

**Bat Survey**  
**Rockingham 1**  
**Hoyland Common**  
**Harworth Estate**  
**July 2014**



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Bat Survey: Rockingham 2014

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<b>Status</b>	<b>Date</b>	<b>Approved by:</b>
Draft	08-08-2014	Ione Bareau MCIEEM
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## Bat Survey: Rockingham 2014

**Sites:**

Rockingham 1  
Hoyland Common  
(Dearne Valley Parkway)  
Barnsley,  
South Yorkshire

**Dates:**

Surveys from July 2013 to July 2014

**Client:**

Harworth Estates,  
AMP Technology Park,  
Brunel Way,  
Rotherham,  
South Yorkshire  
S60 5WG

**Planning Authority:**

Barnsley Metropolitan Borough Council

**Our ref:**

13/131

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## 1. Summary

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A bat survey was carried over a wide area covering three development zones: Rockingham 1, 2 and 3. Thirty three transects were taken, with 47 static overnight recording sessions, through the period July 2013 to July 2014. The results of these surveys are discussed in this report with reference to Rockingham 1 only, although the raw bat survey data relates to all three.

The area of the proposed development 'Rockingham 1' has no potential bat roost habitat.

The construction zone has potential bat foraging habitat at the boundaries (hedge and edge of young woodland) but no bat activity was detected in this area. These boundary habitats will be retained but may be affected by disturbance.

Outside of the construction zone there is a pond with mixed plantation woodland and areas of open grassland; this area has a moderate level of bat foraging activity, confined to common pipistrelle bats. This bat foraging area will be affected by the enlargement of the pond: the amount of open grassland will decrease, but the amount of open water will increase proportionately. The foraging habitat will be otherwise unaffected by the construction and will remain undisturbed by lighting. The impact of the pond enlargement will be neutral; the overall foraging habitat provision will not be reduced.

The development will seek to improve the quality of the habitat for bats, and mitigate for any impact on potential foraging habitat, by introducing a range of bat roost habitat into the pond area, which will encourage maternity roosts into this undisturbed habitat.

## 2. Introduction

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MAB Environment and Ecology Ltd was commissioned by Harworth Estates in July 2013 to assess bat activity in an area of proposed development along the Dearne Valley Parkway, part of Hoyland Common. This area contains 3 proposed development phases (Rockingham 1, 2 & 3). The bat survey data covers all three phases of development (see Fig 1), but the visual assessment, discussion, impact assessment and mitigation cover only Rockingham 1 (see Fig 2).

The report's primary objective is to provide an impact assessment for the development on bats, define any necessary mitigation proposals, and to assess any requirement for Protected Species Licences. In order to do so, the survey methodology was designed to look at long term bat activity patterns across the site, as well as to look for potential bat roost habitat.

The methodology was inherited from recommendations made in a previous ecological consultancy scoping survey by AES-Ltd. The original recommendations were based on a monthly visit in July, August, and September 2013, and then in April / May/ June 2014. Each visit was to include two dawn and two dusk transects over a 24 hr period. In addition there was to be a 5-day static detector recording sessions using 4 recorders in each month.

On account of the site conditions (theft of bat recorders left through the day), the low level of activity recorded in July, and the proposed development timetable (submission in winter 2013), this methodology was amended in August 2013. The revised methodology was to increase the intensity of the survey input by carrying out weekly site visits until the end of September, each visit having 2 x dawn and 2 x dusk surveys, and on each visit 3x static recorders left overnight. By installing the static detectors at

## Bat Survey: Rockingham 2014

dusk and recovering them at dawn, opportunities for theft were avoided. The amended methodology was approved by the Local Planning Authority ecologist in August 2013.



Figure 1 Site survey boundary (includes all 3 development phases)

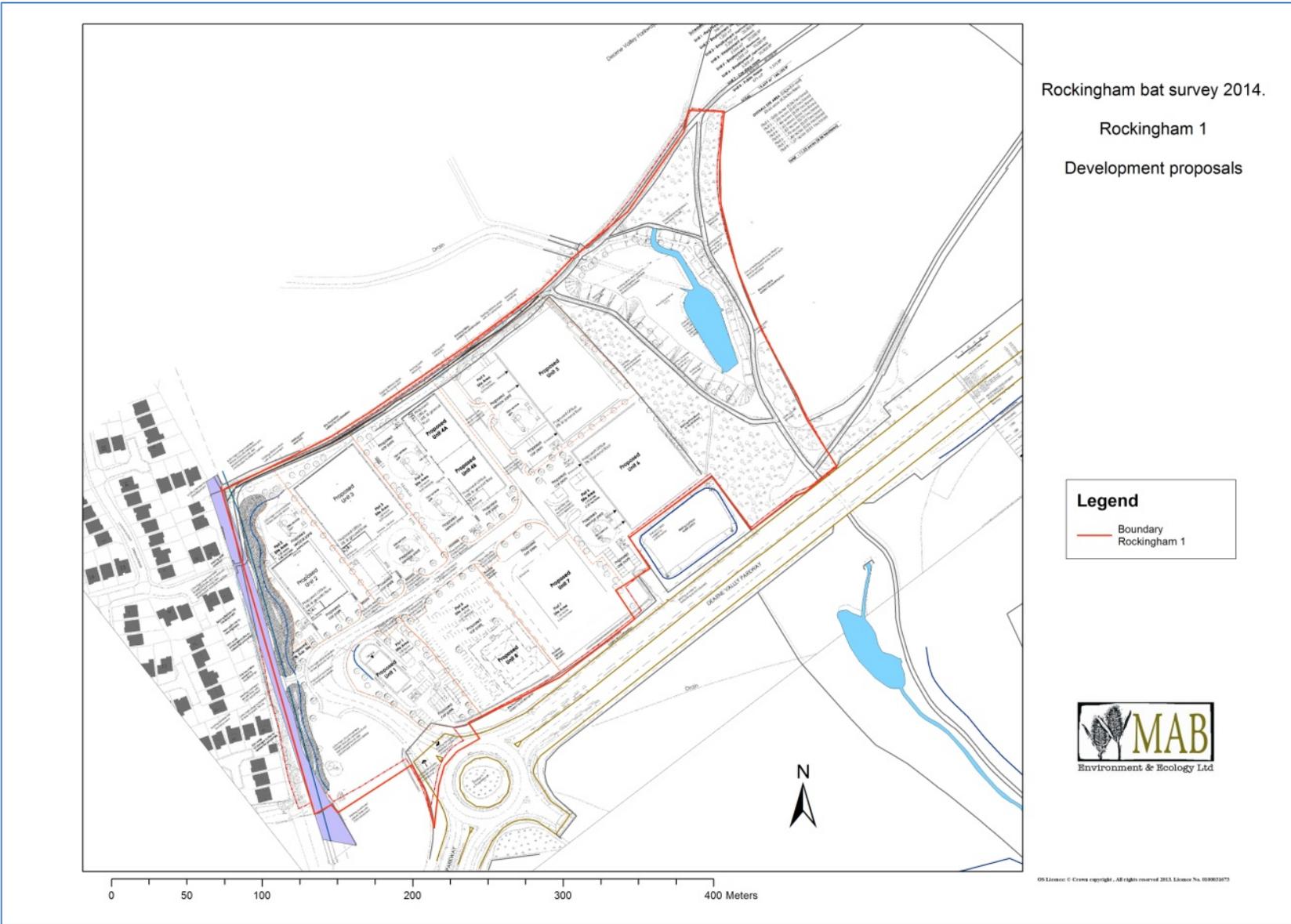


Figure 2 Proposed development Rockingham 1

### 3. Methodology

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3.1 This report has been written by Giles Manners CEnv MCIEEM, of MAB Environment & Ecology Ltd. Mr Manners has been a professional bat ecologist since 2004, and has a Class Survey Licence WML CL18 (Bat Survey Level 3) registration number CLS00343 and also holds a Class Licence WML CL16 (Volunteer Bat Roost Visitor Level 2) – Natural England trainer license. He is also a zoologist of over 20 years' experience, a full member of the Institute of Ecology and Environmental Management and a Chartered Environmentalist.

3.2 Trees affected by the development were inspected visually during the day. Any potential bat roost habitat (woodpecker holes, splits, cracks, rot holes, dense ivy, and peeling bark) was assessed from the ground using binoculars.

3.3 There were no buildings within the survey area.

3.4 Bat roost records for a 2km radius from the centre of the site (= c. 1km buffer around boundary) were commissioned from the South Yorkshire Bat Group and from the West Yorkshire Bat Group.

3.5 Transects were walked by single surveyors carrying Pettersson D240x ultra-sound detectors, set to 10x expansion with manual triggering, recording onto an Edirol R09 WAV solid state recording device for the time expansion channel, with heterodyne output through the other channel. A slow and steady pace was walked, and the detector swept a full 360 degree every 10m. Recorded bats were labelled on the map. Recordings were analysed manually using BatSound, species identification being made by Giles Manners. See constraints re the inherent limitation of bat species identification by ultrasound analysis. Species groups used were as follows:

## Bat Survey: Rockingham 2014

- CP: Common pipistrelle
- SP: Soprano pipistrelle
- N: Noctule
- L: Leisler's bat
- MBM: whiskered /Brandt's bat
- MNAT: Natterer's bat
- BLE: brown long-eared bat

Dusk transects started 30 minutes after sunset; dawn transects started 80 minutes before dawn. All transects were carried out by Giles Manners (as above). See map of routes Figure 3. Transects were timed to last approximately 1hr. Transects did not follow the stop-point methodology (see constraints).

3.6 Overnight unmanned bat recorder sessions used Anabat SD1 detectors and D500x professional full spectrum recorders. See map of locations at Fig 4.

The Anabat detector was used in a standard unmanned remote configuration: CF card emptied and configured for a timed recording starting at dusk and ending at dawn. The division ratio was set at 8, sensitivity at 7. Volume and LCDs were turned down and off. An external microphone was used. The unit (in a pelicase) was placed on the ground, secured with a padlock and chain, with the microphone at a height of around 2m, attached to a tree or shrub and facing into open space, angled slightly upwards. The results were downloaded using CFREAD and the recordings analysed manually by Giles Manners (trained in species composition analysis by Titley) using ANALOOK.

The Pettersson D500x recorders were attached to a tree or shrub at 1.5m height and the internal microphone was used, angled slightly upwards (c 75° from vertical) to prevent water ingress. The D500x settings were as follows:

Table 1 D500x recording settings

Recording Setting	Level
Input gain	40
Trigger level	28
Interval	OFF
Sample frequency	500kHz
Pre-trigger	OFF
Record length	1 second
High pass filter	ON
Auto record	ON
Trigger sensitivity	Medium

The clock was set to BST, and recording started at dusk, ending at dawn. The D500x recordings were analysed using Batbioacoustics (BBA) software (demonstration version 2013). The CSV table results were filtered for confidence over 0.9 (i.e. 90%), and then any calls numbering less than 5 were removed. The resulting data was then presented as a pivot chart in Appendix 2 (using Microsoft Excel), with number of calls grouped into hours. Note that BBA species identification does not distinguish between different pipistrelle species, nor between noctule and Leisler's bat, but is very effective at separating myotis species from other bats. Whiskered / Brandt's are grouped due to the identical call structure. ID groups for locally occurring species are as follows:

- Pipistrellus = all pipistrelle species
- NSL = noctule, Leislars, or serotine) – N.B. serotine does not occur in this area.
- Mbra/Mmys = whiskered / Brandt's bat (cannot be separated by call)
- Mnat = Natterer's bat
- Paur = Brown long-eared bat

Other species are included in the program, e.g. Alcahloe's bat, but were not detected.

Subsequent GIS analysis was carried out using ArcGIS.

3.7 All transects and overnight recording sessions were carried out in good weather conditions, which avoided having to waterproof the microphones, and consequently maximised recorder sensitivity. Good weather was defined by low wind speeds (max 15mph), no precipitation, and temperature above 10°C.

# Bat Survey: Rockingham 2014



Figure 3 Transect routes

# Bat Survey: Rockingham 2014



Figure 4 Recorder locations

#### 4. Constraints

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The transect routes were constrained by impenetrable scrub woodland and the main road.

The recorder sessions were overnight only, and could not be left out during the day due to the theft of a D500x recorder on the first deployment (and subsequent need to take measures to avoid further theft in order to maintain insurance cover). There is also a general absence of taller trees, which restricts the height at which recorders can be positioned. There is no suitable location for a recorder within the field at the west of the site, as this area is devoid of trees and has a high level of public activity as well as grazing horses.

As well as theft, there was an element of abusive and threatening behaviour by members of the public toward our ecologists (and other contractors we encountered). This was most prevalent at the western area nearer the housing and the underpass (where antisocial behaviour was also reported by locals as frequent). Therefore, to reduce risk of assault transects were walked continuously with recorders held discreetly, we did not follow a regular stop-point methodology.

**Species identification: (also see methodology).**

Ultrasound surveys have limitations in terms of confidence and practicality of species identification. Detailed analysis was carried out on a selection of time expansion recordings in order to provide some 'truthing' of species identification. The automated analysis of full spectrum recordings (static recorders) provides confidence in presence of myotis species groups (e.g. Natterer's vs Whiskered / Brandt's bat), whereas the manual analysis of time expansion recordings provides confidence in groups not distinguished by the automated analysis (e.g. common vs soprano pipistrelle and noctule vs Leisler's bat). Between the two techniques, confident species identification is obtained (other than whiskered / Brandt's bats which cannot be distinguished even by very expert analysis of ultrasound recordings).

Louder bats have an inherent bias with all bat surveys using ultrasound, therefore quiet bats such as brown long- eared bats are generally under-represented.

## 5. Site Description

Rockingham 1 comprises one field in the south west of the area (see Figs 6 & 7) plus an area of woodland and one rough grassland around the pond. The field is adjacent to housing and is grazed by tethered horses, and well frequented by locals. It is generally abandoned with various dumps and footpaths throughout. Towards the end of our surveys it was largely stripped of vegetation to form a test mound. There is a hedged boundary at the north of the field, and to the east the field borders young plantation woodland; the other boundaries are open and exposed to lighting, housing, and traffic.

Further description is provided in the visual survey results section.



Figure 5 Woodland areas Rockingham 1,2 &3



Figure 6 Aerial view of Rockingham 1 area



Figure 7 Rockingham 1 area

## 6. Results

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### 6.1 Desktop study

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For all bat records from the biological records search see Appendix 1.

The bat group records search returned 500 records within the 2km radius of the site centre, but only one record within the OS tile of the centre of the site.

There are many records from Worsborough Hall and Country Park, just less than 2km to the north. These include Daubenton's bats, whiskered bats, pipistrelles and brown long-eared bats.

There are also many roost records from the woodlands to the west, which are now ecologically separated from Rockingham by the M1.

There are no maternity colonies near to or adjacent to the site which would have any significance to the results of the surveys.

The aerial imagery of the site shows that it is surrounded on three sides by developed land. There is a degree of habitat connectivity to the north of the site where the mature woodlands join to more extensive woodlands and open countryside.



Figure 8 Aerial view of full survey area (Rockingham 1, 2 & 3)

## 6.2 Visual survey Rockingham 1 area

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Within this area there is no suitable bat roost habitat. The trees are all immature, and there are no buildings.

In terms of potential bat foraging habitat on the construction zone, there is a hedge on the northern boundary (see photo 2) and 'edge habitat' provided by the young plantation woodland on the eastern boundary. The open field is featureless and unlikely to be used by bats.

Around the pond there is good foraging habitat formed by small patches of young broadleaved plantation woodland with tall unmanaged grassland, and a small amount of open water.

There are no mature or semi-mature trees within the site.

Bat Survey: Rockingham 2014



**Photo 1** Pond area viewed from the east



**Photo 2** Hedge on the northern boundary of the construction zone



**Photo 3** Woodland edge on the eastern boundary of the construction zone



**Photo 4** Track within pond / woodland area



**Photo 5** The pond area (centre) with open grassland



**Photo 6** Grass banks around pond area

### 6.3 Transect surveys – Rockingham 1, 2 & 3

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Species key:

CP: Common pipistrelle

SP: Soprano pipistrelle

N: Noctule

L: Leisler's bat

MBM: whiskered /Brandt's bat

MNAT: Natterer's bat

BLE: brown long-eared bat

**Table 2 Transect routes, timing and conditions 2013**

Session number	Reference number	Date - 2013	Transect route	Start / end.	Conditions - dusk	Sunset / Sunrise BST
1	1	22 July	1	Start: 21.40 End: 22.45	Hot (23°C), 70% cloud, humid, dry, still	21.20
1	2	23 July	2	Start: 03.40 End: 04.50	Warm (17°C), 80% cloud, dry, still	05.00
2	3	29 July	3	Start: 21.30 End:22.30	Warm (17°C), 90% cloud, breezy, recent heavy rain	21.07
2	4	30 July	4	Start: 04.00 End:05.00	Warm (14°C), 100% cloud, breezy, showers.	05.13
3	5	6 August	4	Start: 21.15 End:22.12	Warm (19°C), dry, still, 50% cloud	20.51
3	6	7 August	1	Start: 04.00 End: 05.00	Warm (14°C), dry, still, 50% cloud	05.28
4	7	19 August	2	Start: 20.40 End:21.50	Warm (17°C), dry, v light breeze, 20% cloud	20.23
4	8	20 August	3	Start: 04.30 End:05.30	Warm (14°C), dry, still, 10% cloud.	05.50
5	9	2 Sept	1	Start: 20.10 End: 21.15	Warm (17°C), dry, breezy, clear.	19.50
5	10	3 Sept	2	Start: 04.30 End:05.30	Warm (14°C), dry, still, 60% cloud.	06.14
6	11	10 Sept	3	Start: 20.00 End:21.00	Cool (14°C), dry, still, 50% cloud.	19.30
6	12	11 Sept	4	Start: 05.00 End:06.00	Cool (9°C), dry, still, 70% cloud.	06.30
7	13	16 Sept	4	Start: 19.50 End:20.50	Cool (12°C), damp, breezy, 100% cloud.	19.18
7	14	17 Sept	1	Start: 05.00 End:06.00	Cool (9°C), damp, breezy, 100% cloud.	06.39
8	15	23Sept	2	Start: 19.30 End:20.30	Cool (13°C), still, dry, 70% cloud.	19.00
8	16	24 Sept	3	Start: 05.20 End:06.20	Cool (10°C), still, dry, 30% cloud.	06.52

**Table 3 Transect conditions 2014**

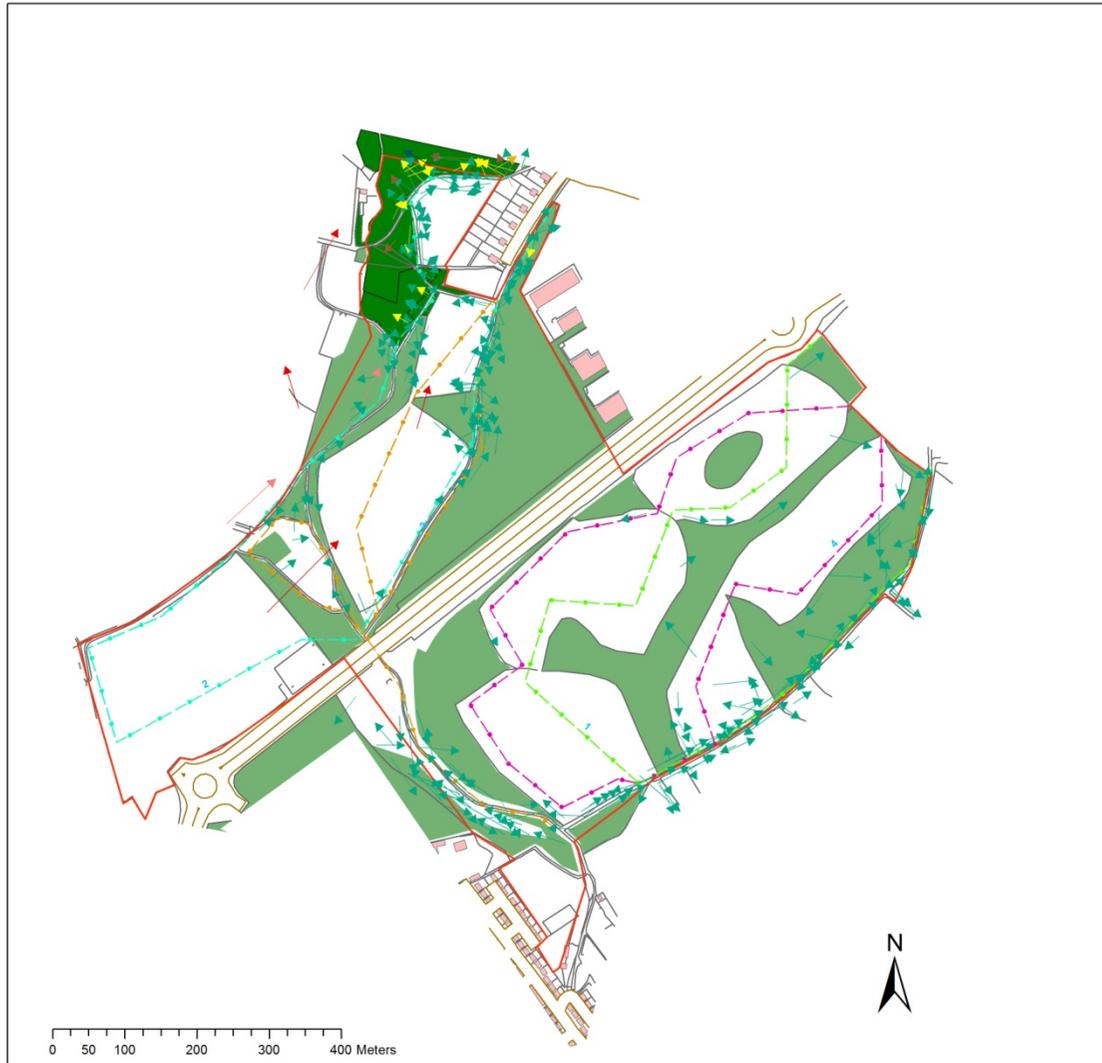
## Bat Survey: Rockingham 2014

Session number	Reference number	Date - 2014	Transect route	Start / end.	Conditions	Sunset / Sunrise BST
9	17	29May	1	Start: 21.40 End: 22.45	Moderate (16°C), dry, still, 100% cloud	21.20
9	18	30 May	2	Start: 03.40 End: 04.50	Cool (9°C), dry, still, 100% cloud.	05.00
10	19	5 June	3	Start: 22.00 End:23.00	Warm (19°C), dry, light south west breeze (4), 95% cloud.	21.28
10	20	6 June	4	Start: 03.30 End:04.30	Warm (12°C), dry, light southerly (4), 1005 cloud.	04.41
11	21	12 June	4	Start: 22.00 End:23.00	Warm (17°C) Dry, still, 60% cloud	21.34
11	22	13 June	1	Start: 03.30 End: 04.30	Moderate (10°C), dry, still,, 80% cloud	04.38
12	23	16 June	2	Start: 22.00 End:23.00	Warm (17°C), dry, breezy (4), 100% cloud	21.36
12	24	17 June	3	Start: 03.30 End:04.30	Warm (12°C), dry, westerly breeze (3), 100% cloud.	04.37
13	25	26June	1	Start: 22.00 End: 23.00	Moderate (16°C), dry, breezy (5), 10% cloud.	21.38
13	26	27 June	2	Start: 03.30 End:04.30	Moderate (10°C), dry, light breeze (3), 30% cloud	04.39
14	27	1 July	3	Start: 22.10 End:23.10	Moderate (16°C), dry, v light breeze (1), clear	21.37
14	28	2 July	4	Start: 03.30 End:04.30	Moderate (10°C), dry, v light breeze (2), 5% cloud	04.42
15	29	10July	4	Start: 22.00 End:23.00	Warm (16°C), dry, breezy (5), 20% cloud.	21.32
15	30	11 July	1	Start: 03.30 End:04.30	Moderate (11°C), dry, light breeze (3), 40% cloud	04.50
16	31	17 July	2	Start: 22.00 End:23.00	Warm (18°C), dry, still, 40% cloud	21.24

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16	32	18 July	3	Start: 03.45 End:04.45	Warm (13°C), dry, still, 25% cloud.	04.49
17	33	24 July	1	Start: 22.00 End:23.00	Hot (22°C), dry, light southerly (3), clear	21.15
17	34	25 July	2	Start: 03.45 End:04.45	Warm (14°C), dry, light southerly (3), clear	05.09

Rockingham bat survey 2014.  
Transect results  
All Transects



**Legend**

**Transect Results**

**Species**

- BLE
- CP
- L
- MBM
- MNAT
- N
- SP

**Transects**

- 1
- 2
- 3
- 4

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Figure 9 Combined transect results

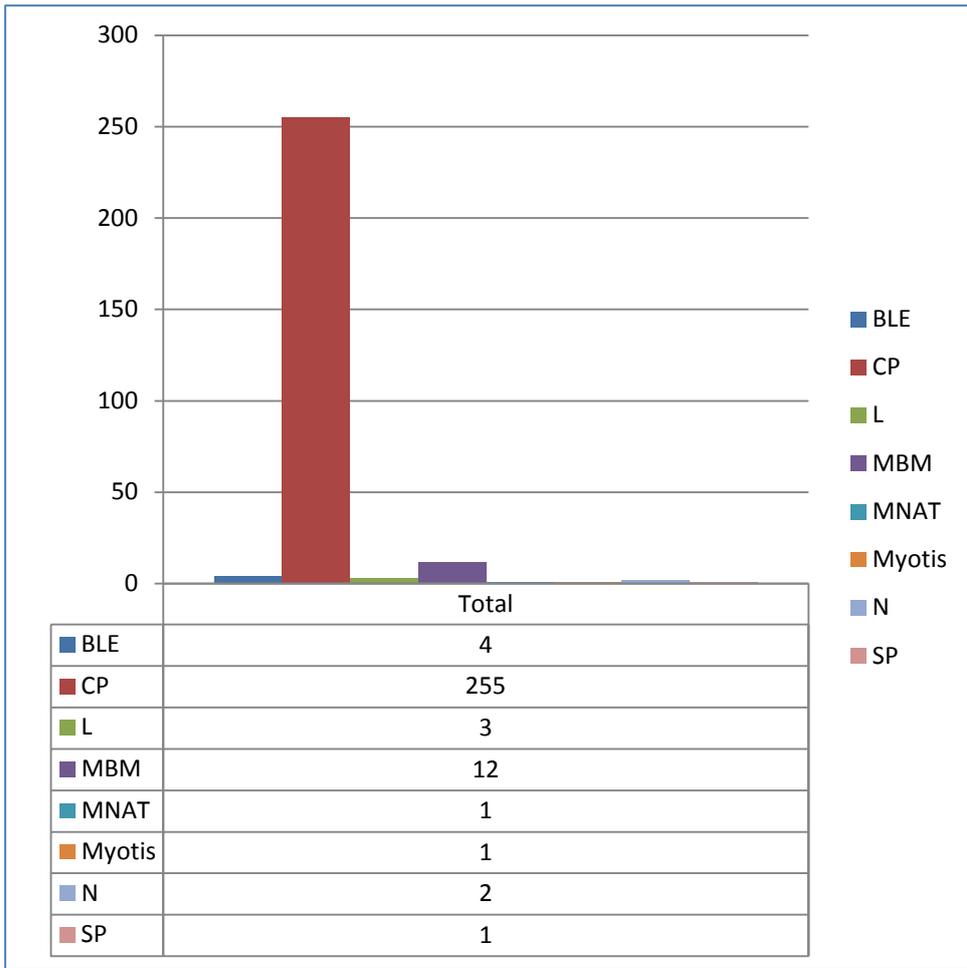


Figure 10 Total calls identified during transects

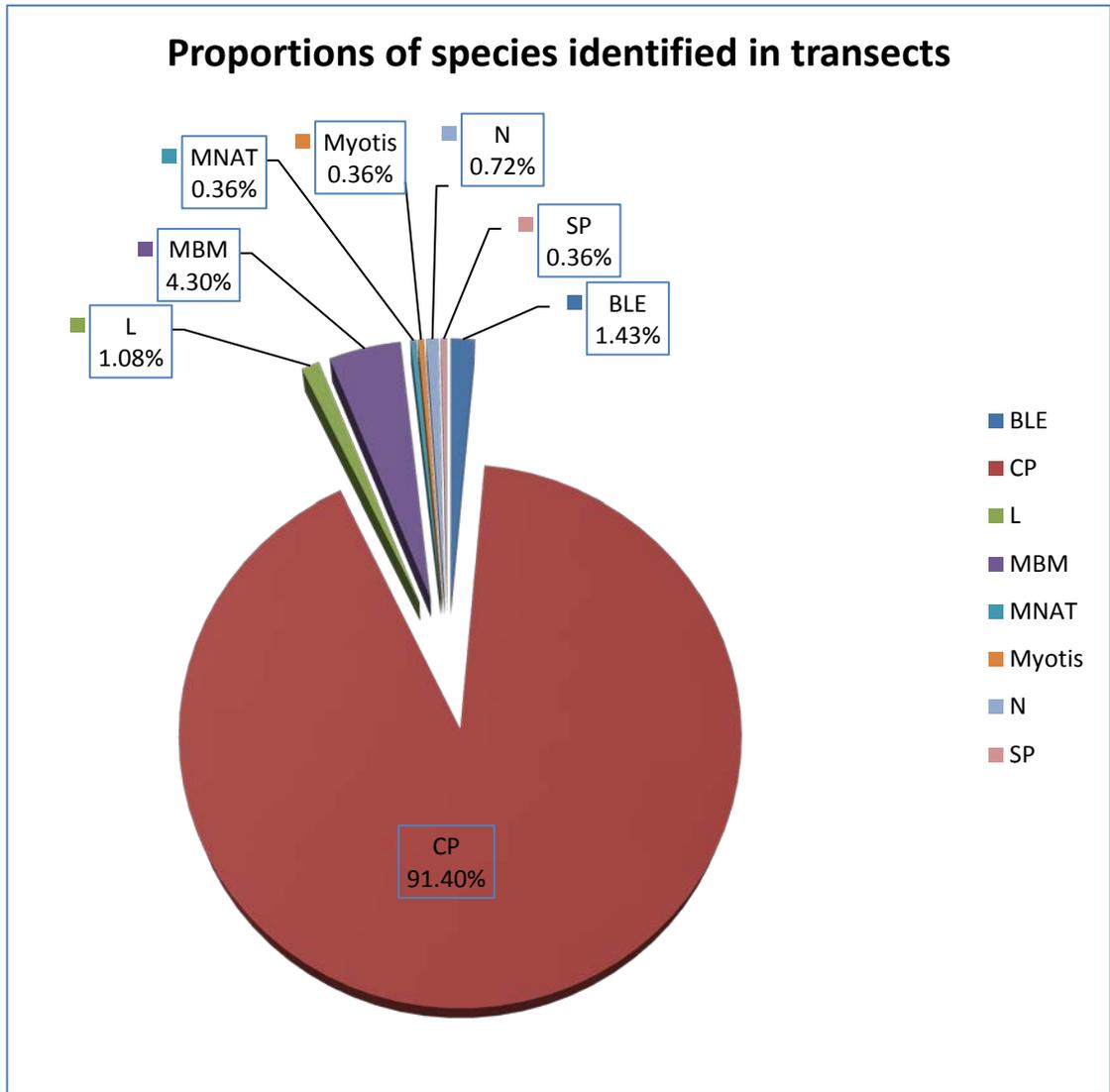


Figure 11 Proportion of species identified in transects.

### 6.3.1 Species identification (call characteristics) during transects

Myotis calls around Shortwood Villas: IPI=126 ms, Fmax = 39 kHz, F range = 25 to 60 kHz, call length = 4ms. See spectrogram below. This is closest to Whiskered / Brandt's bat, but it is not distinctive enough to go beyond genus in definite identification.

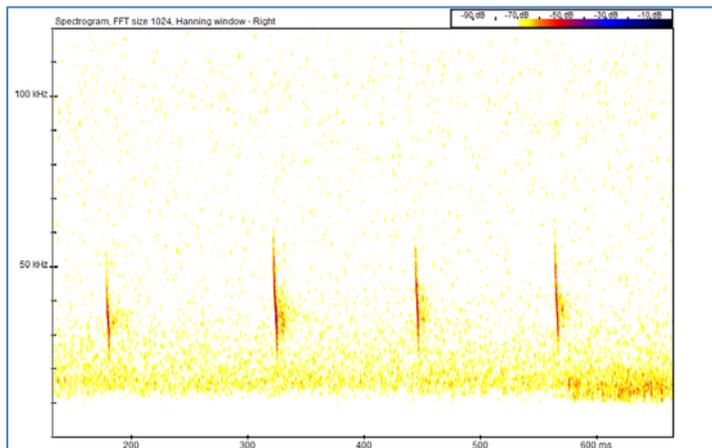


Figure 12 Myotis bat at Shortwood villas

Brown long-eared bat calls in mature woodland northwest of site: IPI=60 ms, split calls F range 32 to 54 kHz and 51 to 62 kHz, Fmax 39kHz and 59kHz. V faint (-60dB). See spectrogram below.

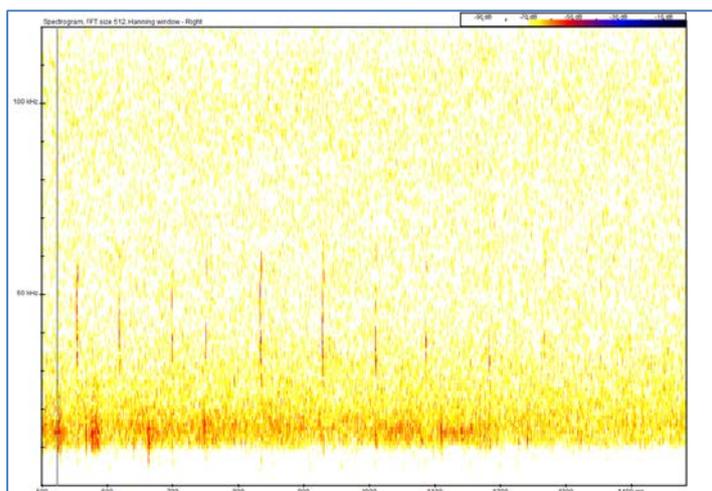


Figure 13 Brown long-eared bat in mature woodland

Soprano pipistrelle heard once only at Shortwood Villas, but very distinctive at 56Khz

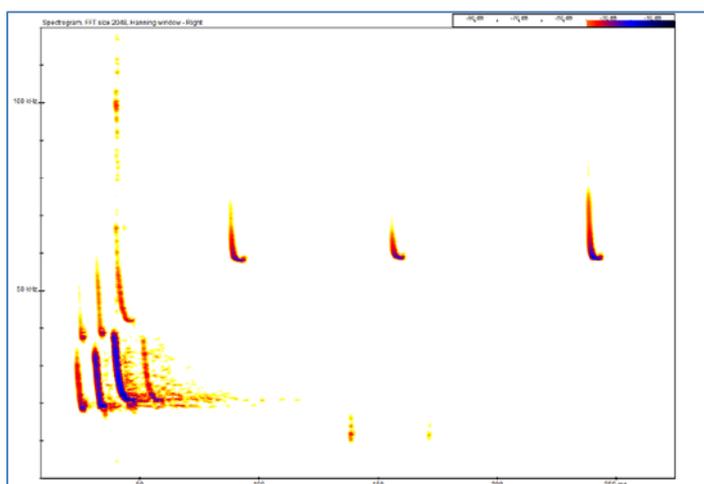


Figure 14 Soprano pipistrelle at Shortwood Villas

Common pipistrelle ubiquitous and easily identified here (all calls with distinct CF element at 45 kHz).

Leisler's bat: recorded once only. 2 calls, loudest (CF type call) has  $F_{max} = 23$  kHz, F range 22 to 29 kHz, call length 16ms; quieter (FM type call) has  $F_{max} = 26.5$ , F range 25 to 28 kHz. Distinct from noctule in that the CF call has a relatively high frequency; however, species calls are variable and ID is not definitive from one recording.

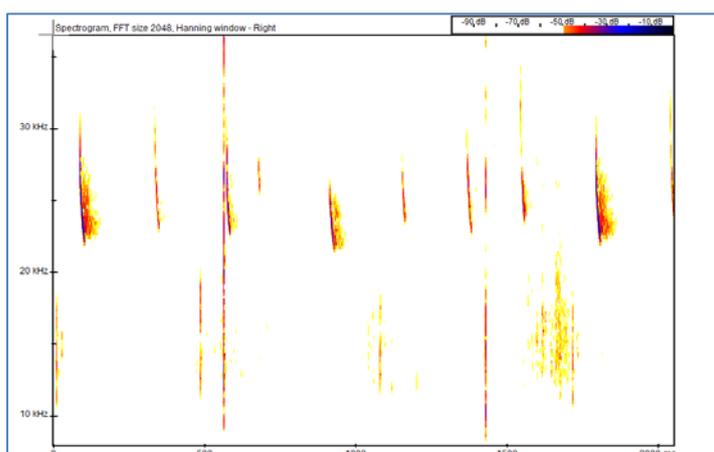


Figure 15 Leisler's bat

## 6.4 Static detector surveys – Rockingham 1, 2 & 3

### 6.4.1 Conditions and timing

**Table 4 Timing and condition of static detector surveys 2013. For further information (sunrise sunset times etc) refer to transect conditions (Table 2)**

Session number	Reference number	Date(s)	Recorder location	Conditions	Detector used
1	1	24 to 25 July	1	Warm and dry throughout	D500x
2	2	31 July to 1 Aug	2	Warm and dry with spells of heavy rain and moderate winds	D500x
3	3	6 to 7 Aug	3	Warm, dry still	D500x
"	4	"	4	"	D500x
"	5	"	5	"	Anabat
4	6	19 to 20 Aug	6	Warm, dry, light breeze	D500x
"	7	"	7	"	D500x
"	8	"	8	"	Anabat
5	9	2 to 3 Sept	9	Warm, dry, breezy, clear	D500x
"	10	"	10	"	D500x
"	11	"	11	"	Anabat
6	12	10 to 11 Sept	12	Cool, dry, still, cloudy	D500x
"	13	"	13	"	D500x
"	14	"	14	"	Anabat
7	15	16 to 17 Sept	15	Cool, damp, breezy, cloudy.	D500x
"	16	"	16	"	D500x
"	17	"	17	"	Anabat
8	18	23 to 24 Sept	18	Cool, still, dry, cloudy.	D500x
"	19	"	19	"	D500x
"	20	"	20	"	Anabat

## Bat Survey: Rockingham 2014

**Table 5 Timing and condition of static detector surveys 2014. For further information (sunrise sunset times etc) refer to transect conditions (Table 3)**

Session number	Reference number	Date(s)	Recorder location	Conditions	Detector used
9	21	29-30 May	8	Moderate, dry . still	Anabat
9	22	"	1	"	D500x
9	23	"	26	"	D500x
10	24	5-6 June	8	Warm dry light breeze	Anabat
10	25	"	6	"	D500x
10	26	"	19	"	D500x
11	27	12-13 June	13	Warm, dry, still	D500x
11	28	"	25	"	D500x
11	29	"	9	"	Anabat
12	30	16-17 June	1	Warm dry breezy	D500x
12	31	"	21	"	Anabat
12	32	"	24	"	D500x
13	33	26-27 June	18	Moderate, dry, light breeze	D500x
13	34	"	4	"	Anabat
13	35	"	15	"	D500x
14	36	1-2 July	23	Moderate, dry, light breeze	D500x
14	37	"	2	"	Anabat
14	38	"	22	"	D500x
15	39	10-11 July	13	Moderate, dry, light breeze	Anabat
15	40	"	1	"	D500x
15	41	"	19	"	D500x
16	42	17-18 July	27	Warm, dry, still	D500x
16	43	"	21	"	Anabat
Session number	Reference number	Date(s)	Recorder location	Conditions	Detector used
16	44	"	25	"	D500x
17	45	24-25 July	21	Hot, dry, light breeze	D500x
17	46	"	28	"	D500x
17	47	"	1	"	D500x

## Bat Survey: Rockingham 2014

### 6.4.2 Static recorder results tables

*(The full results for each session are also in Appendix 2 with times)*

Rockingham static recorder results						
<i>Filtered for &gt;4 calls to register species (so total may exceed sum of species counts)</i>						
Reference	Location	Total calls	Species			
			Pipistrelle	NSL	MbraMmys	Mnat
1	1	280	270	10	0	0
2	2	425	423	0	0	0
3	3	174	174	0	0	0
4	4	152	152	0	0	0
5	5	0	0	0	0	0
6	6	78	65	6	7	0
7	7	3811	3778	27	6	0
8	8	6	4	0	0	0
9	9	119	119	0	0	0
10	10	120	110	10	0	0
11	11	130	130	0	0	0
12	12	21	21	0	0	0
13	13	14	14	0	0	0
14	14	0	0	0	0	0
15	15	0	0	0	0	0
16	16	0	0	0	0	0
17	17	0	0	0	0	0
18	18	59	44	5	10	0
19	19	359	359	0	0	0
20	20	0	0	0	0	0
21	8	0	0	0	0	0
22	1	351	351	0	0	0
23	26	41	41	0	0	0
24	8	0	0	0	0	0
25	6	12	12	0	0	0
26	19	0	0	0	0	0
27	13	4965	4931	18	7	0
28	25	7447	6677	23	742	5
29	9	9	6	3	0	0
30	1	5844	5589	0	244	5
31	21	0	0	0	0	0
32	24	39	0	0	0	0
33	18	50	38	12	0	0
34	4	181	176	5	0	0
35	15	0	0	0	0	0
36	23	195	183	11	0	0

Bat Survey: Rockingham 2014

<b>Rockingham static recorder results</b>						
<i>Filtered for &gt;4 calls to register species (so total may exceed sum of species counts)</i>						
Reference	Location	Total calls	Species			
			Pipistrelle	NSL	MbraMmys	Mnat
37	2	39	39	0	0	0
38	22	73	71	0	0	0
39	13	15	14	0	0	0
40	1	387	386	0	0	0
41	19	98	95	0	0	0
42	27	0	0	0	0	0
43	21	0	0	0	0	0
44	25	7184	6593	6	400	0
45	21	112	87	25	0	0
46	28	802	797	0	0	0
47	1	883	835	37	7	0

6.4.3 Static recorder results – graphic



Figure 16 Static recorder results – total calls

# Bat Survey: Rockingham 2014



Figure 17 Static recorder results – relative species composition

# Bat Survey: Rockingham 2014



Figure 18 Static recorder results – whiskered / Brandt's bat

# Bat Survey: Rockingham 2014



Figure 19 Static recorder results – noctule / Leisler's bat

Bat Survey: Rockingham 2014



Figure 20 Static recorder results - pipistrelles

### Proportion of Total Calls recorded by static detectors

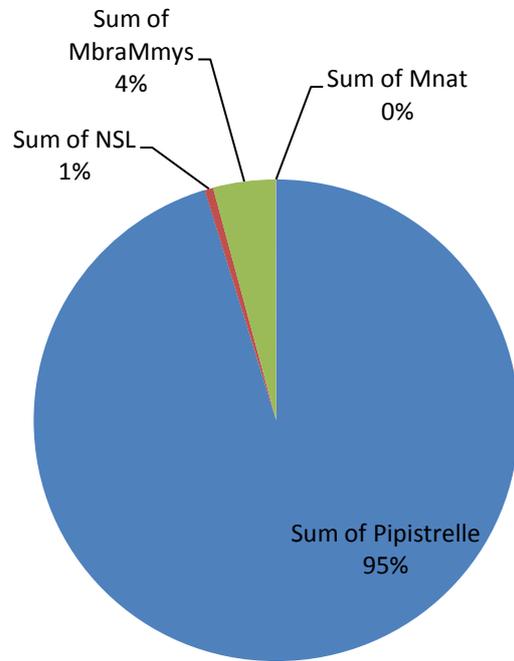


Figure 21 Species proportions from static detectors

## 7. Discussion and analysis

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### 7.1 General

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The results of the transects differ in some respects from the static recorder results. Transects taken at dawn and dusk do not normally show a full range of bat activity, as some species will visit an area only in the middle of the night. Bat species which eat moths (such as Natterer's bats and brown long-eared bats) normally forage later than pipistrelles and other species which eat small insects that peak at either end of the night. Transects do however provide something that a static recorder cannot: an idea of the actual number of bats. A static recorder simply picks up calls, therefore a single bat foraging around the microphone may be recorded several hundred times. During a transect, however, the same bat is only recorded once.

Transects are also useful in detecting roosts, either directly (by seeing them leaving / entering their roosts or swarming outside the roosts) or, indirectly, by looking for 'commuting routes'.

Both methods are subject to detection limitations: Pettersson and Anabat ultrasound detectors use some of the best microphones available, but even these cannot detect many bats beyond 30m from the unit. The detection rate depends very much on the species, the flight direction, and the behaviour of the bat. As with all microphones, the sounds recorded come from a 'cone' shaped detection area spreading out from the microphone.

These limitations are mitigated in transects by the ability of the ecologist to sweep the unit around to maximise detection rates; the surveyor can also see very quiet bats such as brown long-eared bats when they are out of range.

Due to these survey characteristics, the results of a survey such as this are a matter of interpretation with regard to foraging and commuting usage by bat species. The results regarding roost presence and potential are more clear cut.

## 7.2 Bat roosts – Rockingham 1

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There is no potential for bat roosting within the Rockingham 1 area - potential roost habitat is restricted to off-site mature and semi-mature woodland (see Figure 5).

## 7.3 Bat activity – Rockingham 1

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The bat activity map is shown in Figure 23. All of the activity within the Rockingham 1 area is restricted to the pond area and is common pipistrelle only (other than noctule flying over the site). Common pipistrelles are at home in a semi-urban environment, and they forage along edge habitat, thus the concentration of activity along tracks and rides.

There was no consistent flight direction / commuting activity observed, which indicates that there is no breeding roost nearby.

The bat activity within Rockingham 1 is linked to areas of higher and more diverse bat activity to the northeast (see figure 22 below), as it is connected to this area by woodland plantations and suitable edge habitat.

The noctule and Leisler's bats are recorded from a great height and long distance from the surveyor / recorder due to the high volume; these were all commuting bats and have no association with the survey area.

There were very few sparse appearances of bats around the ponds, and no pond specialists such as Daubenton's bats.

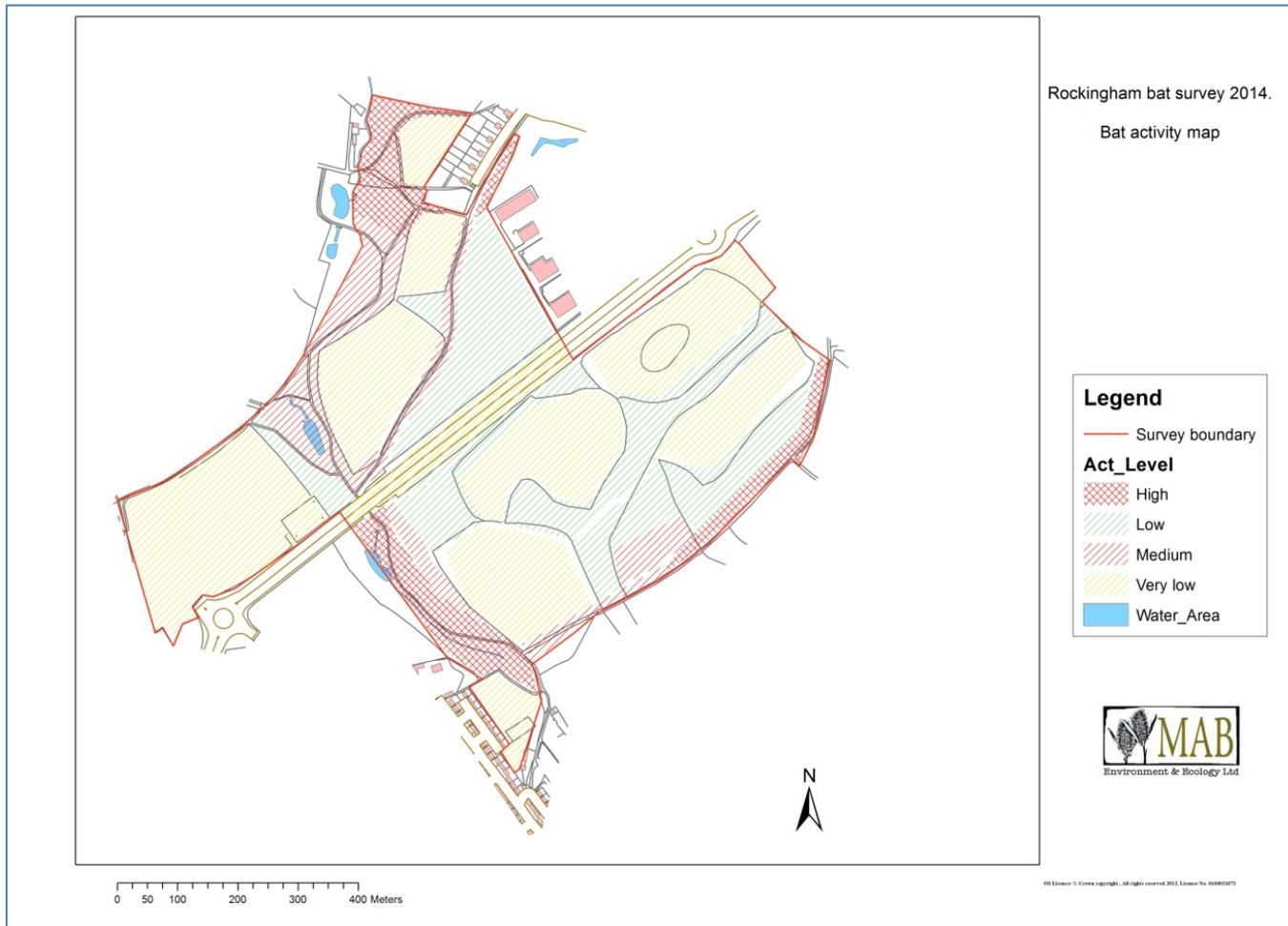


Figure 22 Bat activity map – whole survey area

Bat Survey: Rockingham 2014

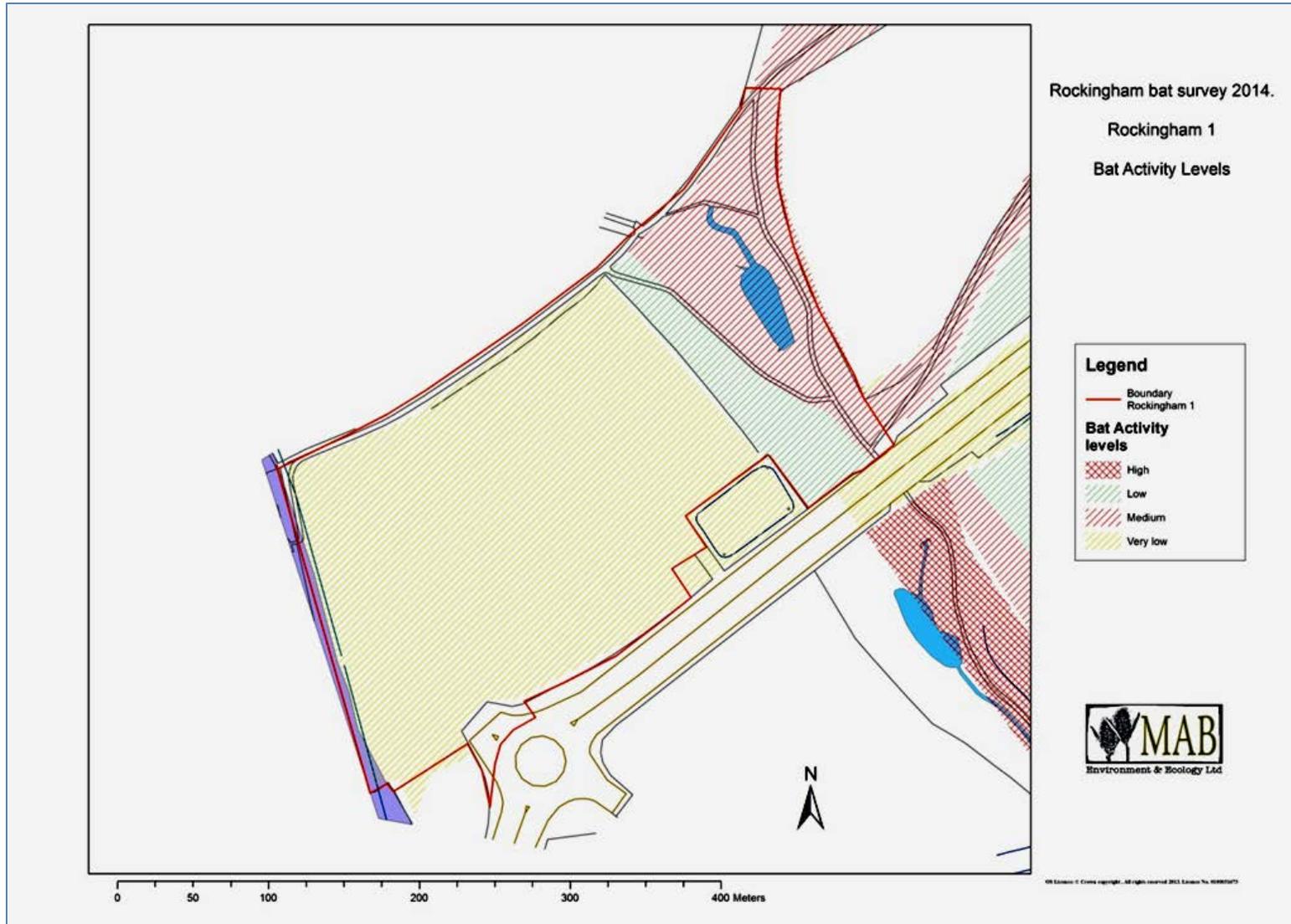


Figure 23 Bat activity levels Rockingham 1

## 8. Impact assessment – Rockingham 1

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The proposed development plans for Rockingham 1 will have no impact on bat roosts.

The construction zone is situated within an area where no bat activity was observed and is buffered from an area of moderate bat activity (around the pond) by a substantial fringe of new broadleaved plantation woodland.

There is observed bat foraging activity within the pond area, and potential bat foraging habitat along the northern and eastern boundaries of the construction zone in the form of hedge at the north and woodland edge at the east (though no bat activity has been detected despite extensive surveys).

There is no proposal or need for lighting on the east side of the site, as all access will be to the west, therefore, there will be no impact on potential foraging habitat to the east.

It is likely that the footpath to the north will require illumination following development. The hedgerow shows no sign of being used by bats for commuting; the extensive transect surveys across the area would have picked up any regular usage. The northern side of the hedge will not be affected by lighting, and the hedge will be retained, therefore there is no discernible impact on usage by bats for commuting or foraging.

The development of the pond area will involve enlargement to around 3x its current size at the expense of rough grassland and areas of young planted trees and shrubs. The overall amount of edge habitat will be reduced as a result of the increased area of open water. Given the relatively low level and non-specialist bat activity, it is unlikely that this will impact on the foraging bats. The extended open water may encourage Daubenton's bats to use the site: this area is linked to two large ponds to the north and extensive woodland.

## 9. Mitigation & Compensation

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### 9.1 Mitigation summary

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The impact in terms loss of habitat quality is low and does not require creation of compensatory foraging habitat; abundant foraging habitat remains for the numbers and species of bats observed.

Impact on the bat foraging habitat must be prevented by restricting lighting inputs to the east of the site – no lighting should be installed to the pond area unless necessary, and if it is deemed to be necessary for safety then it should be low-level down-lighting only.

In order to comply with National Planning Policy Framework (NPPF) with regard to conserving and enhancing wildlife habitat, our primary recommendation is to provide roosting habitat for a range of bat species within the pond and surrounding area. This will mimic the presence of mature trees or buildings and reduce the commuting distance required to access this site. Bats will use small bat boxes for day roosts and for hibernation, but larger boxes may be used for maternity roosts if in warm and sunny conditions. However, the uptake of bat boxes is relatively low (as low as 10% on some sites), therefore several boxes are normally used.

On this site there is an absence of mature trees or buildings on which to erect bat boxes; the new builds will be in a highly disturbed area and so are not suitable. Small lightweight timber boxes can be used in the young plantation as these will not bend the trees, but they are vulnerable to vandalism at these heights. The likelihood of vandalism is also considered high on account of the theft of our bat recorders and the behaviour of some locals in this area. The young trees have many branches and are easy to climb. To encourage bats to use vulnerable boxes would be negligent; therefore, we are

## Bat Survey: Rockingham 2014

recommending usage of installed poles within the woodland / pond area. Each pole should have two handmade large capacity oak bat boxes facing different directions. The poles could also be used for bird boxes. We recommend that the poles should be on the woodland edge for shelter and for reduced impact on the landscape. At least one box should be in a sunny location. Boxes should be around 4m high and not accessible from adjacent trees. The licensed bat ecologist should supply and install the boxes. Boxes should be monitored for 5 years.



**Photo 7 Example of pole mounted maternity roost bat boxes.**

Monitoring of the site would be a standard requirement for large developments. In order to minimise inputs, we recommend using the poles for mounting 3x D500x unmanned bat recorders for 3 annual 1 week periods (late May, early July, and mid September) for the 5 years post development. The results will be analysed for

## Bat Survey: Rockingham 2014

population trends and species composition, and results made publically available on an annual basis.

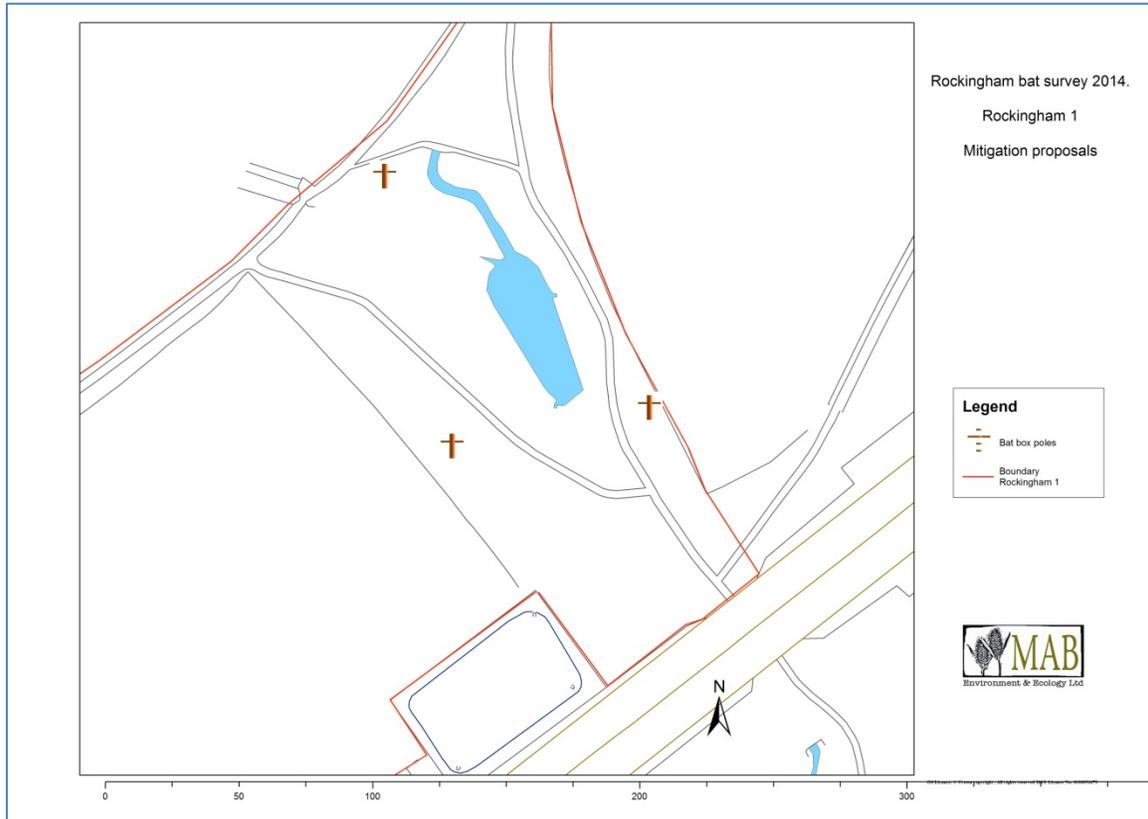


Figure 24 Mitigation proposals

## 9.2 Method Statement

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1. There will be no lighting at the eastern boundary of the construction zone (to prevent light spill into woodlands).
2. There will be no lighting introduced into the pond and woodland areas (other than low level down lights if needed for safety).
3. Three poles will be erected around the pond site with 2x wooden maternity bat roost boxes each at a height of at least 4m and in locations as advised by the ecologists.
4. The bat boxes and usage of the pond area by bats will be monitored for 5 years post-development by installing 3x D500x unmanned ultrasound recorders, one on each pole, for a period of 5 days during 3 periods in each year (May, July and September). Results will be made publically available and provided to the planning authority and the local bat group. At the end of the five year period a statistical analysis of the results will be made, to determine if there has been any change in numbers and diversity of bat calls recorded.

## 10. Information concerning bat protection and the planning system

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**10.1 Relevant Legislation.** All bat species are protected under the Wildlife and Countryside Act (WCA) 1981 (as amended), the Countryside and Rights of Way Act 2000 and the Habitat Regulations 2010.

Under the WCA it is an offence for any person to intentionally kill, injure or take any wild bat; to intentionally disturb any wild bat while it is occupying a structure or place that it uses for shelter or protection; to intentionally damage, destroy or obstruct access to any place that a wild bat uses for shelter or protection; to be in possession or control of any live or dead wild bat, or any part of, or anything derived from a wild bat; or to sell, offer or expose for sale, or possess or transport for the purpose of sale, any live or dead wild bat, or any part of, or anything derived from a wild bat.

Under the Habitat Regulations 2010, it is an offence to (a) deliberately capture, injure or kills any wild animal of a European protected species (EPS), (b) deliberately disturb wild animals of any such species, (c) deliberately take or destroy the eggs of such an animal, or (d) damages or destroys a breeding site or resting place of such an animal. Deliberate disturbance of animals of a European protected species (EPS) includes in particular any disturbance which is likely to impair their ability (i) to survive, to breed or reproduce, or to rear or nurture their young; or (ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate; or to affect significantly the local distribution or abundance of the species to which they belong.

*Prosecution could result in imprisonment, fines of £5,000 per animal affected and confiscation of vehicles and equipment used.* In order to minimise the risk of breaking the law it is essential to work with care to avoid harming bats, to be aware of the procedures to be followed if bats are found during works, and to commission surveys and expert advice as required to minimise the risk of reckless harm to bats.

**10.2 Licences.** Where it is proposed to carry out works which will damage / destroy a bat roost or disturb bats to a significant degree, an EPS licence must first be obtained from the Natural England (even if no bats are expected to be present when the work is carried out). The application for a license normally requires a full knowledge of the use of a site by bats, including species, numbers, and timings. Gathering this information usually involves surveying throughout the bat active season. The licence may require ongoing monitoring of the site following completion of the works.

Licences can only be issued if Natural England are satisfied that there is no satisfactory alternative to the development and that the action authorised will not be detrimental to the maintenance of the population of the species at a favourable conservation status in their natural range.

**10.3 Planning and Wildlife.** The March 2012 National Planning Policy Framework (NPPF) has replaced PPS9 (Planning Policy Statement on Biodiversity and Geological Conservation) as the relevant national planning guidance in relation to ecological issues.

Para 109 of NPPF states that the planning system should “contribute to and enhance the natural and local environment by minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government’s commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures”.

Para 117 of NPPF states that the planning system should “promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species, populations, linked to national and local targets”.

Para 118 of NPPF states that “When determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the following principles:

- if significant harm 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;
- proposed development on land within or outside a Site of Special Scientific Interest likely to have an adverse effect on a Site of Special Scientific Interest (either individually or in combination with other developments) should not normally be permitted. Where an adverse effect on the site’s notified special interest features is likely, an exception should only be made where the benefits of the development, at this site, clearly outweigh both the impacts that it is likely to have 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 proposals where the primary objective is to conserve or enhance biodiversity should be permitted;
- opportunities to incorporate biodiversity in and around developments should be encouraged;
- planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss.

Para 119 of the NPPF makes it clear that “The presumption in favour of sustainable development (paragraph 14) does not apply where development requiring appropriate assessment under the Birds or Habitats Directives is being considered, planned or determined”. Therefore EPS will still be a material consideration when considering sustainable developments.

The accompanying ODPM / Defra Circular 06/2005 remains pertinent; circular 06/2005 is prescriptive in how planning officers should deal with protected species, see paragraphs 98 and 99:

- The presence of a protected species is a material consideration when considering a proposal that, if carried out, would be likely to result in harm to the species or its habitat (see ODPM/Defra Circular, para 98)
- LPAs should consider attaching planning conditions/entering into planning obligations to enable protection of species. They should also advise developers that they must comply with any statutory species protection issues affecting the site (ODPM/Defra Circular, para 98)
- The presence and extent to which protected species will be affected must be established before planning permission is granted. If not, a decision will have been made without all the facts (ODPM/Defra Circular, para 99)
- Any measures necessary to protect the species should be conditioned/planning obligations used, before the permission is granted. Conditions can also be placed on a permission in order to prevent development proceeding without a Habitats Regulations Licence (ODPM/Defra Circular, para 99).
- *The need to ensure ecological surveys are carried out should therefore only be left to coverage under planning conditions in exceptional circumstances.*

Further to NPPF and ODPM Circular 06/2005, Section 40 of the Natural Environment and Rural Communities Act (2006) states that ‘Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity’. Section 40(3) also states that ‘conserving biodiversity includes, in relation to a living organism or type of habitat, restoring or enhancing a population or habitat’.

## 11. References

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## Appendix 1: bat roost records for 2km radius

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### West Yorkshire Bat Group

Grid Ref	Location Name	Date	Common Name	Recommended Name	Abundance	Record Type
SE3380 21	Rockley Engine House	04/06/19 97	Natterer's Bat	Myotis nattereri	Not Recorded Range	Roost (possible)
SE3470 28	Bell Bank Wood Tree	22/05/19 88	Noctule	Nyctalus noctula	unknown Count of Adult	Roost (possible)
SE3500 29	Worsbrough Hall Tree	01/02/19 93	Noctule	Nyctalus noctula	unknown Count of Adult	Roost (possible)
SE3500 29	Worsbrough Hall	01/12/19 91	Pipistrelle Bat species	Pipistrellus	21-50 Count of Adult	Roost (maternity)

South Yorkshire Bat Group

Recorder	Date	GridRef 6Fig	House number/name	Address line 1	Address line 2	Address line 3	Type	Notes	Species	Number
Jerry Brown	29/05/19		81		Tankersley Church	Tankersley	Barnsley		Unknown	1
Eric Bennett	11/08/20		09	Tankersley Lane	Glebe Farm	Tankersley	Barnsley	Pl.aur in barn D and cottage E. 2 seen poss juv present.		
Eric Bennett	11/08/20		09		Glebe farm	Tankersley	Barnsley	Barn Lots of discarded moth wings.	Brown long-eared bat	2-5
Jerry Brown	29/05/19		81		Skiers Spring Wood	Elsecar	Barnsley		Unknown	3
Eric Bennett	27/07/20		05		Carr Lane	Tankersley	Barnsley	House	Owner count (30 minutes)	Unknown Pip
Eric Bennett	10/07/19		88		Rockley Brick Culvert	Stainborough	Barnsley	Culvert	Unknown	+Dr
Eric Bennett	31/07/19		88		Rockley Stone Bridge	Stainborough	Barnsley		Daubenton's bat	6
Eric Bennett	31/07/19		88		Rockley Stone Bridge	Stainborough	Barnsley	Bridge	Natterer's bat	8
Eric Bennett	11/09/19		88		Rockley Stone Bridge	Stainborough	Barnsley		Daubenton's bat	1
Eric Bennett	07/05/19		89		Rockley Stone Bridge	Stainborough	Barnsley		Daubenton's bat	2
Eric Bennett	25/05/19		89		Rockley Stone Bridge	Stainborough	Barnsley		Daubenton's bat	2
Eric Bennett	13/07/19		89		Rockley Stone Bridge	Stainborough	Barnsley		Natterer's bat	8
Eric Bennett	13/07/19		89		Rockley Stone Bridge	Stainborough	Barnsley		Daubenton's bat	5
Eric Bennett	21/08/19		89		Rockley Stone Bridge	Stainborough	Barnsley		Daubenton's bat	1
Eric Bennett	27/08/19		89		Rockley Stone Bridge	Stainborough	Barnsley		Daubenton's bat	5
Eric Bennett	22/06/19		90		Rockley Stone Bridge	Stainborough	Barnsley		Daubenton's bat	2
Eric Bennett	05/08/19		90		Rockley Stone Bridge	Stainborough	Barnsley		Daubenton's bat	2
Eric Bennett	23/09/19		90		Rockley Stone Bridge	Stainborough	Barnsley		Daubenton's bat	2
Eric Bennett	28/04/19		91		Rockley Stone Bridge	Cawthorne	Barnsley		Daubenton's bat	4
Eric Bennett	31/08/19		91		Rockley Stone Bridge	Stainborough	Barnsley		Daubenton's bat	1
Eric Bennett	13/09/19		91		Rockley Stone Bridge	Stainborough	Barnsley		Daubenton's bat	5

## Bat Survey: Rockingham 2014

Bennett	92								
Eric	13/04/19								
Bennett	93	SE333019	Rockley Stone Bridge		Stainborough	Barnsley		Daubenton's bat	3
Eric	12/06/19								
Bennett	93	SE333019	Rockley Stone Bridge		Stainborough	Barnsley		Daubenton's bat	2
Eric	04/06/19								
Bennett	94	SE333019	Rockley Stone Bridge		Stainborough	Barnsley		Daubenton's bat	10
Eric	11/06/19								
Bennett	94	SE333019	Rockley Stone Bridge		Stainborough	Barnsley		Daubenton's bat	1
Eric	18/06/19								
Bennett	94	SE333019	Rockley Stone Bridge		Stainborough	Barnsley		Daubenton's bat	1
Eric	26/06/19								
Bennett	94	SE333019	Rockley Stone Bridge		Stainborough	Barnsley		Daubenton's bat	4
Eric	20/08/19								
Bennett	94	SE333019	Rockley Stone Bridge		Stainborough	Barnsley		Daubenton's bat	4
Eric	10/09/19								
Bennett	94	SE333019	Rockley Stone Bridge		Stainborough	Barnsley		Daubenton's bat	3
Eric	14/10/19								
Bennett	94	SE333019	Rockley Stone Bridge		Stainborough	Barnsley		Daubenton's bat	2
Eric	29/08/19								
Bennett	95	SE333019	Rockley Stone Bridge		Stainborough	Barnsley		Daubenton's bat	8
Eric	09/06/19								
Bennett	96	SE333019	Rockley Stone Bridge		Stainborough	Barnsley		Daubenton's bat	2
Eric	23/03/19								
Bennett	97	SE333019	Rockley Stone Bridge		Stainborough	Barnsley		Daubenton's bat	1
Eric	11/09/20								
Bennett	01	SE333019	Rockley Stone Bridge	Rockley Lane	Stainborough	Barnsley		Report based on existing records.	
Eric	01/08/19								
Bennett	96	SE338021	Rockley Engine House		Stainborough	Barnsley		Unknown Myotis	2
Eric	01/08/19								
Bennett	96	SE338021	Rockley Engine House		Stainborough	Barnsley		Natterer's bat	2
Jerry	01/08/19								
Brown	96	SE338021	Rockley Engine House		Stainborough	Barnsley		Natterer's bat	2
Eric	01/08/19								
Bennett	96	SE338021	Rockley Engine House		Rockley	Barnsley	Ruin	Natterer's bat	30
Eric	18/08/19								
Bennett	96	SE338021	Rockley Engine House		Stainborough	Barnsley		Natterer's bat	1

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Eric Bennett	28/05/2000	SE338021	Rockley Engine House		Stainborough	Barnsley		Unknown		
Eric Bennett	06/06/2000	SE338021	Barnsley					Natterer's bat	2	
Eric Bennett	06/06/2000	SE338021	Rockley Engine House					Pipistrelle sp.	1	
Eric Bennett	06/06/2000	SE338021	Rockley Engine House		Stainborough	Barnsley		Natterer's bat	2	
Eric Bennett	16/06/2000	SE338021	Rockley Engine House		Stainborough	Barnsley		Natterer's bat	8	
Eric Bennett	16/06/2000	SE338021	Rockley Engine House		Stainborough	Barnsley		Natterer's bat		
Eric Bennett	21/06/2000	SE338021	Barnsley					Natterer's bat	30	
Eric Bennett	21/06/2000	SE338021	Rockley Engine House		Stainborough	Barnsley		Natterer's bat	30	
Eric Bennett	21/06/2000	SE338021	Rockley Engine House		Stainborough	Barnsley		Pipistrelle sp.	1	
Eric Bennett	27/06/2000	SE338021	Rockley Engine House		Stainborough	Barnsley		Natterer's bat	15	
Eric Bennett	10/06/2002	SE338021	Barnsley					Natterer's bat	29	
Eric Bennett	07/06/2003	SE338021	Barnsley					Natterer's bat	39	
Eric Bennett	11/02/2005	SE334020	Rockley Stone Bridge	Rockley Dike	Stainborough	Barnsley		Long standing roost		
Nicky Rivers	13/06/2009	SE338021	Barnsley					Natterer's bat	3	
Nicky Rivers	21/06/2009	SE338021	Barnsley					Natterer's bat	3	
Martin Derbyshire	06/06/2010	SE338021	Rockley Engine House	Around the old furnace in the woods			Near Rockley Engine house known Natterers roost	Constant feeding around old furnace	Soprano pipistrelle	1
Nicky Rivers	20/06/2010	SE338021	Barnsley					Natterer's bat	4	

## Bat Survey: Rockingham 2014

Martin Derbyshire	20/06/2010	SE338021	Rockley Engine House	Around the old furnace in the woods	Known Natterers roost	Emerging from top of engine house	Natterer's bat	1
Middleton	27/01/2011	SE3302	Rockley	tunnel	hibernacula roost		Natterer's bat	7
Martin Derbyshire	19/06/2011	SE338021	Rockley Engine House	Around the old furnace in the woods	Previous known Natterers roost but now no longer used	Seen feeding around old furnace	Soprano pipistrelle	1
Martin Derbyshire	19/06/2011	SE338021	Rockley Engine House	Around the engine house	Previous known Natterers roost but now no longer used	Occasional feeding pipistrelle around the building	Pipistrelle sp.	5
Middleton	23/01/2012	SE3302	Broom Royd Wood			hibernaculer roost	Natterer's bat	1
Middleton	20/08/2012	SE334020	Rockley			foraging (anabat recording)	Common pipistrelle	2
Middleton	20/08/2012	SE334020	Rockley			foraging (anabat recording)	Soprano pipistrelle	3
Middleton	20/08/2012	SE334020	Rockley			foraging (anabat recording)	Daubenton's bat	1
Middleton	20/08/2012	SE334020	Rockley			foraging (anabat recording)	Noctule	1
Middleton	20/08/2012	SE337002	Rockley			foraging (anabat recording)	Natterer's bat	3
Middleton	17/01/2013	SE3302	Broom Royd Wood		hibernacular roost	hibernacular roost	Natterer's bat	2
Middleton	06/02/2013	SE3302	Broom Royd Wood		hibernacular roost	hibernacular roost	Natterer's bat	2
Middleton	06/02/2013	SE3302	Broom Royd Wood		hibernacular roost	hibernacular roost	Daubenton's bat	2

## Bat Survey: Rockingham 2014

English Nature	22/07/2003	SE346002	Tankersley St Peter's Pri	Westwood New Road	Tankersley				Bat found in playground. Box & dusk release advised. Bat found in doorway yesterday. Failed to fly last night. Possible roost noises above bedroom. JG visit. No roost identified. Bat collected for care. Bat died	Pipistrelle sp.	Unknwn
Natural England	26/07/2007	SE345001		8 Walker Road	Tankersley		Barnsley				
Jerry Brown	08/04/1981	SE3401	School Yard		Worsbrough Village		Barnsley			Unknown	1
Householder	24/08/1990	SE343011	Rockley Lane		Birdwell		Barnsley		Large bats reported emerging from wall cavity. Chattering heard at 5am.	Unknown large Bat	4
Eric Bennett	25/05/2000	SE346015	Kestrel Rise		Birdwell		Barnsley	House		Pipistrelle sp.	39
Eric Bennett	25/05/2000	SE346015	Kestrel Rise		Birdwell		Barnsley			Pipistrelle sp.	39
Eric Bennett	22/08/2001	SE347016	Asprey Avenue		Birdwell		Barnsley		Grounded bat 112 Baby bats found in house being repairedTook babies for temp care & returned to roost.	Soprano pipistrelle	1
English Nature	05/07/2006	SE345011		Sheffield Road	Birdwell		Barnsley	Roost		Pipistrelle sp.	
Karen Larkin	02/03/2012	SE345013	Birdwell, Sheffield , S70 5XF						adult male	Soprano pipistrelle	
Jerry Brown	08/04/1981	SE3402	Vicarage		Worsbrough Village		Barnsley			Unknown	1
Eric Bennett	22/05/1982	SE347028	Bell Bank Wood Tree 2		Worsborough		Barnsley	Tree Oak	Lost - snow	Noctule	10
Eric Bennett	25/05/1982	SE347028	Bell Bank Wood Tree 1		Worsborough		Barnsley	Tree Oak	Felled by vandals	Noctule	14
Jerry Brown	25/05/1982	SE347028	Bell Bank Wood -Tree 1.		Worsbrough		Barnsley			Noctule	14
Jerry Brown	25/05/1982	SE347028	Bell Bank Wood Tree 2		Worsbrough		Barnsley			Pipistrelle sp.	6
Jerry Brown	25/05/1982	SE347028	Bell Bank Wood Tree 2		Worsbrough		Barnsley			Noctule	10

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Brown	82						
Jerry	26/05/19						
Brown	82	SE3402	Bell Bank Wood	Worsbrough	Barnsley	Unknown	1
Jerry	17/07/19		Worsbrough Country			Unknown	
Brown	86	SE3402	Park	Worsbrough	Barnsley	Noctule/Leislars	1
Eric	22/05/19						
Bennett	88	SE347028	Bell Bank Wood Tree 2	Worsbrough	Barnsley	Noctule	6
Jerry	18/09/19		Worsbrough Country				
Brown	77	SE345034	Park	Worsborough	Barnsley	Unknown	2
Jerry	20/09/19		Worsbrough Country				
Brown	77	SE345034	Park	Worsborough	Barnsley	Unknown	2
Edwin	09/12/19		Worsbrough Country				
Blunt	77	SE345034	Park	Worsborough	Barnsley	Unknown	1
Jerry	10/12/19		Worsbrough Country				
Brown	77	SE345034	Park	Worsborough	Barnsley	Unknown	1
Jerry	06/05/19		Worsbrough Country				
Brown	78	SE345034	Park	Worsborough	Barnsley	Unknown	2
Jerry	07/05/19		Worsbrough Country				
Brown	78	SE345034	Park	Worsborough	Barnsley	Unknown	14
Jerry	09/05/19		Worsbrough Country				
Brown	78	SE345034	Park	Worsborough	Barnsley	Unknown	10
Jerry	18/05/19		Worsbrough Country				
Brown	78	SE345034	Park	Worsbrough	Barnsley	Noctule/Leislars	12
Jerry	21/05/19		Worsbrough Country				
Brown	78	SE345034	Park	Worsborough	Barnsley	Unknown	6
Jerry	23/05/19		Worsbrough Country				
Brown	78	SE345034	Park	Worsborough	Barnsley	Unknown	20
Jerry	26/05/19		Worsbrough Country				
Brown	78	SE345034	Park	Worsborough	Barnsley	Unknown	6
Jerry	09/06/19		Worsbrough Country				
Brown	78	SE345034	Park	Worsborough	Barnsley	Unknown	20
Jerry	19/06/19		Worsbrough Country				
Brown	78	SE345034	Park	Worsborough	Barnsley	Unknown	2
Jerry	26/06/19		Worsbrough Country				
Brown	78	SE345034	Park	Worsborough	Barnsley	Unknown	5
Jerry	23/08/19		Worsbrough Country				
Brown	78	SE345034	Park	Worsborough	Barnsley	Unknown	1

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Jerry Brown	04/09/19	78	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	1
Jerry Brown	05/09/19	78	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	1
Jerry Brown	07/09/19	78	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	4
Jerry Brown	08/09/19	78	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	6
Jerry Brown	13/09/19	78	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	1
Jerry Brown	14/09/19	78	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	3
Jerry Brown	18/09/19	78	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	1
Jerry Brown	19/09/19	78	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	1
Jerry Brown	22/09/19	78	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	2
Jerry Brown	23/09/19	78	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	8
Jerry Brown	27/09/19	78	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	5
Jerry Brown	28/09/19	78	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	1
Jerry Brown	30/09/19	78	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	2
Jerry Brown	04/10/19	78	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	5
Jerry Brown	05/10/19	78	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	1
Jerry Brown	07/10/19	78	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	1
Jerry Brown	09/10/19	78	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	1
Jerry Brown	10/10/19	78	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	1
Jerry	11/04/19	SE345034	Worsbrough Country	Worsborough	Barnsley	Unknown	2	

## Bat Survey: Rockingham 2014

Brown	79		Park				
Jerry	12/04/19		Worsbrough Country				
Brown	79	SE345034	Park	Worsborough	Barnsley	Unknown	1
Jerry	18/04/19		Worsbrough Country				
Brown	79	SE345034	Park	Worsborough	Barnsley	Unknown	2
Jerry	09/05/19		Worsbrough Country				
Brown	79	SE345034	Park	Worsborough	Barnsley	Daubenton's bat	4
Jerry	11/05/19		Worsbrough Country				
Brown	79	SE345034	Park	Worsborough	Barnsley	Unknown	1
Jerry	24/05/19		Worsbrough Country				
Brown	79	SE345034	Park	Worsborough	Barnsley	Unknown	3
Jerry	25/05/19		Worsbrough Country				
Brown	79	SE345034	Park	Worsborough	Barnsley	Unknown	4
Jerry	27/05/19		Worsbrough Country				
Brown	79	SE345034	Park	Worsborough	Barnsley	Unknown	12
Derek	08/06/19		Worsbrough Country				
Drew	79	SE345034	Park	Worsborough	Barnsley	Unknown	16
Derek	08/06/19		Worsbrough Country				
Drew	79	SE345034	Park	Worsborough	Barnsley	Pipistrelle sp.	1
Derek	29/06/19		Worsbrough Country				
Drew	79	SE345034	Park	Worsborough	Barnsley	Noctule	1
Derek	29/06/19		Worsbrough Country				
Drew	79	SE345034	Park	Worsborough	Barnsley	Pipistrelle sp.	1
Jerry	03/07/19		Worsbrough Country				
Brown	79	SE345034	Park	Worsborough	Barnsley	Unknown Myotis	2
Jerry	03/07/19		Worsbrough Country				
Brown	79	SE345034	Park	Worsborough	Barnsley	Pipistrelle sp.	1
Jerry	03/08/19		Worsbrough Country				
Brown	79	SE345034	Park	Worsborough	Barnsley	Daubenton's bat	1
Jerry	03/08/19		Worsbrough Country				
Brown	79	SE345034	Park	Worsborough	Barnsley	Pipistrelle sp.	2
Jerry	09/08/19		Worsbrough Country				
Brown	79	SE345034	Park	Worsborough	Barnsley	Noctule	7
Jerry	15/08/19		Worsbrough Country				
Brown	79	SE345034	Park	Worsborough	Barnsley	Unknown large Bat	1
Jerry	15/08/19		Worsbrough Country				
Brown	79	SE345034	Park	Worsborough	Barnsley	Unknown large Bat	1

## Bat Survey: Rockingham 2014

Jerry Brown	15/08/19	79	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Unknown small Bat	2
Jerry Brown	25/08/19	79	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Noctule	1
Jerry Brown	29/08/19	79	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	2
Jerry Brown	30/08/19	79	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	2
Jerry Brown	31/08/19	79	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	2
Jerry Brown	01/09/19	79	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	2
Jerry Brown	03/09/19	79	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	2
Jerry Brown	04/09/19	79	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	1
Jerry Brown	07/09/19	79	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	1
Derek Drew	08/09/19	79	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	3
Jerry Brown	12/09/19	79	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	2
Jerry Brown	13/09/19	79	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	2
Jerry Brown	14/09/19	79	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	2
Jerry Brown	17/09/19	79	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	1
Jerry Brown	18/09/19	79	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	2
Jerry Brown	18/09/19	79	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Unknown Noctule/Leislars	1
Jerry Brown	22/09/19	79	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	6
Jerry Brown	23/09/19	79	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	3
Jerry Brown	24/09/19	79	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	6

## Bat Survey: Rockingham 2014

Brown	79		Park					
Jerry	29/09/19		Worsbrough Country					
Brown	79	SE345034	Park	Worsborough	Barnsley		Unknown	3
Jerry	30/09/19		Worsbrough Country					
Brown	79	SE345034	Park	Worsborough	Barnsley		Unknown	2
Jerry	13/10/19		Worsbrough Country					
Brown	79	SE345034	Park	Worsborough	Barnsley		Unknown	1
Jerry	05/04/19		Worsbrough Country					
Brown	80	SE345034	Park	Worsborough	Barnsley		Unknown	1
Jerry	05/04/19		Worsbrough Country				Unknown small	
Brown	80	SE345034	Park	Worsbrough	Barnsley		Bat	1
Jerry	13/04/19		Worsbrough Country				Unknown small	
Brown	80	SE345034	Park	Worsbrough	Barnsley		Bat	6
Jerry	14/04/19		Worsbrough Country					
Brown	80	SE345034	Park	Worsborough	Barnsley		Unknown	3
Jerry	21/04/19		Worsbrough Country				Unknown small	
Brown	80	SE345034	Park	Worsbrough	Barnsley		Bat	5
Jerry	11/05/19		Worsbrough Country				Unknown small	
Brown	80	SE345034	Park	Worsbrough	Barnsley		Bat	4
Jerry	11/05/19		Worsbrough Country				Unknown	
Brown	80	SE345034	Park	Worsbrough	Barnsley		Noctule/Leislars	1
Jerry	15/05/19		Worsbrough Country				Unknown	
Brown	80	SE345034	Park	Worsbrough	Barnsley		Noctule/Leislars	1
Jerry	15/05/19		Worsbrough Country					
Brown	80	SE345034	Park	Worsborough	Barnsley		Unknown	5
Jerry	16/05/19		Worsbrough Country					
Brown	80	SE345034	Park	Worsborough	Barnsley		Unknown	6
Jerry	19/06/19		Worsbrough Country					
Brown	80	SE345034	Park	Worsborough	Barnsley		Unknown	5
Jerry	16/08/19		Worsbrough Country					
Brown	80	SE345034	Park	Worsborough	Barnsley		Unknown	3
Jerry	23/08/19		Worsbrough Country					
Brown	80	SE345034	Park	Worsborough	Barnsley		Unknown	2
Jerry	31/08/19		Worsbrough Country				Unknown	
Brown	80	SE345034	Park	Worsbrough	Barnsley		Noctule/Leislars	1
Jerry	08/09/19	SE345034	Worsbrough Country	Worsbrough	Barnsley		Unknown Myotis	1

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Brown	80		Park					
Jerry	08/09/19		Worsbrough Country					
Brown	80	SE345034	Park	Worsbrough	Barnsley		Noctule	
Jerry	09/09/19		Worsbrough Country					
Brown	80	SE345034	Park	Worsbrough	Barnsley		Pipistrelle sp.	4
Jerry	11/09/19		Worsbrough Country				Unknown	
Brown	80	SE345034	Park	Worsbrough	Barnsley		Noctule/Leislars	1
Jerry	11/09/19		Worsbrough Country					
Brown	80	SE345034	Park	Worsbrough	Barnsley		Pipistrelle sp.	1
Jerry	14/09/19		Worsbrough Country					
Brown	80	SE345034	Park	Worsbrough	Barnsley		Noctule	2
Jerry	15/09/19		Worsbrough Country					
Brown	80	SE345034	Park	Worsborough	Barnsley		Unknown	6
Jerry	17/09/19		Worsbrough Country				Unknown	
Brown	80	SE345034	Park	Worsbrough	Barnsley		Noctule/Leislars	1
Jerry	21/09/19		Worsbrough Country				Unknown small	
Brown	80	SE345034	Park	Worsbrough	Barnsley		Bat	1
Jerry	03/10/19		Worsbrough Country				Unknown small	
Brown	80	SE345034	Park	Worsbrough	Barnsley		Bat	3
Jerry	10/04/19		Worsbrough Country					
Brown	81	SE345034	Park	Worsborough	Barnsley		Unknown	1
Jerry	10/04/19		Worsbrough Country					
Brown	81	SE345034	Park	Worsbrough	Barnsley		Noctule	1
Jerry	21/05/19		Worsbrough Country					
Brown	81	SE345034	Park	Worsbrough	Barnsley		Unknown Myotis	
Jerry	21/05/19		Worsbrough Country					
Brown	81	SE345034	Park	Worsbrough	Barnsley		Noctule	2
Jerry	22/05/19		Worsbrough Country					
Brown	81	SE345034	Park	Worsbrough	Barnsley		Noctule	
Jerry	22/05/19		Worsbrough Country					
Brown	81	SE345034	Park	Worsbrough	Barnsley		Pipistrelle sp.	3
Jerry	19/06/19		Worsbrough Country					
Brown	81	SE345034	Park	Worsborough	Barnsley		Unknown	30
Jerry	19/06/19		Worsbrough Country					
Brown	81	SE345034	Park	Worsbrough	Barnsley		Daubenton's bat	4
Jerry	19/06/19		Worsbrough Country					
Brown	81	SE345034	Park	Worsbrough	Barnsley		Noctule	

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Jerry Brown	19/06/19	81	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Pipistrelle sp.	6
Jerry Brown	23/06/19	81	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	30
Jerry Brown	26/06/19	81	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Noctule	
Jerry Brown	26/06/19	81	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Pipistrelle sp.	1
Jerry Brown	26/06/19	81	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	
Jerry Brown	27/06/19	81	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	30
Jerry Brown	27/06/19	81	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Unknown small Bat	2
Jerry Brown	27/06/19	81	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Daubenton's bat	
Jerry Brown	27/06/19	81	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Noctule	
Jerry Brown	29/06/19	81	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Daubenton's bat	1
Jerry Brown	30/06/19	81	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	
Jerry Brown	30/06/19	81	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Whiskered bat	1
Jerry Brown	30/06/19	81	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Noctule	
Jerry Brown	10/07/19	81	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	5
Jerry Brown	10/07/19	81	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Whiskered bat	2
Jerry Brown	15/07/19	81	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Noctule	10
Jerry Brown	15/08/19	81	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	14
Jerry Brown	26/08/19	81	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Noctule	3
Jerry Brown	26/08/19	81	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Unknown small	1
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Brown	81		Park			Bat	
Jerry	25/09/19		Worsbrough Country				
Brown	81	SE345034	Park	Worsbrough	Barnsley	Noctule	10
Jerry	29/09/19		Worsbrough Country				
Brown	81	SE345034	Park	Worsborough	Barnsley	Unknown	10
Jerry	18/10/19		Worsbrough Country				
Brown	81	SE345034	Park	Worsborough	Barnsley	Unknown	1
Jerry	31/01/19		Worsbrough Country				
Brown	82	SE345034	Park	Worsborough	Barnsley	Unknown	1
Jerry	18/04/19		Worsbrough Country				
Brown	82	SE345034	Park	Worsbrough	Barnsley	Daubenton's bat	3
Jerry	18/04/19		Worsbrough Country				
Brown	82	SE345034	Park	Worsbrough	Barnsley	Noctule	
Jerry	18/04/19		Worsbrough Country			Unknown small	
Brown	82	SE345034	Park	Worsbrough	Barnsley	Bat	2
Jerry	19/04/19		Worsbrough Country			Unknown small	
Brown	82	SE345034	Park	Worsbrough	Barnsley	Bat	2
Jerry	22/04/19		Worsbrough Country				
Brown	82	SE345034	Park	Worsborough	Barnsley	Unknown	12
Jerry	22/04/19		Worsbrough Country				
Brown	82	SE345034	Park	Worsbrough	Barnsley	Noctule	12
Jerry	22/04/19		Worsbrough Country				
Brown	82	SE345034	Park	Worsbrough	Barnsley	Pipistrelle sp.	1
Jerry	26/04/19		Worsbrough Country				
Brown	82	SE345034	Park	Worsbrough	Barnsley	Whiskered bat	1
Jerry	26/04/19		Worsbrough Country				
Brown	82	SE345034	Park	Worsbrough	Barnsley	Pipistrelle sp.	2
Jerry	28/04/19		Worsbrough Country				
Brown	82	SE345034	Park	Worsbrough	Barnsley	Noctule	
Jerry	29/04/19		Worsbrough Country			Unknown large	
Brown	82	SE345034	Park	Worsbrough	Barnsley	Bat	
Jerry	29/04/19		Worsbrough Country			Unknown small	
Brown	82	SE345034	Park	Worsbrough	Barnsley	Bat	
Jerry	05/05/19		Worsbrough Country				
Brown	82	SE345034	Park	Worsbrough	Barnsley	Noctule	1
Jerry	05/05/19		Worsbrough Country				
Brown	82	SE345034	Park	Worsbrough	Barnsley	Pipistrelle sp.	1

## Bat Survey: Rockingham 2014

Jerry Brown	05/05/19	82	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	
Jerry Brown	14/05/19	82	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Noctule	1
Jerry Brown	17/05/19	82	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Whiskered bat	1
Jerry Brown	17/05/19	82	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Noctule	4
Derek Drew	27/05/19	82	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Daubenton's bat	1
Derek Drew	27/05/19	82	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Whiskered bat	1
Derek Drew	27/05/19	82	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Pipistrelle sp.	2
Derek Drew	28/05/19	82	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Pipistrelle sp.	3
Derek Drew	28/05/19	82	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Daubenton's bat	1
Jerry Brown	08/08/19	82	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Noctule	15
Jerry Brown	25/08/19	82	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Noctule	
Jerry Brown	08/09/19	82	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Noctule	10
Jerry Brown	11/09/19	82	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Noctule	20
Jerry Brown	04/10/19	82	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Unknown large Bat	2
Jerry Brown	16/10/19	82	SE345034	Worsbrough Country Park	Worsborough	Barnsley	Unknown	1
Jerry Brown	30/10/19	82	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Unknown small Bat	1
Jerry Brown	20/11/19	82	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Unknown large Bat	1
Jerry Brown	10/05/19	83	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Unknown small Bat	1
Jerry Brown	31/05/19	82	SE345034	Worsbrough Country Park	Worsbrough	Barnsley	Daubenton's bat	6

## Bat Survey: Rockingham 2014

Brown	83		Park					
Jerry	31/05/19		Worsbrough Country				Unknown	
Brown	83	SE345034	Park	Worsbrough	Barnsley		Noctule/Leislars	1
Jerry	03/07/19		Worsbrough Country					
Brown	83	SE345034	Park	Worsbrough	Barnsley		Noctule	1
Jerry	03/07/19		Worsbrough Country				Unknown	
Brown	83	SE345034	Park	Worsbrough	Barnsley		Noctule/Leislars	4
Jerry	03/07/19		Worsbrough Country				Unknown small	
Brown	83	SE345034	Park	Worsbrough	Barnsley		Bat	
Jerry	01/08/19		Worsbrough Country				Unknown	
Brown	83	SE345034	Park	Worsbrough	Barnsley		Noctule/Leislars	3
Jerry	03/10/19		Worsbrough Country				Unknown small	
Brown	83	SE345034	Park	Worsbrough	Barnsley		Bat	2
Jerry	07/09/19		Worsbrough Country				Unknown	
Brown	84	SE345034	Park	Worsbrough	Barnsley		Noctule/Leislars	2
Derek	18/08/19		Worsbrough Country					
Drew	85	SE345034	Park	Worsbrough	Barnsley		Daubenton's bat	
Derek	18/08/19		Worsbrough Country					
Drew	85	SE345034	Park	Worsbrough	Barnsley		Whiskered bat	1
Derek	18/08/19		Worsbrough Country					
Drew	85	SE345034	Park	Worsbrough	Barnsley		Noctule	2
Derek	18/08/19		Worsbrough Country					
Drew	85	SE345034	Park	Worsbrough	Barnsley		Pipistrelle sp.	1
Jerry	23/09/19		Worsbrough Country					
Brown	85	SE345034	Park	Worsbrough	Barnsley		Daubenton's bat	3
Jerry	30/10/19		Worsbrough Country				Unknown small	
Brown	85	SE345034	Park	Worsbrough	Barnsley		Bat	1
Jerry	30/10/19		Worsbrough Country					
Brown	85	SE345034	Park	Worsbrough	Barnsley		Noctule	1
Jerry	30/10/19		Worsbrough Country					
Brown	85	SE345034	Park	Worsbrough	Barnsley		Daubenton's bat	2
Jerry	09/11/19		Worsbrough Country					
Brown	85	SE345034	Park	Worsbrough	Barnsley		Noctule	1
Jerry	22/08/19		Worsbrough Country				Brown long-eared bat	
Brown	86	SE345034	Park	Worsborough	Barnsley			1
Jerry	01/09/19	SE345034	Worsbrough Country	Worsbrough	Barnsley		Unknown small	1

## Bat Survey: Rockingham 2014

Brown	86		Park				Bat	
Jerry	14/09/19		Worsbrough Country					
Brown	86	SE345034	Park	Worsbrough	Barnsley		Daubenton's bat	2
Jerry	14/09/19		Worsbrough Country					
Brown	86	SE345034	Park	Worsbrough	Barnsley		Noctule	5
Jerry	30/09/19		Worsbrough Country					
Brown	86	SE345034	Park	Worsbrough	Barnsley		Daubenton's bat	1
Jerry	06/10/19		Worsbrough Country					
Brown	86	SE345034	Park	Worsbrough	Barnsley		Daubenton's bat	1
Eric	13/04/19		Worsbrough Country					
Bennett	87	SE345034	Park	Worsbrough	Barnsley		Pipistrelle sp.	3
Eric	30/04/19		Worsbrough Country					
Bennett	87	SE345034	Park	Worsbrough	Barnsley		Daubenton's bat	
Eric	30/04/19		Worsbrough Country					
Bennett	87	SE345034	Park	Worsbrough	Barnsley		Noctule	1
Eric	27/09/19		Worsbrough Country					
Bennett	87	SE345034	Park	Worsbrough	Barnsley		Pipistrelle sp.	1
Eric	27/09/19		Worsbrough Country					
Bennett	87	SE345034	Park	Worsbrough	Barnsley		Daubenton's bat	5
Eric	27/09/19		Worsbrough Country					
Bennett	87	SE345034	Park	Worsbrough	Barnsley		Noctule	2
Jerry	01/11/19		Worsbrough Country				Unknown small	
Brown	87	SE345034	Park	Worsbrough	Barnsley		Bat	1
Eric	07/08/19		Worsbrough Country					
Bennett	88	SE345034	Park	Worsbrough	Barnsley		Daubenton's bat	
Eric	07/08/19		Worsbrough Country					
Bennett	88	SE345034	Park	Worsbrough	Barnsley		Noctule	
Eric	07/08/19		Worsbrough Country					
Bennett	88	SE345034	Park	Worsbrough	Barnsley		Pipistrelle sp.	1
Eric	26/03/19		Worsbrough Country					
Bennett	89	SE345034	Park	Worsbrough	Barnsley		Noctule	2
Eric	26/03/19		Worsbrough Country					
Bennett	89	SE345034	Park	Worsbrough	Barnsley		Pipistrelle sp.	1
Eric	21/06/19		Worborough Mill,					
Bennett	89	SE349033	House	Worsbrough	Barnsley		Pipistrelle sp.	1
Eric	21/06/19		Worsborough Mill					
Bennett	89	SE349033	House	Worsborough	Barnsley	House	Pipistrelle sp.	1

## Bat Survey: Rockingham 2014

Jerry	18/08/19								
Brown	89	SE345034	Worsbrough Hall	Worsbrough	Barnsley			Whiskered bat	2
Jerry	15/10/19		Worsbrough Country					Unknown small	
Brown	89	SE345034	Park	Worsbrough	Barnsley			Bat	1
Eric	23/04/19		Worsbrough Country						
Bennett	90	SE345034	Park	Worsbrough	Barnsley			Pipistrelle sp.	5
Eric	23/04/19		Worsbrough Country						
Bennett	90	SE345034	Park	Worsbrough	Barnsley			Noctule	
Eric	23/04/19		Worsbrough Country						
Bennett	90	SE345034	Park	Worsbrough	Barnsley			Daubenton's bat	15
Eric	22/06/19		Worsbrough Country						
Bennett	90	SE345034	Park	Worsbrough	Barnsley			Noctule	10
Eric	22/06/19		Worsbrough Country						
Bennett	90	SE345034	Park	Worsbrough	Barnsley			Daubenton's bat	6
Eric	22/06/19		Worsbrough Country						
Bennett	91	SE349030	Park	Worsbrough	Barnsley			Noctule	1
Eric	06/07/19		Worsbrough Country						
Bennett	91	SE345034	Park	Worsbrough	Barnsley			Noctule	1
Eric	06/07/19		Worsbrough Country						
Bennett	91	SE345034	Park	Worsbrough	Barnsley			Daubenton's bat	
Eric	17/07/19		Worsbrough Country						
Bennett	91	SE344037	Park	Worsbrough	Barnsley			Pipistrelle sp.	1
Eric	17/07/19		Worsbrough Country						
Bennett	91	SE344037	Park	Worsbrough	Barnsley			Noctule	1
Eric	18/05/19		Worsbrough Country						
Bennett	92	SE347033	Park	Worsbrough	Barnsley			Pipistrelle sp.	1
Eric	05/09/19		Worsbrough Country						
Bennett	92	SE345034	Park	Worsbrough	Barnsley			Noctule	6
Eric	05/09/19		Worsbrough Country						
Bennett	92	SE345034	Park	Worsbrough	Barnsley			Daubenton's bat	
Eric	08/05/19		Worsbrough Country						
Bennett	93	SE345034	Park	Worsbrough	Barnsley			Daubenton's bat	
Eric	08/05/19		Worsbrough Country						
Bennett	93	SE345034	Park	Worsbrough	Barnsley			Noctule	20
Jerry	06/08/19		Worsbrough Country					Unknown small	
Brown	93	SE345034	Park	Worsbrough	Barnsley			Bat	2
Eric	27/04/19	SE345034	Worsbrough Country	Worsbrough	Barnsley			Daubenton's bat	



## Bat Survey: Rockingham 2014

Nicky Rivers	21/06/2009	SE3403	Barnsley					Soprano pipistrelle	30	
Nicky Rivers	06/06/2010	SE3403	Barnsley					Soprano pipistrelle	9	
Nicky Rivers	20/06/2010	SE3403	Barnsley					Soprano pipistrelle	3	
SYBG/NB MP	20/06/2010	SE349033		The Old Mill building	Worsborough Mill	Barnsley		Seen leaving the building	Common pipistrelle	2
Martin Derbyshire	20/06/2010	SE349033	Worsborough Mill	The old Mill building			Known summer roost	Seen leaving the building	Common pipistrelle	2
Middleton P	17/09/2010	SE3403	Worsborough res					transect	Noctule	3
Middleton P	17/09/2010	SE3403	Worsborough res				minimum number	transect	Common pipistrelle	10
Middleton P	17/09/2010	SE3403	Worsborough res				minimum number	transect	Soprano pipistrelle	12
Middleton P	17/09/2010	SE3403	Worsborough res				possible minimum number	transect	Nathusius' pipistrelle	1
Middleton P	17/09/2010	SE3403	Worsborough res				number	transect	Daubenton's bat	10
Middleton P	20/05/2011	SE3403	Worsborough Res	reservoir				foraging	Noctule	6
Middleton P	20/05/2011	SE3403	Worsborough Res	reservoir				foraging	Daubenton's bat	10
Middleton P	20/05/2011	SE3403	Worsborough Res	reservoir				foraging	Common pipistrelle	8
Middleton P	20/05/2011	SE3403	Worsborough Res	reservoir				foraging	Soprano pipistrelle	10
Nicky Rivers	19/06/2011	SE3403	Barnsley						Soprano pipistrelle	1
Martin Derbyshire	19/06/2011	SE349033	Worsborough Mill	The old Mill building			Known summer roost	Observed emerging from building	Soprano pipistrelle	1
Martin Derbyshire	09/07/2011	SE349033	Worsborough Mill	The old Mill building			Known summer	2 pips seen feeding around the building but no	Pipistrelle sp.	2



## Bat Survey: Rockingham 2014

Brown	79							
Jerry	06/09/19							
Brown	79	SE350029	Worsbrough Hall	Worsborough	Barnsley		Unknown	2
Jerry	19/06/19							
Brown	80	SE350029	Worsbrough Hall	Worsborough	Barnsley		Unknown	1
Jerry	30/07/19						Unknown small	
Brown	80	SE350029	Worsbrough Hall	Worsbrough	Barnsley		Bat	1
Jerry	04/08/19						Unknown small	
Brown	80	SE350029	Worsbrough Hall	Worsbrough	Barnsley		Bat	1
Jerry	05/08/19						Unknown small	
Brown	80	SE350029	Worsbrough Hall	Worsbrough	Barnsley		Bat	1
Jerry	10/08/19							
Brown	80	SE350029	Worsbrough Hall	Worsbrough	Barnsley		Pipistrelle sp.	2
Jerry	11/08/19						Unknown small	
Brown	80	SE350029	Worsbrough Hall	Worsbrough	Barnsley		Bat	3
Jerry	13/08/19							
Brown	80	SE350029	Worsbrough Hall	Worsborough	Barnsley		Unknown	1
Jerry	20/08/19							
Brown	80	SE350029	Worsbrough Hall	Worsborough	Barnsley		Unknown	4
Jerry	01/09/19							
Brown	80	SE350029	Worsbrough Hall	Worsborough	Barnsley		Unknown	
Jerry	09/04/19							
Brown	81	SE350029	Worsbrough Hall	Worsborough	Barnsley		Unknown	1
Jerry	26/05/19						Unknown	
Brown	81	SE350029	Worsbrough Hall	Worsbrough	Barnsley		Noctule/Leislars	1
Jerry	27/07/19							
Brown	81	SE350029	Worsbrough Hall	Worsborough	Barnsley		Unknown	
Jerry	30/07/19							
Brown	81	SE350029	Worsbrough Hall	Worsborough	Barnsley		Unknown	6
Jerry	09/08/19							
Brown	81	SE350029	Worsbrough Hall	Worsborough	Barnsley		Unknown	1
Jerry	11/08/19							
Brown	81	SE350029	Worsbrough Hall	Worsbrough	Barnsley		Noctule	1
Jerry	11/08/19						Unknown small	
Brown	81	SE350029	Worsbrough Hall	Worsbrough	Barnsley		Bat	10
Jerry	13/08/19							
Brown	81	SE350029	Worsbrough Hall	Worsborough	Barnsley		Unknown	1

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## Bat Survey: Rockingham 2014

Jerry Brown	16/08/19	81	SE350029	Worsbrough Hall	Worsbrough	Barnsley		Pipistrelle sp.	4
Jerry Brown	19/08/19	81	SE350029	Worsbrough Hall	Worsbrough	Barnsley		Pipistrelle sp.	38
Jerry Brown	20/08/19	81	SE350029	Worsbrough Hall	Worsbrough	Barnsley		Pipistrelle sp.	34
Eric Bennett	22/08/19	81	SE350029	Worsborough Hall	Worsborough	Barnsley	Mansion	Pipistrelle sp.	50
Jerry Brown	22/08/19	81	SE350029	Worsbrough Hall	Worsbrough	Barnsley		Pipistrelle sp.	50
Jerry Brown	22/04/19	82	SE350029	Worsbrough Hall	Worsborough	Barnsley		Unknown	2
Jerry Brown	16/05/19	82	SE350029	Worsbrough Hall	Worsbrough	Barnsley		Unknown small Bat	2
Jerry Brown	28/06/19	82	SE350029	Worsbrough Hall	Worsborough	Barnsley		Unknown	2
Jerry Brown	30/06/19	82	SE350029	Worsbrough Hall	Worsbrough	Barnsley		Pipistrelle sp.	2
Jerry Brown	08/08/19	82	SE350029	Worsbrough Hall	Worsbrough	Barnsley		Unknown small Bat	1
Jerry Brown	28/08/19	82	SE3502	Hall Close	Worsbrough Village	Barnsley		Unknown	1
Jerry Brown	21/04/19	83	SE3502	Hall Close	Worsbrough Village	Barnsley		Unknown	1
Jerry Brown	07/06/19	83	SE350029	Worsbrough Hall	Worsbrough	Barnsley		Unknown small Bat	3
Jerry Brown	16/07/19	83	SE3502	Wellcroft	Worsbrough Village	Barnsley		Unknown	1
Jerry Brown	28/07/19	83	SE3502	Wellcroft	Worsbrough Village	Barnsley		Unknown	1
Jerry Brown	15/08/19	83	SE350029	Worsbrough Hall	Worsbrough	Barnsley		Unknown small Bat	1
Jerry Brown	03/10/19	83	SE350029	Worsbrough Hall	Worsborough	Barnsley		Unknown	1
Jerry Brown	11/08/19	84	SE350029	Worsbrough Hall	Worsborough	Barnsley		Unknown	1

## Bat Survey: Rockingham 2014

Jerry Brown	13/09/19	84	SE350029	Worsbrough Hall	Worsborough	Barnsley		Unknown	1	
Jerry Brown	21/08/19	86	SE350029	Worsbrough Hall	Worsbrough	Barnsley		Leisler's bat	32	
Jerry Brown	27/08/19	86	SE350029	Worsbrough Hall	Worsbrough	Barnsley		Leisler's bat	17	
Jerry Brown	13/09/19	86	SE350029	Worsbrough Hall	Worsborough	Barnsley		Unknown	1	
Jerry Brown	15/10/19	86	SE350029	Worsbrough Hall	Worsbrough	Barnsley		Unknown Noctule/Leislars	4	
Jerry Brown	19/04/19	87	SE350029	Worsbrough Hall	Worsbrough	Barnsley		Pipistrelle sp.	2	
Jerry Brown	18/08/19	89	SE350029	Worsbrough Hall	Worsbrough	Barnsley		Leisler's bat	1	
Householder Unknown	01/01/19	90	SE350029	Worsbrough Hall Welcroft	Worsbrough Village	Barnsley		Large dead bat found in bedroom	Unknown large Bat	1
Eric Bennett	23/04/19	90	SE350025	House, Worsbrough Village	Worsbrough	Barnsley	Offices		Pipistrelle sp.	2
Eric Bennett	23/04/19	90	SE351028	Welcroft House	Worsbrough Village	Barnsley			Noctule	1
Eric Bennett	23/04/19	90	SE351028	Welcroft House	Worsbrough Village	Barnsley		bat found under ridge tile during repair work	Pipistrelle sp.	2
Eric Bennett	01/08/19	90	SE350029	Worsbrough Hall	Worsbrough Village	Barnsley			Noctule	1
Eric Bennett	01/08/19	90	SE350029	Worsbrough Hall	Worsbrough Village	Barnsley			Pipistrelle sp.	
Jerry Brown	01/08/19	90	SE350029	Worsbrough Hall	Worsbrough	Barnsley			Pipistrelle sp.	1
Jerry Brown	01/08/19	90	SE350029	Worsbrough Hall	Worsbrough	Barnsley			Noctule	1
Eric Bennett	01/02/19	93	SE350029	Worsborough Hall Tree	Worsborough	Barnsley	Tree		Unknown	6
Eric Bennett	01/02/19	93	SE350029	Worsbrough Hall	Worsbrough	Barnsley			Unknown Noctule/Leislars	

## Bat Survey: Rockingham 2014

Eric Bennett	01/08/20	SE350029	Bruce Lodge	Pilley	Barnsley		Whiskered bat	4
Eric Bennett	24/08/20	SE350028	Worsbrough Hall	Worsborough	Barnsley		Unknown	
Eric Bennett	05/09/20	SE350028	Hall Close	Worsborough Village	Barnsley	Converted Mansion	Soprano pipistrelle	61
Eric Bennett	05/09/20	SE350028	Hall Close	Worsborough Village	Barnsley	Converted mansion	Brown long-eared bat	+Dr
Eric Bennett	05/09/20	SE350028	Worsbrough Hall	Worsbrough			Soprano pipistrelle	28
Eric Bennett	05/09/20	SE350028	Worsbrough Hall	Worsborough	Barnsley		Brown long-eared bat	
Eric Bennett	11/09/20	SE350029	Worsbrough Hall	Worsbrough			Soprano pipistrelle	61
Nicky Rivers	2012	SE351034	Barnsley			Roost emergence count	Common pipistrelle	2
Nicky Rivers	2012	SE351034	Barnsley			Roost emergence count	Unknown. Noctule / leisler's bat	1
Bob Boreham	16/05/19	SE3503	Woolley Bank Wood	Worsborough	Barnsley		Unknown	1
Jerry Brown	21/08/19	SE352032	Button Mill Inn	Worsborough	Barnsley		Unknown Myotis	3
Jerry Brown	21/08/19	SE352032	Button Mill Inn	Worsborough	Barnsley		Noctule	4
Eric Bennett	01/06/19	SE355037	Broomroyd	Worsborough Bridge	Barnsley	Cat damaged bat, died.	Pipistrelle sp.	1
Eric Bennett	06/07/19	SE352032	Button Mill Inn	Worsborough	Barnsley		Pipistrelle sp.	1
Eric Bennett	06/07/19	SE352032	Button Mill Inn	Worsborough	Barnsley		Noctule	1
Eric Bennett	06/07/19	SE352032	Button Mill Inn	Worsborough	Barnsley		Pipistrelle sp.	238
Eric Bennett	06/07/19	SE352032	Button Mill Inn	Worsborough	Barnsley	Public House	Pipistrelle sp.	467

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## Bat Survey: Rockingham 2014

Eric	17/07/19							
Bennett	91	SE3503	Bell Bank Wood		Worsbrough	Barnsley	Noctule	1
Eric	17/07/19							
Bennett	91	SE352032	Button Mill Inn		Worsbrough	Barnsley	Pipistrelle sp.	201
Eric	02/08/19							
Bennett	91	SE352032	Button Mill Inn		Worsbrough	Barnsley	Pipistrelle sp.	311
Eric	01/06/19							
Bennett	92	SE352032	Button Mill Inn		Worsbrough	Barnsley	Pipistrelle sp.	237
Eric	15/06/19							
Bennett	92	SE352032	Button Mill Inn		Worsbrough	Barnsley	Pipistrelle sp.	310
Eric	16/07/19							
Bennett	92	SE352032	Button Mill Inn		Worsbrough	Barnsley	Pipistrelle sp.	525
Eric	21/08/19							
Bennett	92	SE352032	Button Mill Inn		Worsbrough	Barnsley	Pipistrelle sp.	160
Eric	03/06/19							
Bennett	93	SE352032	Button Mill Inn		Worsbrough	Barnsley	Pipistrelle sp.	369
Eric	10/06/19							
Bennett	93	SE352032	Button Mill Inn		Worsbrough	Barnsley	Pipistrelle sp.	283
Eric	16/06/19							
Bennett	93	SE352032	Button Mill Inn		Worsbrough	Barnsley	Pipistrelle sp.	366
Eric	02/06/19							
Bennett	94	SE352032	Button Mill Inn		Worsbrough	Barnsley	Pipistrelle sp.	444
Eric	23/06/19							
Bennett	94	SE352032	Button Mill Inn		Worsbrough	Barnsley	Pipistrelle sp.	374
Eric	03/06/19							
Bennett	96	SE352032	Button Mill Inn		Worsbrough	Barnsley	Pipistrelle sp.	412
Eric	19/06/19							
Bennett	96	SE352032	Button Mill Inn		Worsbrough	Barnsley	Pipistrelle sp.	451
Eric	03/06/19							
Bennett	97	SE352032	Barnsley				Soprano pipistrelle	467
Eric	03/06/19							
Bennett	97	SE352032	Button Mill Inn		Worsbrough	Barnsley	Pipistrelle sp.	467
Eric	11/06/19							
Bennett	97	SE352032	Barnsley				Soprano pipistrelle	450
Eric	11/06/19							
Bennett	97	SE352032	Button Mill Inn		Worsbrough	Barnsley	Pipistrelle sp.	450
Eric	15/06/19	SE0335	Barnsley					

## Bat Survey: Rockingham 2014

Bennett	97									
Eric	15/06/19								Soprano	
Bennett	97	SE3503	Barnsley						pipistrelle	467
Eric	15/06/19									
Bennett	99	SE0335	Barnsley							
Eric	15/06/19								Soprano	
Bennett	99	SE3503	Barnsley						pipistrelle	112
Eric	24/06/19								Soprano	
Bennett	99	SE352032	Barnsley						pipistrelle	112
Eric	24/06/19									
Bennett	99	SE352032	Button Mill Inn	Worsbrough	Barnsley				Noctule	1
Eric	24/06/19									
Bennett	99	SE352032	Button Mill Inn	Worsbrough	Barnsley				Pipistrelle sp.	112
Eric	07/06/20								Soprano	
Bennett	00	SE352032	Barnsley						pipistrelle	100
Eric	07/06/20									
Bennett	00	SE352032	Button Mill Inn	Worsbrough	Barnsley				Pipistrelle sp.	100
Eric	15/06/20								Soprano	
Bennett	00	SE3503	Barnsley						pipistrelle	366
Eric	19/06/20								Soprano	
Bennett	00	SE352032	Barnsley						pipistrelle	122
Eric	19/06/20									
Bennett	00	SE352032	Button Mill Inn	Worsbrough	Barnsley				Pipistrelle sp.	122
Eric	28/06/20								Soprano	
Bennett	00	SE352032	Barnsley						pipistrelle	366
Eric	28/06/20									
Bennett	00	SE352032	Button Mill Inn	Worsbrough	Barnsley				Pipistrelle sp.	366
Jerry	15/07/20		Oak Tree, Park						Unknown small	
Brown	01	SE353030	Cottages	Worsbrough	Barnsley				Bat	4
Nicky	31/05/20								Soprano	
Rivers	09	SE3503	Barnsley						pipistrelle	73
Martin								Known		
Derbyshire	01/06/20							summer		
	09	SE351032	The Button Mill Inn	The Pub				roost	Observed emerging	44
SYBG/NBM	01/06/20									
	09			The Button Mill Inn	Dunninc Road				Observed emerging	44

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## Bat Survey: Rockingham 2014

Nicky Rivers	06/06/20	SE3503	Barnsley					Soprano pipistrelle	44	
Nicky Rivers	19/06/20	SE3503	Barnsley					Soprano pipistrelle	38	
Martin Derbyshire	19/06/20	SE351032	The Button Mill Inn	The Pub			Known summer roost	Observed emerging from roost	Soprano pipistrelle	38
Nicky Rivers	06/07/20	SE3503	Barnsley					Soprano pipistrelle	58	
Martin Derbyshire	06/07/20	SE351032	The Button Mill Inn	The Pub			Known summer roost	Observed emerging from roost	Soprano pipistrelle	58
Nicky Rivers	17/06/20	SE351034	Barnsley				Roost emergence count		Soprano pipistrelle	5
Eric Bennett	03/09/20	SE361003	Springfield Road		Hoyland Common	Barnsley			Unknown	1
English Nature	28/08/20	SE369011	Birch Cottage	Market Street	Hoyland			Bat flying in sitting room last night - gone into gap in high beam. EB to contact. Bat gone.		
Eric Bennett	08/03/20	SE367018	Blacker Grange Farm	Grange View	Platts Common	Barnsley		No signs. Barn owl possible nest site.		
Jerry Brown	18/07/19	SE3602	Worsbrough Village		Worsbrough Village	Barnsley			Unknown Noctule/Leislars	3
Jerry Brown	24/03/19	SE3603	Worsbrough Dale Sewage Works		Worsbrough	Barnsley			Unknown	7
Derek Drew	26/03/19	SE3603	Worsbrough Dale Sewage Works		Worsbrough	Barnsley			Pipistrelle sp.	1
English Nature	17/09/20	SE376007	Green Street	Hoyland	Barnsley		Roost	Roof repairs imminent. Bats seen emerging from under eaves. EB considers work unlikely to affect bats as mainly at ridge of roof. Work to proceed with caution.		

## Bat Survey: Rockingham 2014

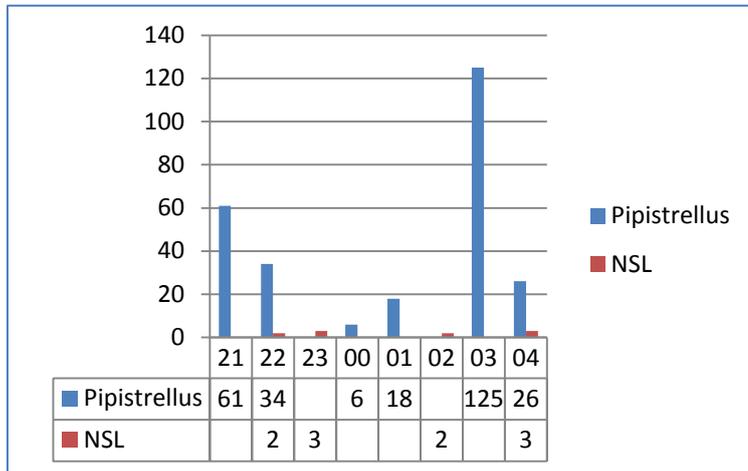
Eric Bennett	17/09/2003	SE376007	Green Street		Hoyland	Barnsley	House		Unknown	-
English Nature	20/06/2005	SE379004		King Street	Hoyland			Concern over bats seen flying around old surgery due to be demolished		
English Nature	21/07/2006	SE375000		Weir Close	Hoyland	Barnsley	Roost	Concerns about bat droppings & noise above child's bedroom.		
Natural England P	01/08/2007	SE375000		Weir Close	Hoyland	Barnsley	Roost	Roost access under fascias. Needing to renew fascias soon. DW visit.	Unknown	Unknwn
Middleton P	29/05/2012	SE371024	Upper Wood Head Farm					commuting	Soprano pipistrelle	1
Middleton P	29/05/2012	SE371024	Upper Wood Head Farm					foraging	Common pipistrelle	3
Middleton P	14/06/2012	SE371024	Upper Wood Head Farm					foraging	Noctule	1
Middleton P	14/06/2012	SE371024	Upper Wood Head Farm					foraging	Wood mouse	1
Middleton P	14/06/2012	SE371024	Upper Wood Head Farm					commuting	Leisler's bat	1
Middleton P	14/06/2012	SE371024	Upper Wood Head Farm					foraging	Common pipistrelle	1
Middleton P	06/07/2012	SE371024	Upper Wood Head Farm					foraging	Common pipistrelle	1
Middleton P	06/07/2012	SE371024	Upper Wood Head Farm					commuting to roost nearby (north)	Noctule	10+

## Appendix 2: Static recorder results

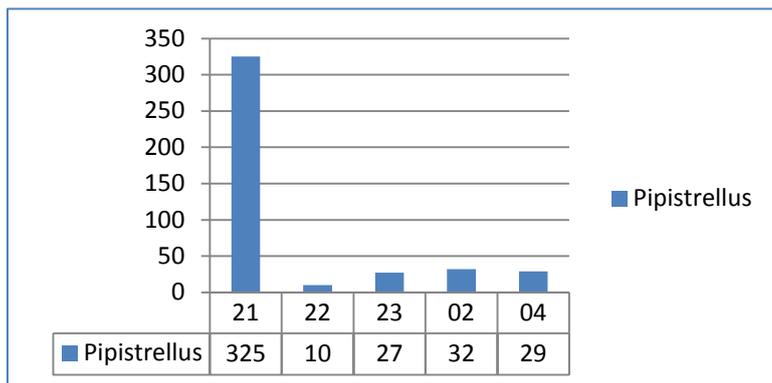
Static recorder results: x-axis = time (grouped into hours), y-axis = number of calls extracted and identified.

NSL= Noctule or Leislars. Less than 5 calls for a species in a night was not counted.

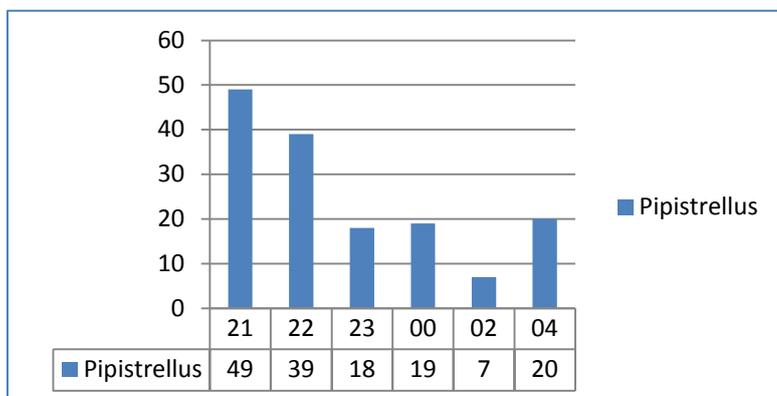
Static recorder reference 1



Static recorder reference 2

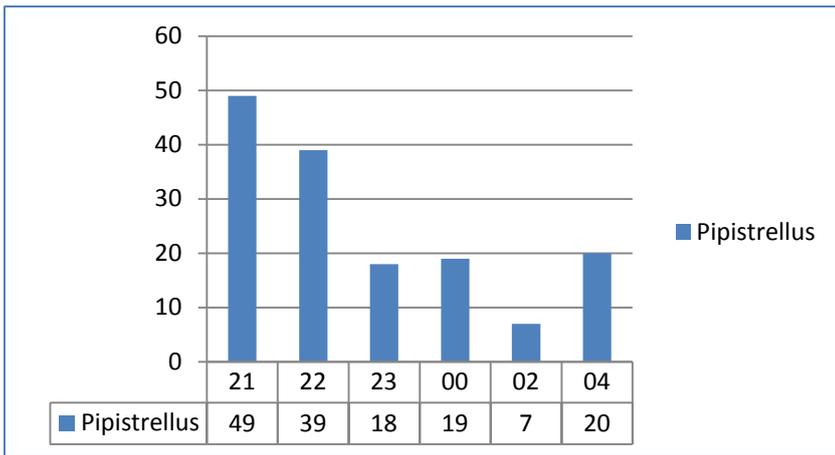


Static recorder reference 3



## Bat Survey: Rockingham 2014

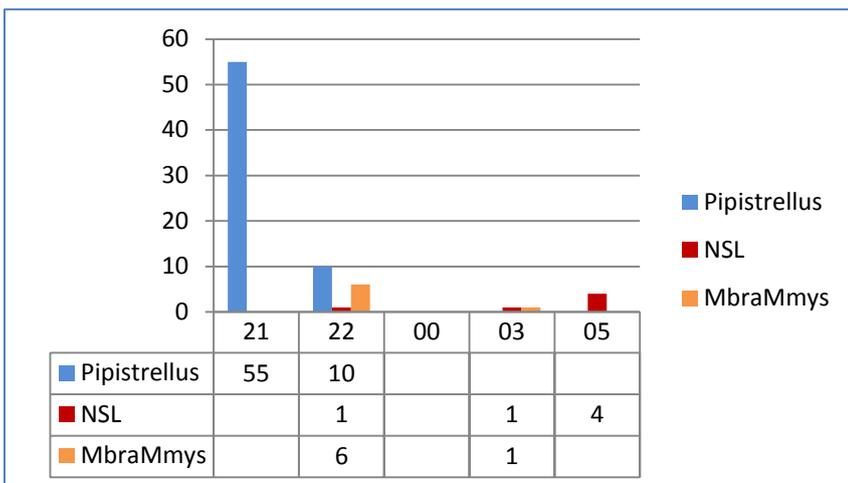
### Static recorder reference 4



### Static recorder reference 5

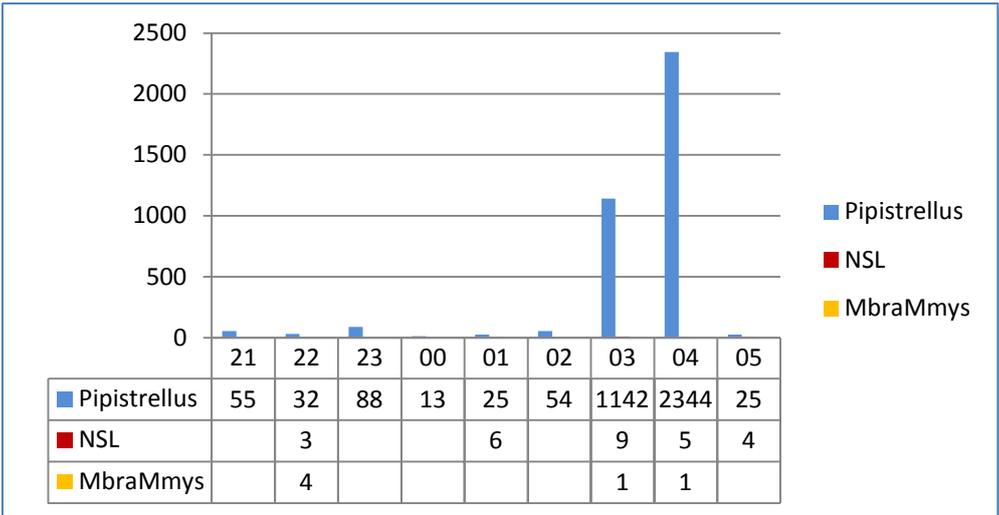
No species above or equal to 5 calls.

### Static recorder reference 6

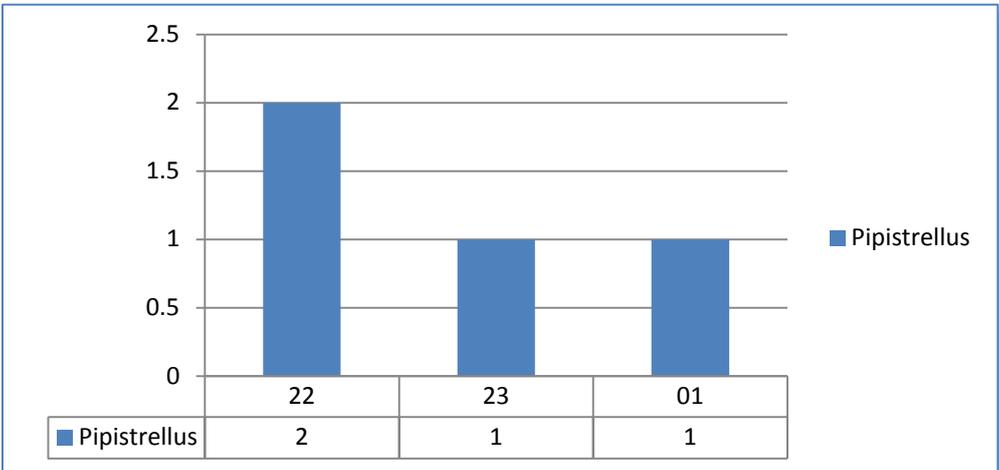


## Bat Survey: Rockingham 2014

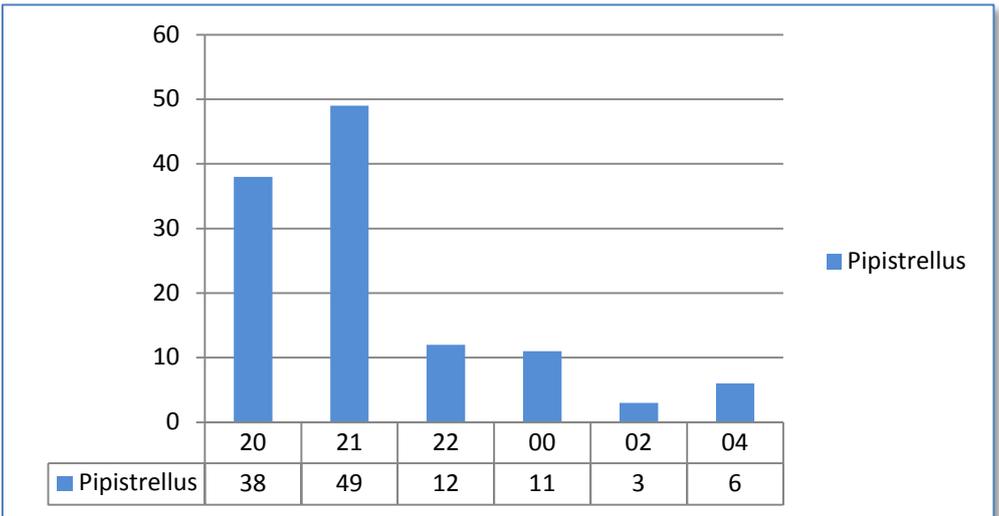
Static recorder reference 7



Static recorder reference 8

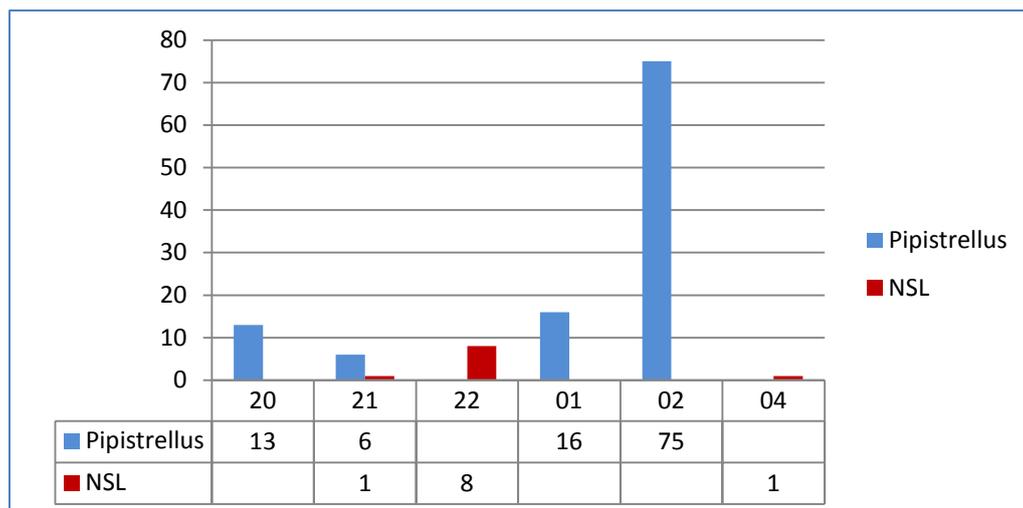


Static recorder reference 9

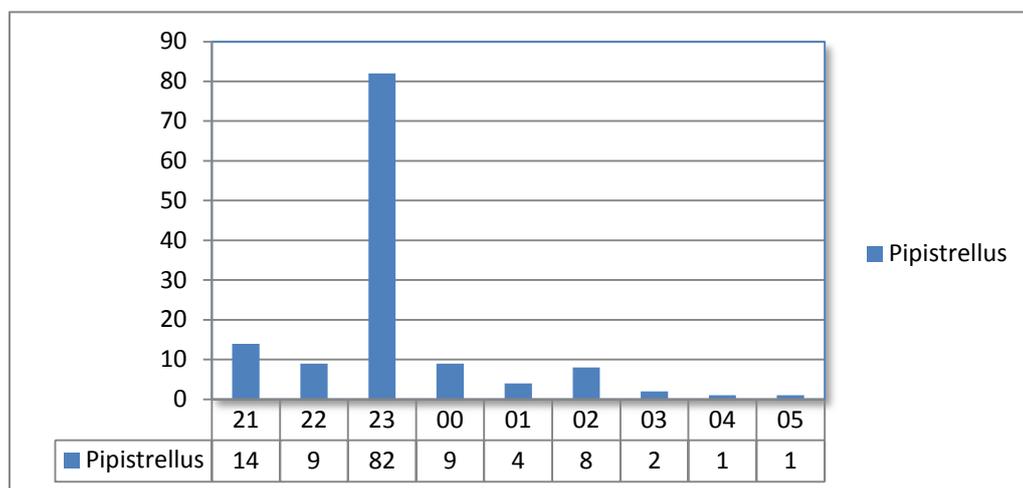


## Bat Survey: Rockingham 2014

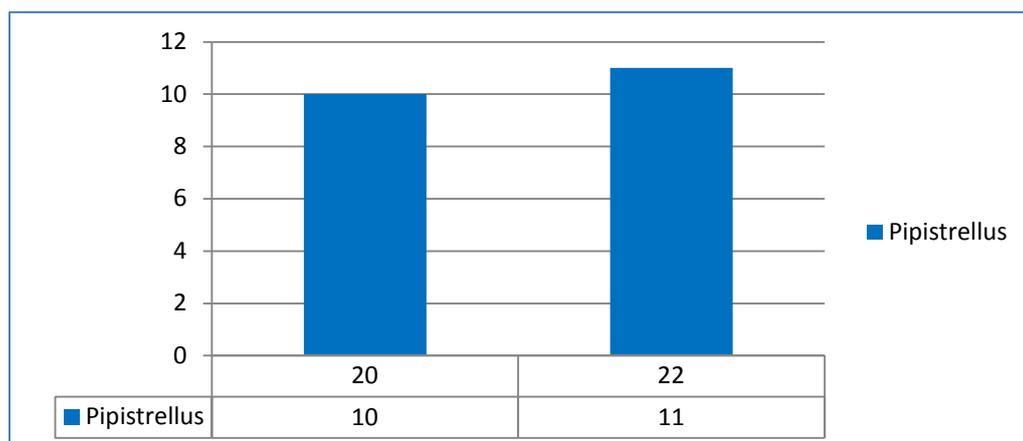
**Static recorder reference 10**



**Static recorder reference 11**



**Static recorder reference 12**

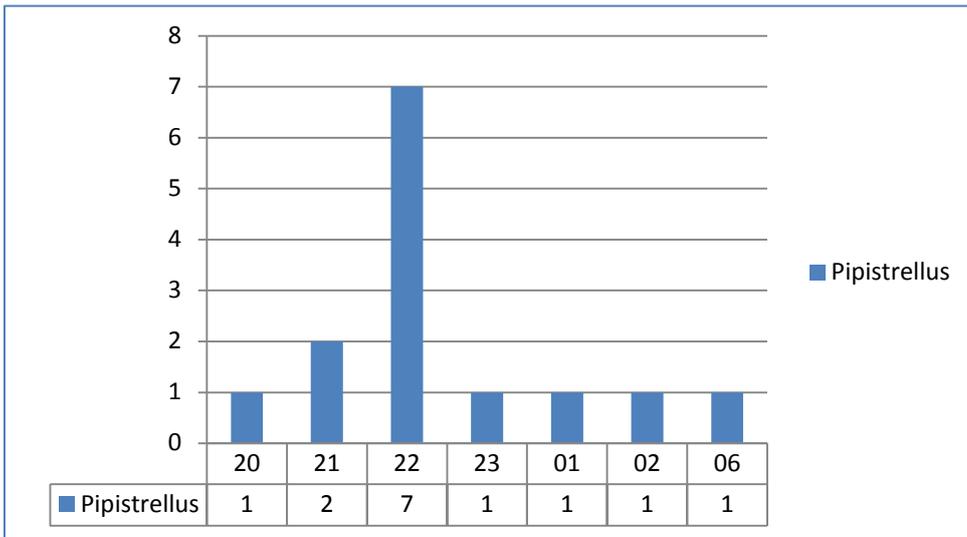


**Static recorder reference 13**

No species above or equal to 5 calls.

# Bat Survey: Rockingham 2014

## Static recorder reference 14



Static recorder reference 15

No species above or equal to 5 calls.

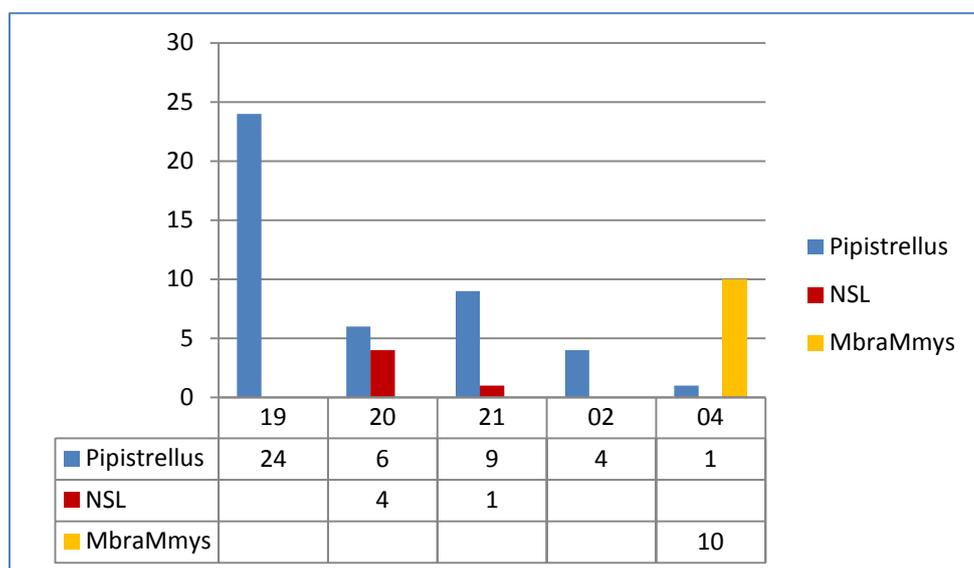
Static recorder reference 16

No species above or equal to 5 calls.

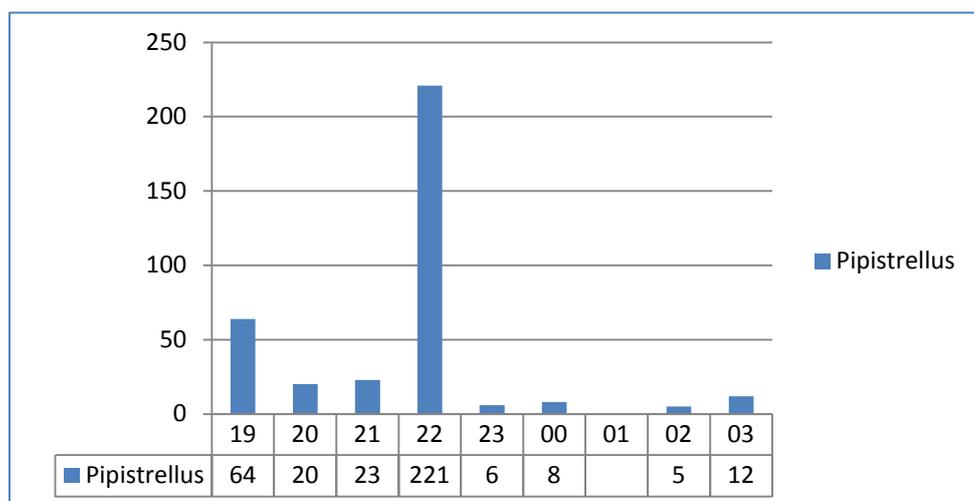
Static recorder reference 17

No species above or equal to 5 calls.

Static recorder reference 18



Static recorder reference 19



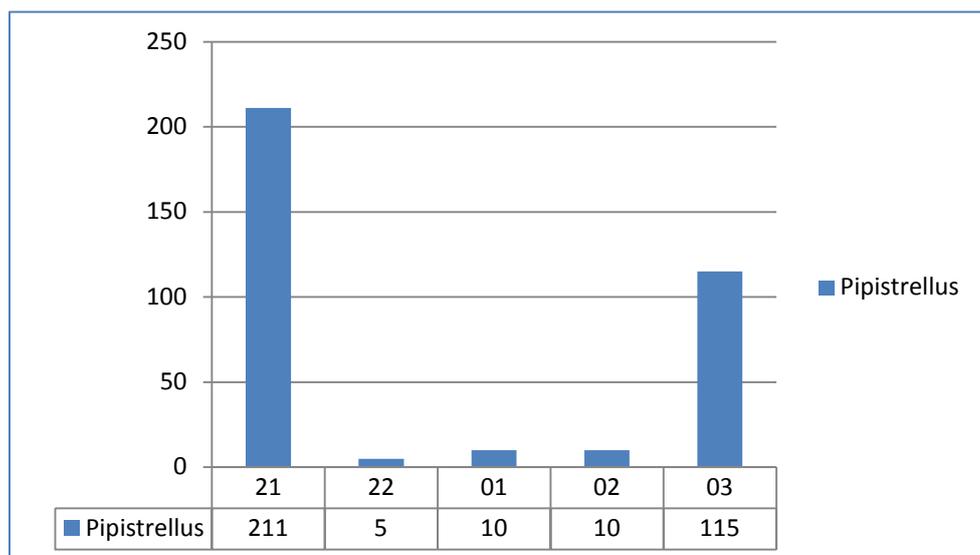
**Static recorder reference 20**

No species above or equal to 5 calls.

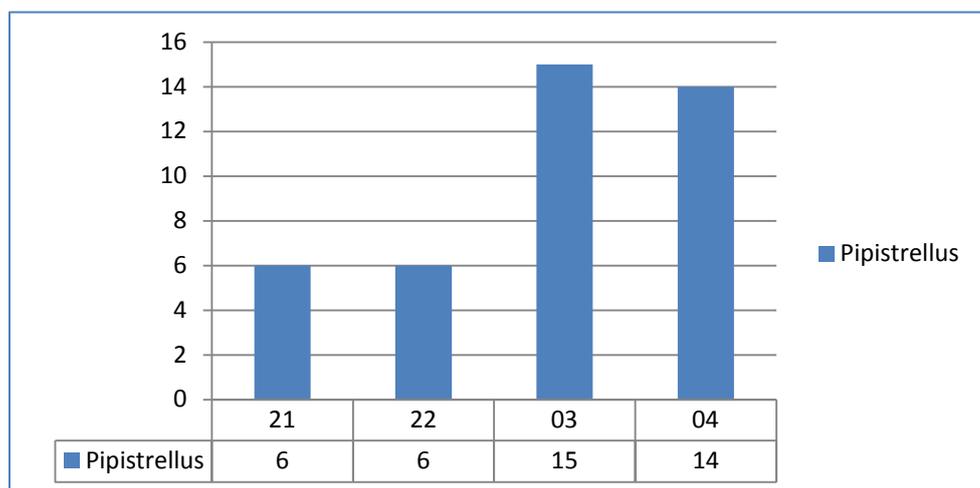
**Static recorder reference 21**

No species above or equal to 5 calls.

**Static recorder reference 22**



**Static recorder reference 23**

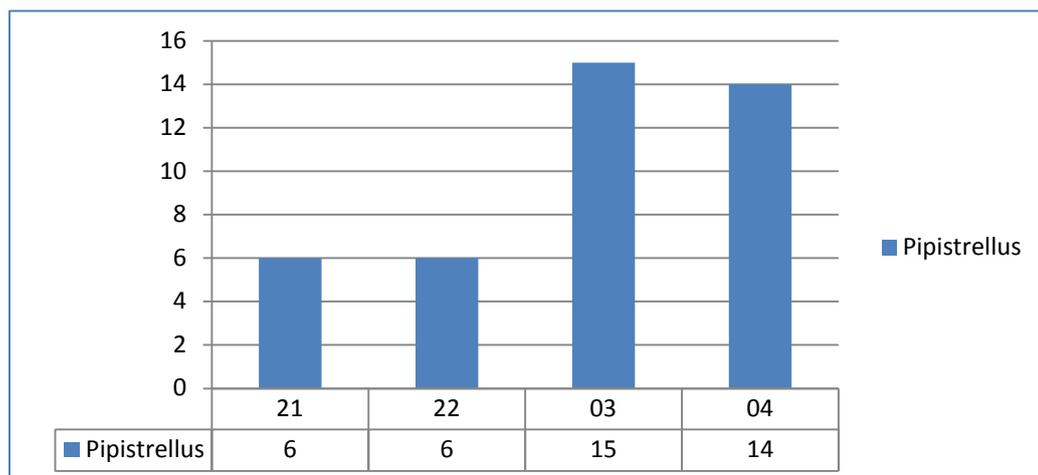


**Static recorder reference 24**

No species above or equal to 5 calls.

## Bat Survey: Rockingham 2014

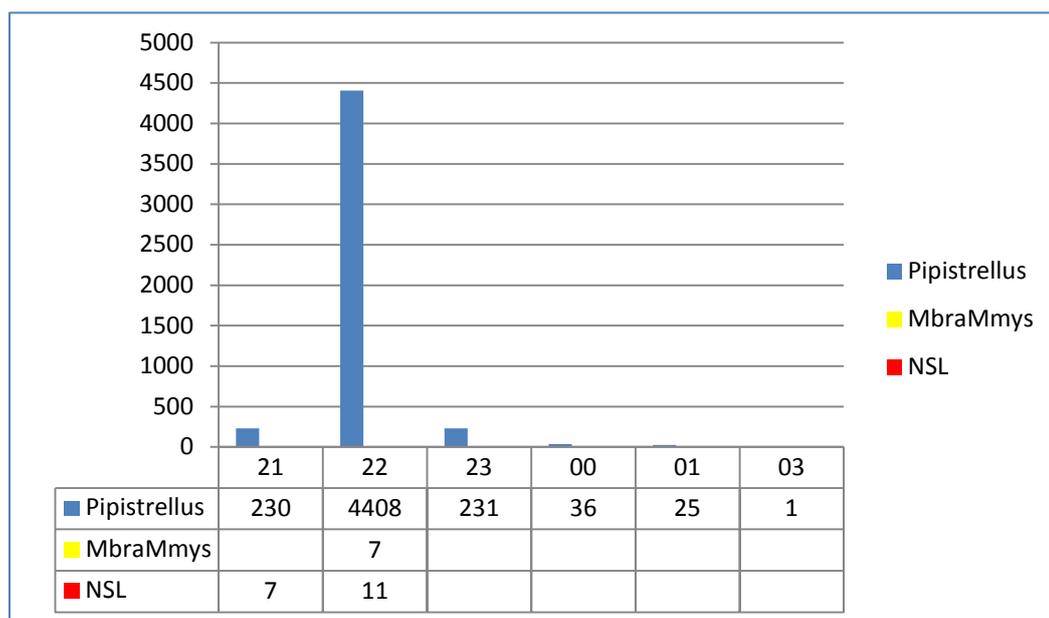
### Static recorder reference 25



### Static recorder reference 26

No species above or equal to 5 calls.

### Static recorder reference 27

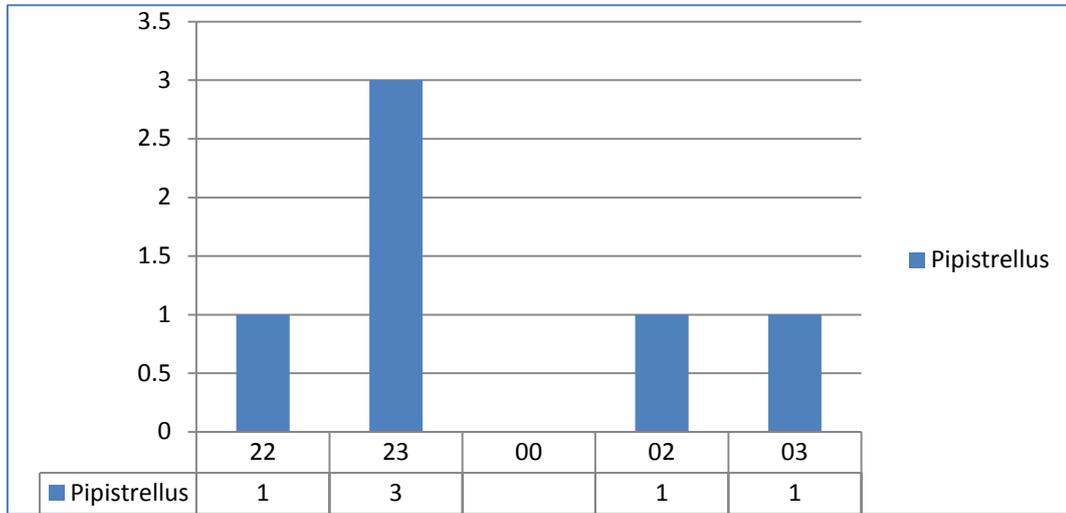


## Bat Survey: Rockingham 2014

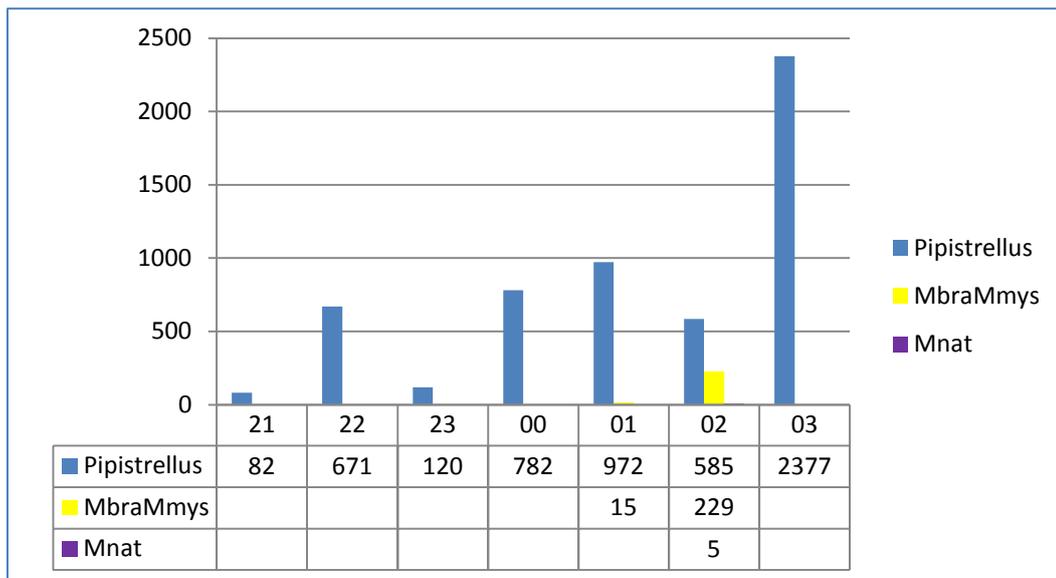
### Static recorder reference 28

No species above or equal to 5 calls.

### Static recorder reference 29



### Static recorder reference 30

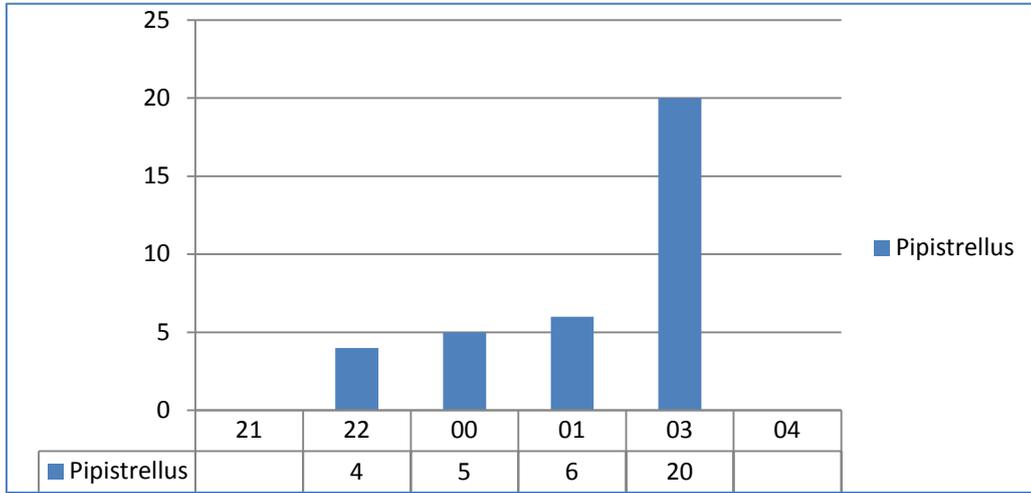


Bat Survey: Rockingham 2014

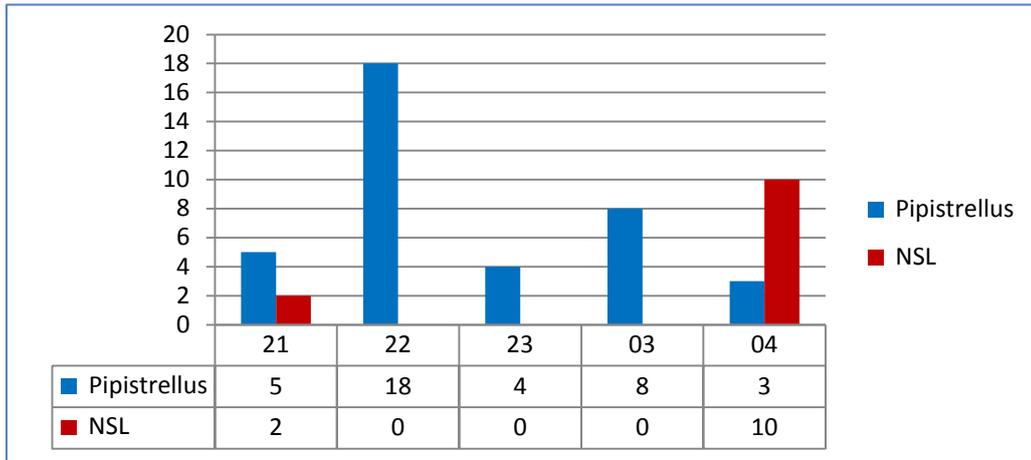
Static recorder reference 31

No species above or equal to 5 calls.

Static recorder reference 32

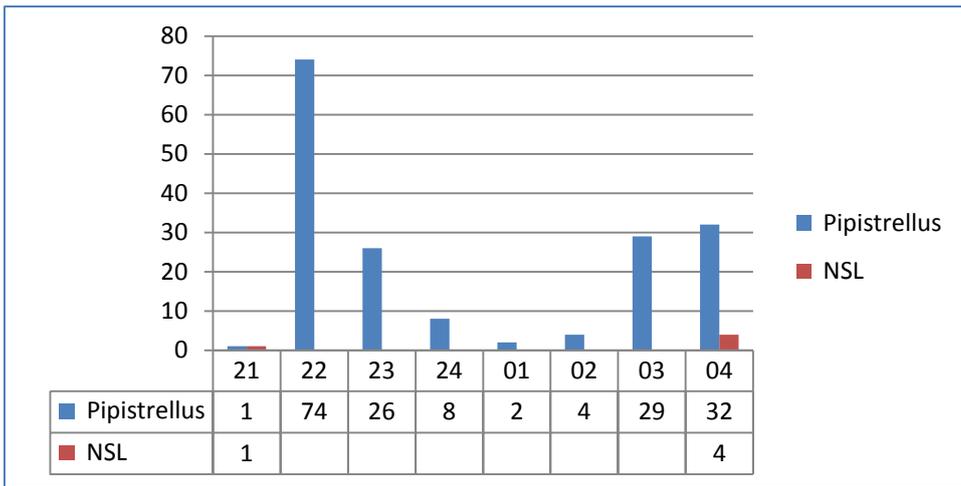


Static recorder reference 33



## Bat Survey: Rockingham 2014

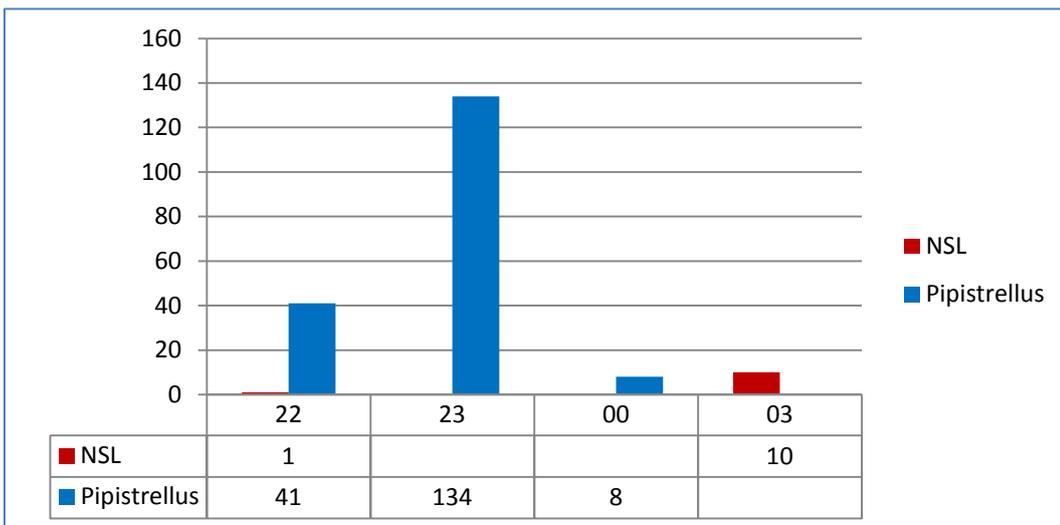
### Static recorder reference 34



### Static recorder reference 35

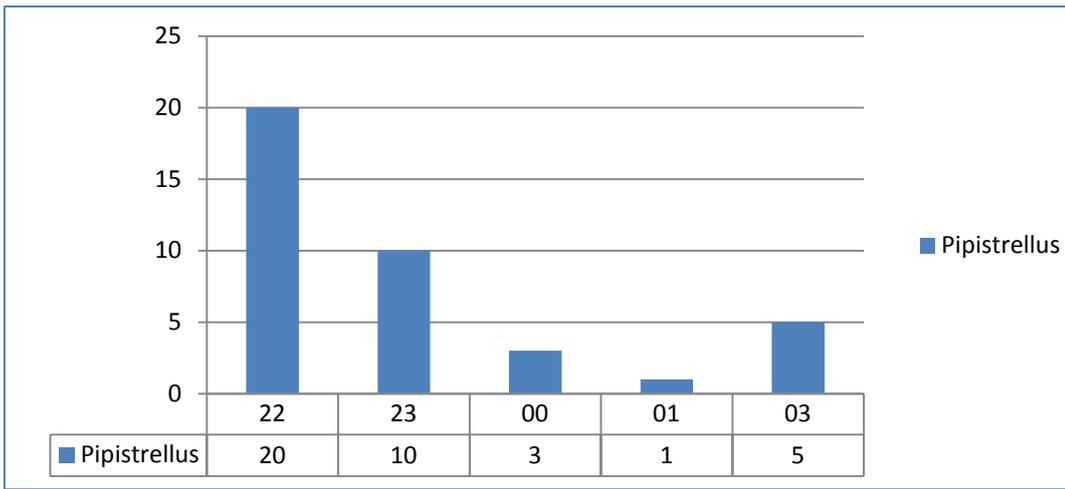
No species above or equal to 5 calls.

### Static recorder reference 36



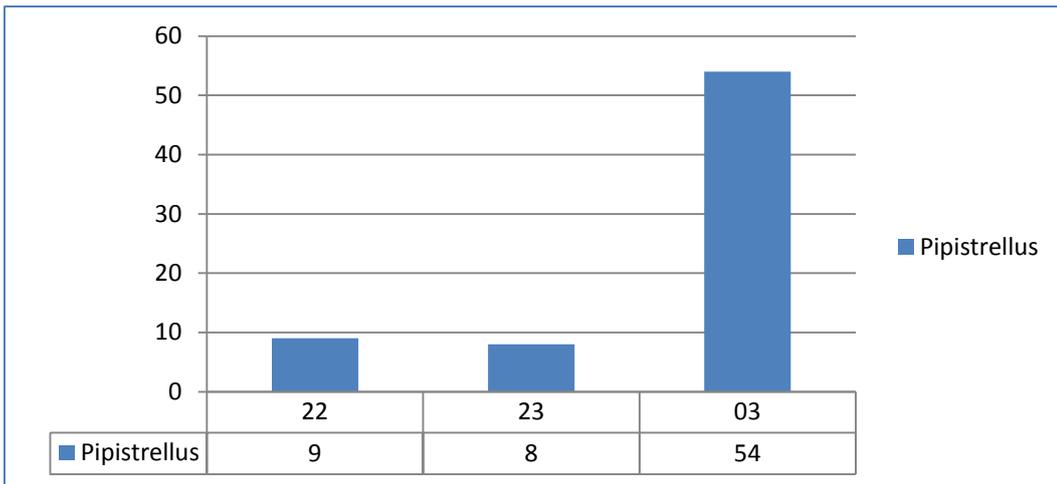
# Bat Survey: Rockingham 2014

Static recorder reference 37

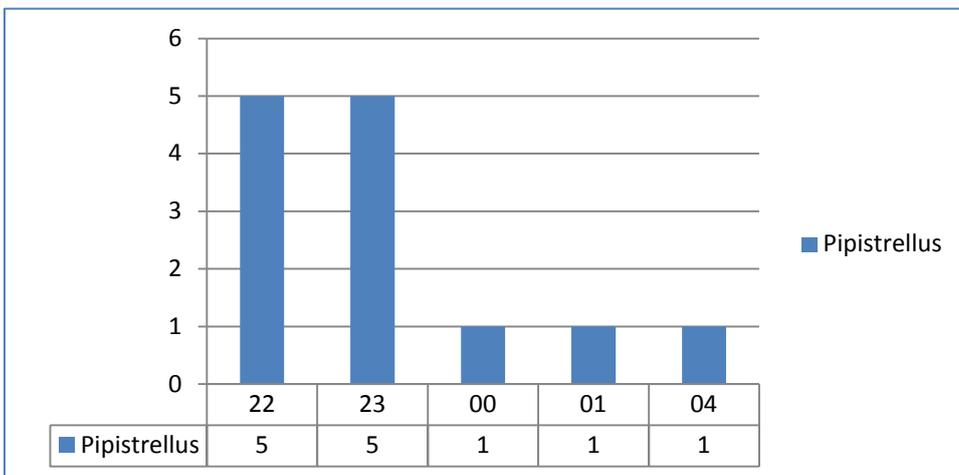


## Bat Survey: Rockingham 2014

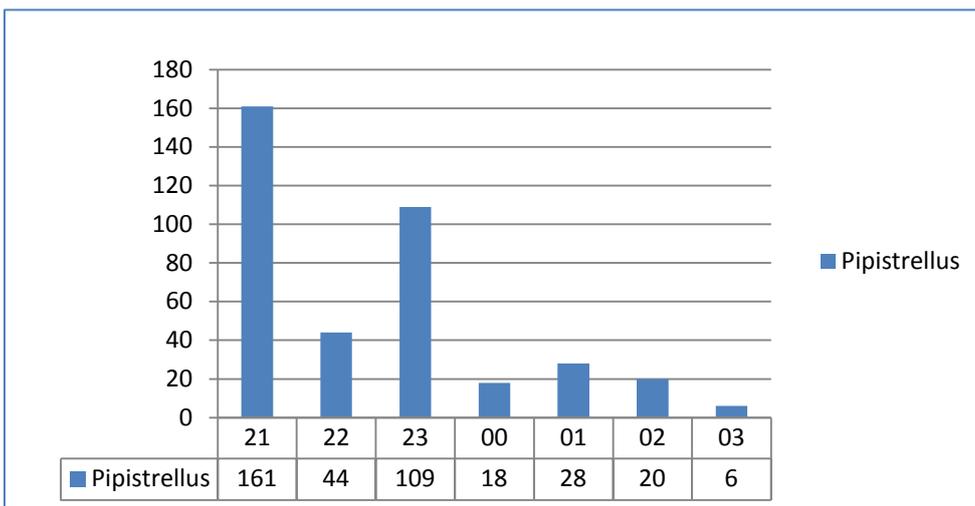
Static recorder reference 38



Static recorder reference 39

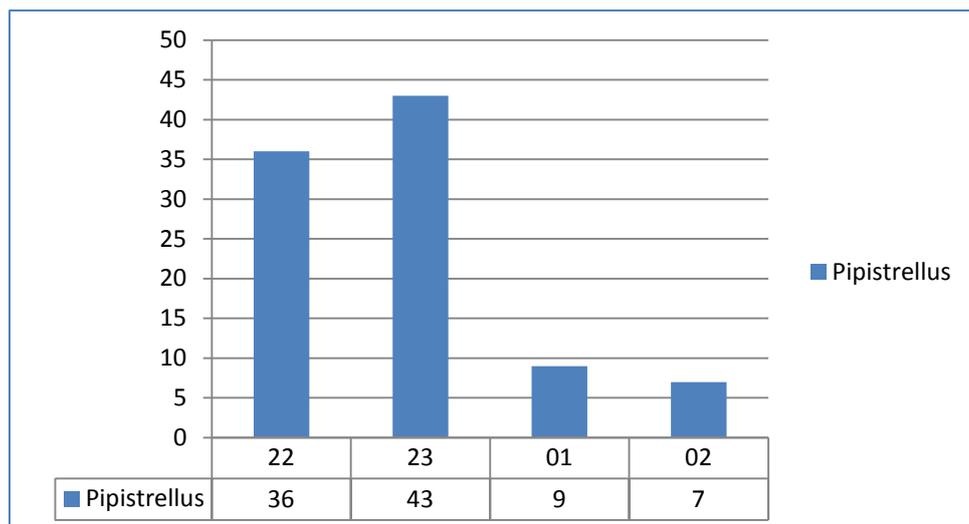


Static recorder reference 40



## Bat Survey: Rockingham 2014

### Static recorder reference 41



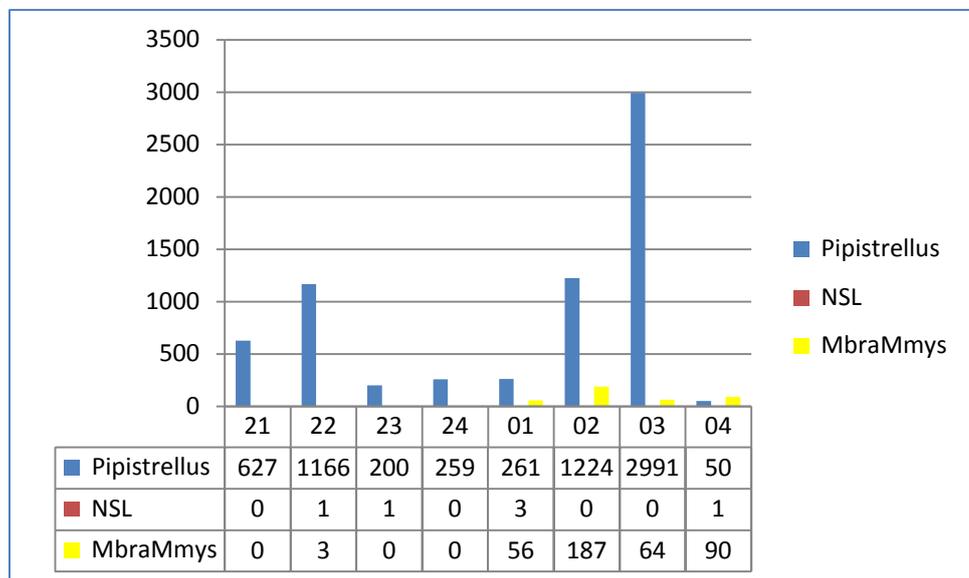
### Static recorder reference 42

No species above or equal to 5 calls.

### Static recorder reference 43

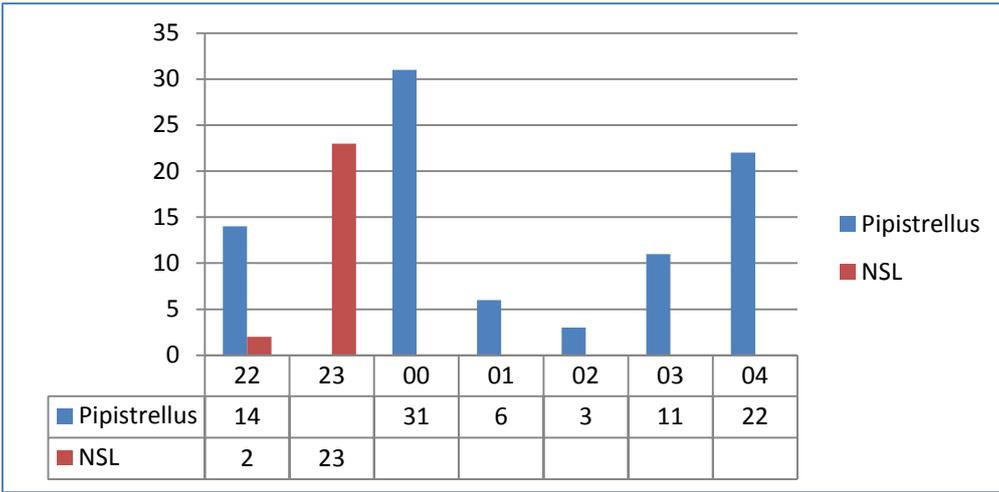
No species above or equal to 5 calls.

### Static recorder reference 44

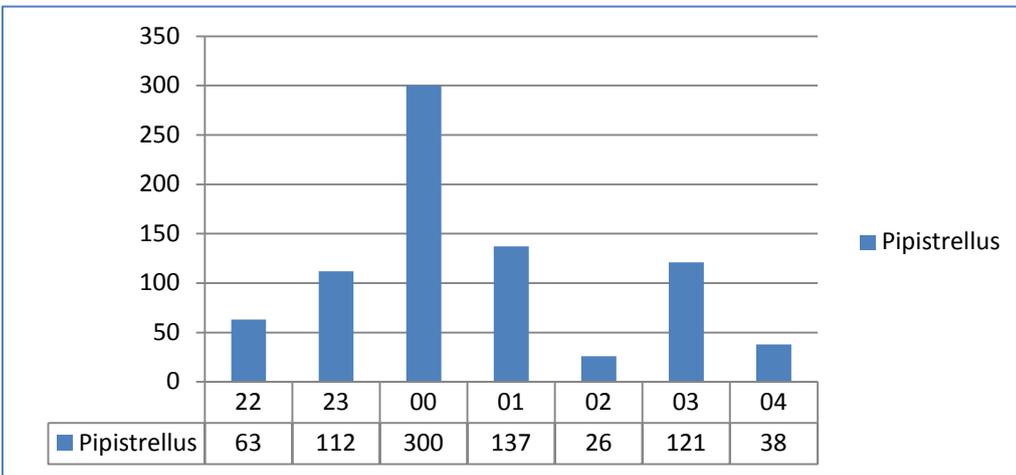


## Bat Survey: Rockingham 2014

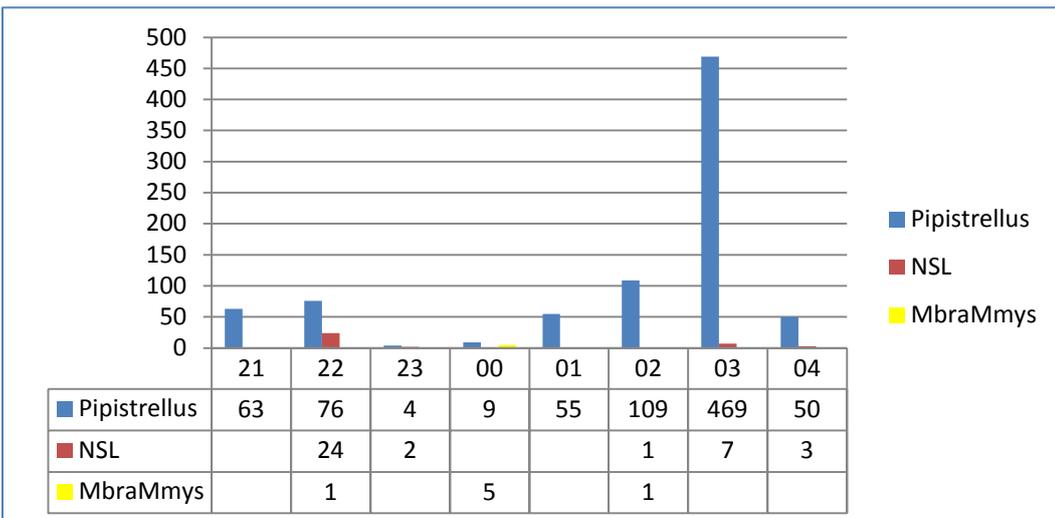
Static recorder reference 45



Static recorder reference 46



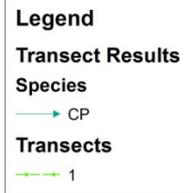
Static recorder reference 47



## Appendix 3: transect results



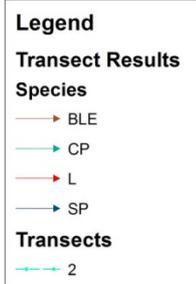
Rockingham bat survey 2013.  
Transect results  
Transect Ref: 1



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Rockingham bat survey 2013.  
Transect results  
Transect Ref: 2



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# Bat Survey: Rockingham 2014



Rockingham bat survey 2013.  
Transect results  
Transect Ref: 3



**Legend**

**Transect Results**

**Species**

—> CP

**Transects**

— 3

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Rockingham bat survey 2013.  
Transect results  
Transect Ref: 4



**Legend**

**Transect Results**

**Species**

—> CP

**Transects**

— 4

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# Bat Survey: Rockingham 2014



Rockingham bat survey 2013.  
Transect results  
Transect Ref: 5



**Legend**

**Transect Results**

**Species**

→ CP

**Transects**

— 4

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Rockingham bat survey 2013.  
Transect results  
Transect Ref: 6



**Legend**

**Transect Results**

**Species**

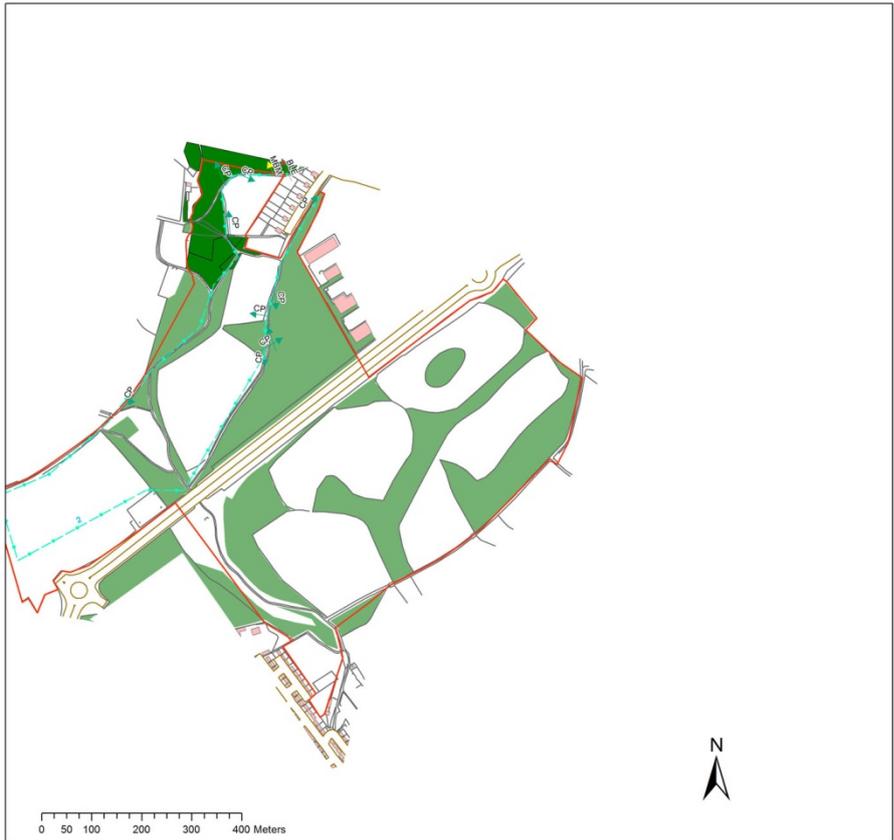
→ CP

**Transects**

— 1

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# Bat Survey: Rockingham 2014



Rockingham bat survey 2013.  
Transect results  
Transect Ref: 7



**Legend**

**Transect Results**

**Species**

- BLE
- CP
- MBM

**Transects**

- 2

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Rockingham bat survey 2013.  
Transect results  
Transect Ref: 8



**Legend**

**Transect Results**

**Species**

- CP

**Transects**

- 3

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# Bat Survey: Rockingham 2014



Rockingham bat survey 2013.  
Transect results  
Transect Ref: 9



**Legend**

**Transect Results**

**Species**

—> CP

**Transects**

--- 1

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Rockingham bat survey 2013.  
Transect results  
Transect Ref: 10



**Legend**

**Transect Results**

**Species**

—> CP

—> MBM

**Transects**

--- 2

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# Bat Survey: Rockingham 2014



Rockingham bat survey 2013.  
Transect results  
Transect Ref: 11



**Legend**

**Transect Results**

**Species**

→ CP

**Transects**

— 3

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Rockingham bat survey 2013.  
Transect results  
Transect Ref: 12



**Legend**

**Transect Results**

**Species**

→ CP

**Transects**

— 4

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# Bat Survey: Rockingham 2014



Rockingham bat survey 2013.  
Transect results  
Transect Ref: 13



**Legend**

**Transect Results**

**Species**

→ CP

**Transects**

— 4

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Rockingham bat survey 2013.  
Transect results  
Transect Ref: 14



**Legend**

**Transect Results**

**Species**

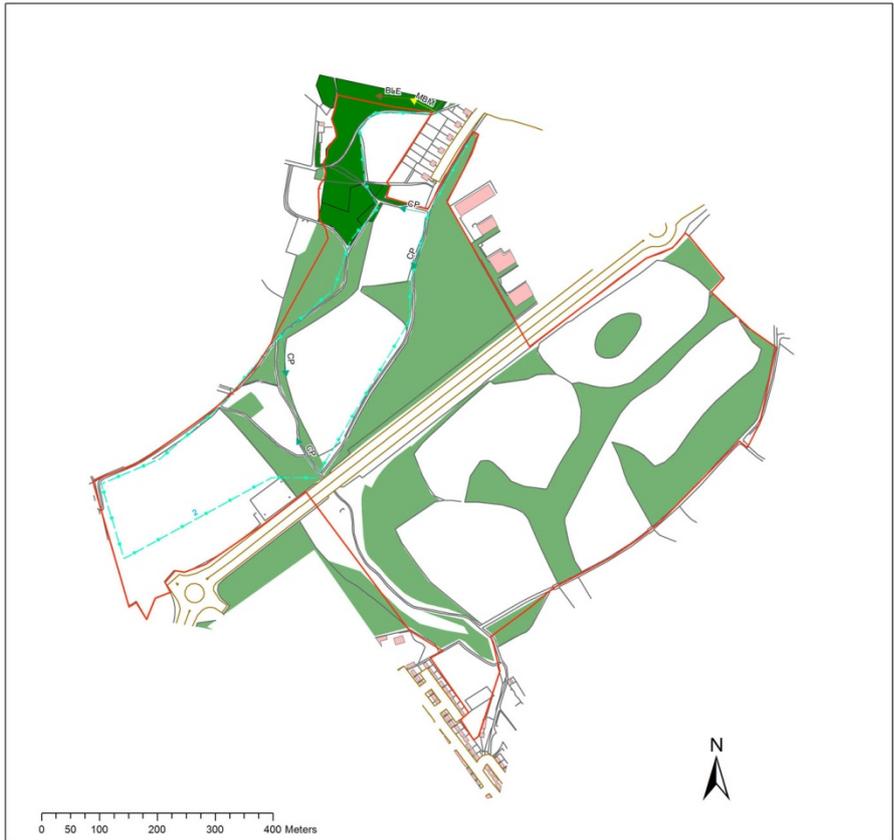
→ CP

**Transects**

— 1

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# Bat Survey: Rockingham 2014



Rockingham bat survey 2013.  
Transect results  
Transect Ref: 15



**Legend**

**Transect Results**

**Species**

- BLE
- CP
- MBM

**Transects**

- 2

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Rockingham bat survey 2013.  
Transect results  
Transect Ref: 16



**Legend**

**Transect Results**

**Species**

- CP

**Transects**

- 3

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# Bat Survey: Rockingham 2014



Rockingham bat survey 2014.  
Transect results  
Transect Ref: 17



**Legend**

**Transect Results**

**Species**

→ CP

**Transects**

1

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Rockingham bat survey 2014.  
Transect results  
Transect Ref: 18



**Legend**

**Transect Results**

**Species**

→ CP

→ MBM

**Transects**

2

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# Bat Survey: Rockingham 2014



Rockingham bat survey 2014.  
Transect results  
Transect Ref: 19



**Legend**

**Transect Results**

**Species**

- CP
- N

**Transects**

- 3

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Rockingham bat survey 2014.  
Transect results  
Transect Ref: 20



**Legend**

**Transect Results**

**Species**

- CP

**Transects**

- 4

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# Bat Survey: Rockingham 2014



Rockingham bat survey 2014.  
Transect results  
Transect Ref: 21



**Legend**

**Transect Results**

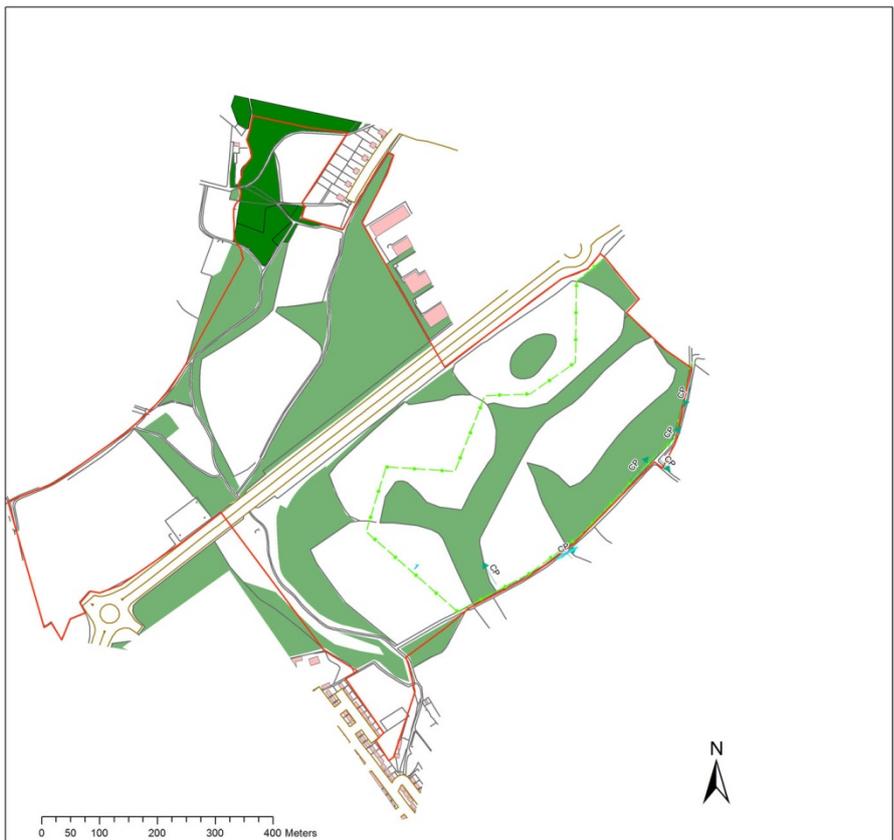
**Species**

→ CP

**Transects**

— 4

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Rockingham bat survey 2014.  
Transect results  
Transect Ref: 22



**Legend**

**Transect Results**

**Species**

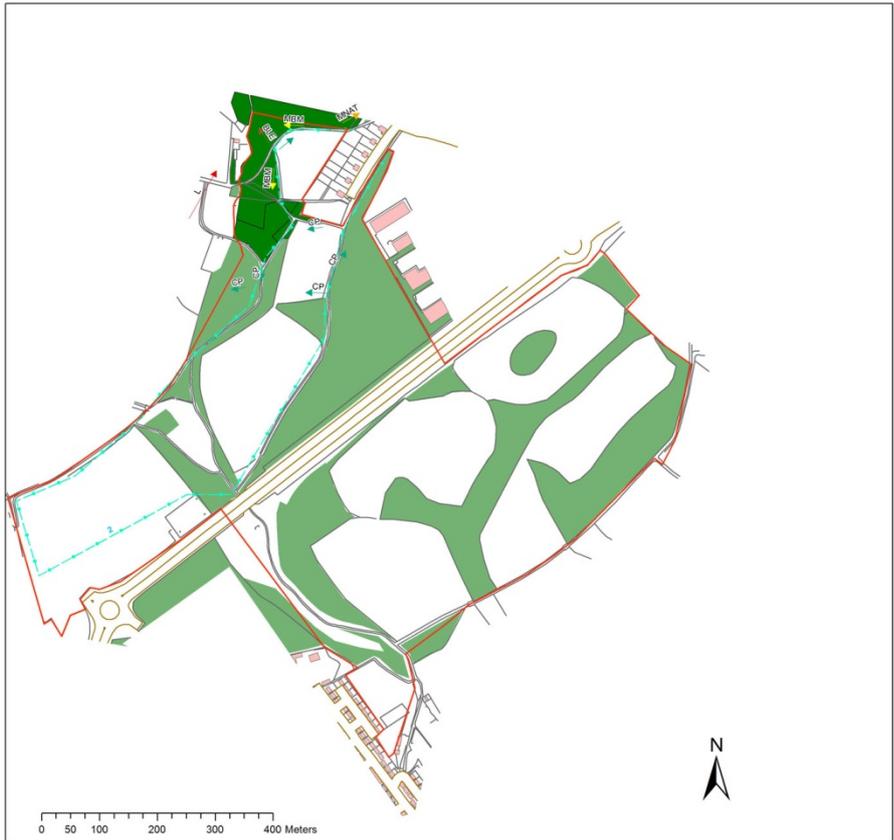
→ CP

**Transects**

— 1

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# Bat Survey: Rockingham 2014



Rockingham bat survey 2014.  
Transect results  
Transect Ref: 23



**Legend**

**Transect Results**

**Species**

- BLE
- CP
- L
- MBM
- MNAT

**Transects**

- - - 2

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Rockingham bat survey 2014.  
Transect results  
Transect Ref: 24



**Legend**

**Transect Results**

**Species**

- CP

**Transects**

- - - 3

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# Bat Survey: Rockingham 2014



Rockingham bat survey 2014.  
Transect results  
Transect Ref: 25



**Legend**

**Transect Results**

**Species**

→ CP

**Transects**

— 1

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Rockingham bat survey 2014.  
Transect results  
Transect Ref: 26



**Legend**

**Transect Results**

**Species**

→ BLE

→ CP

→ MBM

→ N

**Transects**

— 2

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# Bat Survey: Rockingham 2014



Rockingham bat survey 2014.  
Transect results  
Transect Ref: 27



**Legend**

**Transect Results**

**Species**

- CP
- L

**Transects**

- 3

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Rockingham bat survey 2014.  
Transect results  
Transect Ref: 28



**Legend**

**Transect Results**

**Species**

- CP

**Transects**

- 4

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# Bat Survey: Rockingham 2014



Rockingham bat survey 2014.  
Transect results  
Transect Ref: 29



**Legend**

**Transect Results**

**Species**

→ CP

**Transects**

— 4

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Rockingham bat survey 2014.  
Transect results  
Transect Ref: 30



**Legend**

**Transect Results**

**Species**

→ CP

**Transects**

— 1

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# Bat Survey: Rockingham 2014



Rockingham bat survey 2014.  
Transect results  
Transect Ref: 31



**Legend**

**Transect Results**

**Species**

- CP
- MBM

**Transects**

- 2

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Rockingham bat survey 2014.  
Transect results  
Transect Ref: 32



**Legend**

**Transect Results**

**Species**

- CP
- L

**Transects**

- 3

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# Bat Survey: Rockingham 2014



Rockingham bat survey 2014.  
Transect results  
Transect Ref: 33



**Legend**

**Transect Results**

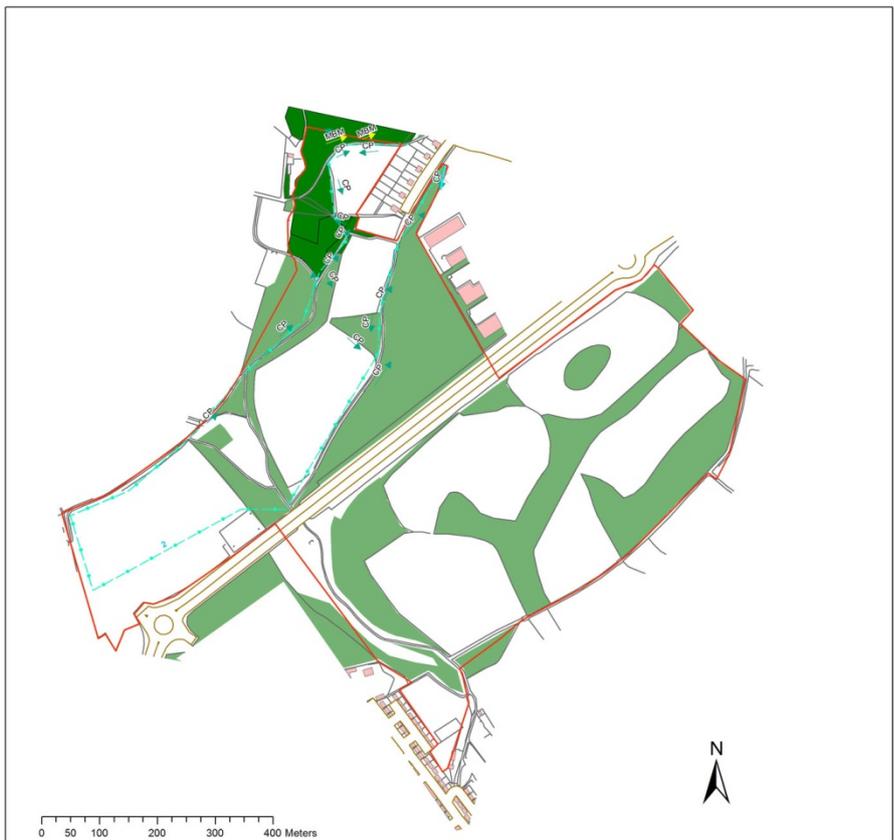
**Species**

→ CP

**Transects**

1

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Rockingham bat survey 2014.  
Transect results  
Transect Ref: 34



**Legend**

**Transect Results**

**Species**

→ CP

→ MBM

**Transects**

2

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