrelle	Common (2)	Individual bats (5)	None (1)	Suburban areas or intensive arable land (2)	Not important (10)
Soprano pipistrelle	Common (2)	Individual bats (5)	None (1)	Suburban areas or intensive arable land (2)	Not important (10)
Brown long-eared	Common (2)	Individual bats (5)	None (1)	Suburban areas or intensive arable land (2)	Not important (10)
Noctule	Rarer (5)	Individual bats (5)	None (1)	Suburban areas or intensive arable land (2)	District/ Local/ Parish (13)
Nathusius's pipistrelle	Rarer (5)	Individual bats (5)	None (1)	Suburban areas or intensive arable land (2)	District/ Local/ Parish (13)
Myotis sp.	Rarer (5)	Individual bats (5)	None (1)	Suburban areas or intensive arable land (2)	District/ Local/ Parish (13)

5.1 Impacts

5.1.1 Impact in the Absence of Mitigation

In the absence of mitigation, the lighting associated with the proposed tennis courts would negatively impact commuting routes and foraging for at least five different bat species. Although no roosts were

recorded on site, the site is likely to be within the core sustenance zones for all bats recorded in the local area. Both commuting and foraging bats would be potentially affected by the proposal.

Without implementation of mitigation, general short and long-term impacts on bats by this development would result in:

- Increased light pollution associated with the use of floodlighting, and
- Minor changes in the site layout.

5.1.2 Predicted scale of impact

It is considered that, in the long-term, the nature and magnitude of the interference and potential loss of commuting and foraging opportunities in the absence of mitigation would be a low, negative impact of District/ Local/ Parish importance. The scale of impact has been assessed as low due to the low bat activity on site. Other factors considered in assigning the impact of the project as low include the current light spill associated with Henley road to the south of the site and the existing lighting on the pathway along the northern boundary of the site. A diagram showing the lighting plan and bat transect can be found in Appendix 3. The positioning of the floodlights and their design take into account patterns of bat activity on the site and are designed to minimise light spill (especially upwards). The main areas where bats were observed commuting or foraging receive very little light spill, especially the south eastern corner where no lighting is proposed. Furthermore, the flood lighting will be used only for limited periods of time within any given night or year and therefore it is unlikely the boundaries will be significantly impacted during key times of the bat season.

6 Recommendations and Enhancements

6.1 Outline of Strategy

- Reinforcement and enhancement of planting along commuting routes;
- Sensitive use of artificial lighting; and
- Long-term habitat management.

6.2 Site Design

6.2.1 Sensitive use of lighting

Increased levels of artificial light can cause disturbance to bats. Though several bat species can take advantage of artificial lighting systems for foraging, feeding off the insects they attract, others species avoid them as foraging within an illuminated area increases the risk of predation by nocturnal birds of prey or even domestic cats. If lighting is intensive and widespread, particularly lighting from lamps, which

emit UV light (such as mercury vapour); it can deter some bats from utilising the site and in some instances can act as a barrier across commuting lines. Research has also shown that certain types of artificial lighting (namely mercury vapour lamps) have been proven to disturb the emergence patterns of bats when they are placed within the vicinity of entrances to a bat roost.

The majority of the proposed development area is amenity grassland or hard standing which is poor quality habitat for foraging bats. The main impact to both foraging and commuting bats will be the proposed flood lighting. However, pipistrelle bats were recorded the most on site and are not a particularly light averse species. The lighting has been designed sensitively taking into consideration the boundaries of the site identified by both the transect and automated bat detector surveys as the areas with the highest bat activity. No bats were recorded flying over the sports pitch or tennis courts where the light spill will be concentrated. The positioning of the flood lights avoids any light spill on the south eastern corner where bats were observed foraging.

The lighting has also been designed to be down facing to reduce upwards light spill and therefore reduce the impact on commuting bats. Lighting should be used when the tennis courts and sports pitch are in use and then switched off when not in use, keeping to the minimum light levels required to meet health and safety standards.

6.2.2 Planting

It is recommended as an optional enhancement that species of night flowering scented plants are planted along the northern boundary of the site to increase suitable foraging habitat for bats. Species that would be suitable are night-scented stock (*Matthiola bicornis*) garden phlox (*Phlox paniculata*), honeysuckle (*Lonicera* sp.), sweet rocket (*Hesperis matronalis*) and evening primrose (*Oenothera biennis*).

7 Legislation and Policy

7.1 Bats

Bats and their roost sites are protected by UK and European legislation.

The Wildlife and Countryside Act (1981) (as amended) makes it an offence to:

- Intentionally kill, injure or take a bat;
- Possess or control any live or dead specimen or anything derived from a bat;
- Intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by a bat; and
- Intentionally or recklessly disturb a bat while it is occupying a structure or place which it uses for that purpose.

Additionally, the Conservation of Habitats and Species Regulations 2010 make it an offence to:

- Deliberately capture or kill a bat;
- Deliberately disturb a bat;
- Damage or destroy a breeding site or a resting place of a bat; and
- Keep, transport, sell or exchange or offer for sale or exchange a live or dead bat or any part of a bat.

7.2 National Planning Policy Framework

The National Planning Policy Framework (NPPF) was updated in February 2019 thereby replacing the older versions. The new framework sets out in Paragraphs 174 to 177 that to protect and enhance biodiversity and geodiversity, plans should:

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

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

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

The following should be given the same protection as habitat sites:

- potential Special Protection Areas and possible Special Areas of Conservation;
- listed or proposed Ramsar sites; and
- sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.

The presumption in favour of sustainable development does not apply where development requiring appropriate assessment because of its potential impact on a habitats site is being planned or determined.

7.3 Local Planning Policy

Reading Borough Council are in the process of updating their local plan. The information below has been taken from the Reading Borough Council's Core Strategy 2009:

CS36: Biodiversity and Geology

a) Development should retain, protect and incorporate features of biodiversity or geological interest (including protected species and their habitats) found within the application site into their schemes.

On sites with recognised biodiversity or geological value, development will not be permitted where there would be a direct or indirect adverse impact on the site, unless it can be clearly demonstrated that: -

- i. The need for development clearly outweighs the need to protect the value of the site; and
- ii. Appropriate compensation, impact minimisation, mitigation and compensation are provided.

8 References

Bat Conservation Trust (2012) *Bat Surveys - Good Practice Guidelines*. Bat Conservation Trust. London.

Hundt, L. (2012) *Bat Surveys: Good Practice Guidelines*, 2nd Edition, Bat Conservation Trust.

Mitchell-Jones, A. J. & McLeish, A. P. (2004) *Bat Workers Manual*. 3rd ed. JNCC, Peterborough.

Mitchell-Jones, A. J. (2004) *Bat Mitigation Guidelines* version January 2004, English Nature, Peterborough.

Reading Borough Council (2008) Core Strategy adopted 2008

Wray et al. (2010) *Valuing bats in the ecological impact assessment*, In Practice (70).

Appendix 1 - Photographs



Photo 1: View across playing field in August 2018 looking south towards Henley Road



Photo 2: View of existing tennis courts August 2018 (eastern end of site)

Appendix 2 – Transect Route and Automated Detector Locations

See following page:



**Transect survey and static
detector locations**

- Boundary
- Dectector 1
- Detector 2
- Stopping points
- Transect

Project: **Queen Anne's
School**

Client: **Neil Boddington**

Drawing
Title: **Bat Survey**



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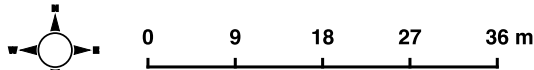
Appendix 3 – Diagram showing bat transect and lighting plan overlay



Bat Survey/ Lighting overlay

- Boundary
- Detector 1
- Detector 2
- Stopping points
- Transect
- Light Contours

Project: **Queen Annes School**
Client: **Queen Annes School**
Drawing Title: **Bat Survey**



SCALE (@A3): 1:1,251 Drawn by BG Date: 4 October 2019

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Appendix 4 – Site/ Species Value

Table 5 – Valuing commuting routes

Species	Number of bats	Roosts/potential roosts nearby	Type and complexity of linear features
Common (2)	Individual bats (5)	None (1)	Absence of (other) linear features (1)
-	-	Small number (3)	Unvegetated fences and large field sizes (2)
Rarer (5)	Small number of bats (10)	Moderate number/Not known (4)	Walls, gappy or flailed hedgerows, isolated well- grown hedgerows, and moderate field sizes (3)
-	-	Large number of roosts, or close to a SSSI for the species (5)	Well-grown and well-connected hedgerows, small field sizes (4)
Rarest (20)	Large number of bats (20)	Close to or within a SAC for the species (20)	Complex network of mature well-established hedgerows, small fields and rivers/streams (5)

Table 6 – Valuing foraging areas

Species	Number of bats	Roosts/potential roosts nearby	Foraging habitat characteristics
Common (2)	Individual bats (5)	None (1)	Industrial or other site without established vegetation (1)
-	-	Small number (3)	Suburban areas or intensive arable land (2)
Rarer (5)	Small number of bats (10)	Moderate number/Not known (4)	Isolated woodland patches, less intensive arable and/or small towns and villages (3)
-	-	Large number of roosts, or close to a SSSI for the species (5)	Larger or connected woodland blocks, mixed agriculture, and small villages/hamlets (4)
Rarest (20)	Large number of bats (20)	Close to or within a SAC for the species (20)	Mosaic of pasture, woodlands and wetland areas (5)

Table 7 – Scoring system for valuing commuting and foraging bats

Species	Number of bats
International	>50
National	41-50
Regional	31-40
County	21-30
District/Local/Parish	11-20
Not Important	1-10

All Appendix 4 tables taken from Wray et al. (2010)

Appendix 5 – Transect results

Total number of bat 'passes' recorded during each transect survey

Species	Sept	May	Jul	Total
Common Pipistrelle	13	2	5	20
Soprano Pipistrelle	9	2	7	18
Pipistrelle sp.	0	0	0	0
Nathusius's pipistrelle	0	0	0	0
Noctule	1	1	0	2
Brown long-eared bat	0	0	1	1
Myotis sp.	0	0	1	1
TOTAL	23	5	14	

Appendix 6 – Automated Detector Results

Total number of bat 'passes' recorded during static detector surveys

Species	Sept/Oct 2018	May 2019	July/August 2019	Total
Common Pipistrelle	7	23	68	98
Soprano Pipistrelle	17	2	14	33
Nathusius' Pipistrelle	2	0	2	4
Unidentified pipistrelle	3	2	27	32
Noctule	2	5	12	19
Brown long-eared bat	0	0	4	4
TOTAL	31	32	127	<u>190</u>