
BAT SURVEY REPORT

Land off Wakefield Road, Athersley,
Barnsley

Harworth Group



Applied Ecological Services Ltd
Ramshaw House, Ramshaw
County Durham
DL14 0NG

www.aes-ltd.com
info@aes-ltd.com
01388 835084

Field Investigations and Data

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1.0 INTRODUCTION

1.1 Applied Ecological Services Ltd. (AES-LTD) was commissioned by Harworth Group to undertake bat activity surveys within an area of land off Wakefield Road, Athersley, Barnsley, South Yorkshire S71 1NX. The bat surveys were carried out in accordance with current guidelines (Collins, 2016)¹. The bat surveys were undertaken by Caroline Hillier (NE survey licence 2015-15581-CLS-CLS) and David Gash.

SITE DESCRIPTION

1.2 The survey area (red line boundary) covers approximately 7.73ha (19.10 acres) and is located at grid reference SE 34736 08719 (approximate central point). The site is situated 2.44km north north east of the centre of Barnsley within a semi-rural setting. The centre of the site is at OS grid reference SE 34736 08719.

Figure 1: Site Location



1.3 Habitats within the survey area include improved pasture, semi-improved neutral grassland, swamp, amenity grassland, ephemeral/short perennial grassland, marshy grassland, a watercourse, scattered and dense scrub, hedgerows, fences, stone walls and bare ground. At the periphery there is an area of deciduous woodland to the south west of the site and an

¹ Collins J. (Ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London.

area of plantation woodland to the south, both are outside of the site boundary (third party trees), but the tree canopy overhangs the survey area.

PROPOSED WORKS

- 1.4 The development proposals are understood to include the redevelopment of the site to provide a 5.70ha (14.10 acres) residential development and associated infrastructure, open space and landscaping.

AIMS OF FIELD SURVEY

- 1.5 The objective of the survey was to determine the presence/absence of bats, if present where and how they were using the site (see Figure 1). The bat surveys were designed to collect the following information:

- The presence or absence of bats within the site boundary in or close proximity to the survey boundary;
- The presence of roosts or potential roost locations, and
- The assemblage of bat species using the site.

2.0 METHODS

SUMMARY OF SURVEY METHODS

- 2.1 A daytime survey of the site was undertaken in order to investigate the potential of the habitats on site to support bats. There were no buildings or mature trees within the survey boundary, so there were no opportunities for roosting bats within the site.

PRE-SURVEY DATA SEARCH

- 2.2 In order to compile existing baseline information for the site, relevant ecological information was requested from the following organisations which for the purposes of this report, included:

- Multi Agency Geographic Information for the Countryside (Magic) website;
- Sheffield Biological Records Centre (SBRC);
- South Yorkshire Bat Group

- 2.3 A 5km radius from the boundary of the site was searched for sites of International nature conservation importance, such as Special Areas of Conservation (SACs) and Special Protection Areas (SPAs). A 2km radius from the boundary of the site was searched for statutory sites of national, regional and local importance, such as Sites of Special Scientific Interest (SSSIs) and Local Nature Reserves (LNRs), and non-statutory designated sites such as Local Wildlife Sites (LWS) and also for records of protected and notable species, including bats. **Drawing 1** illustrates bat records within 2km of the site.

- 2.4 Further inspection, using colour 1:25,000 OS base maps (www.ordnancesurvey.co.uk) and aerial photographs from Google Earth (www.maps.google.co.uk), was also undertaken in order to provide additional context and identify any features of potential importance for nature conservation in the wider area.

SURVEYOR INFORMATION

- 2.5 The Initial inspection of the site was carried out by Charlotte Mercer MSc, BSc. Hons and Dr Caroline Hillier MCIEEM. Charlotte is principal ecologist and company director and Caroline is senior ecologist, both are experienced field biologists with Applied Ecological Services Ltd (AES-LTD). The bat surveys were led by Dr Caroline Hillier MSc BSc (Hons) MCIEEM senior

ecologist at AES-LTD, a member of Durham Bat Group and a licensed bat surveyor (2015-15581-CLS-CLS). Caroline has over 10 years' experience carrying out bat surveys.

FIELD SURVEYS

Habitat Survey

- 2.6 An ecological appraisal of the site enables the classification of features within the site for their suitability for roosting, commuting and foraging bats. Table 1 below is taken from Collins (2016) detailing what makes features on site more, or less suitable for bats.

Table 1: Potential Suitability of Proposed Development Sites.

Suitability	Description Roosting Habitats	Commuting And Foraging Habitat
Negligible	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	<p>A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and or suitable surrounding habitat to be used on a regular basis or by a large number of bats (i.e. unlikely to be suitable for maternity or hibernation).</p> <p>A tree of sufficient size and age to contain potential roost features (PRF) but with none seen from the ground or features seen only with limited roosting potential.</p>	<p>Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat.</p> <p>Suitable but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in parkland situation) or a patch of scrub.</p>
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but are unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).	<p>Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens.</p> <p>Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.</p>
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger number of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat	<p>Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge.</p> <p>High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaf</p>

		<p>woodland, tree-lined watercourses and grazed parkland.</p> <p>Site is close to and connected to known roosts.</p>
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2.7 A high potential building would typically be an older building situated close to high quality bat foraging habitats such as woodland, water features or substantial hedgerows. Buildings falling within this class will usually offer a variety of roosting opportunities suitable for use by a range of bat species. Conversely a low potential building will typically be well sealed and of modern construction, offering no or few clear access points or roosting opportunities. The risk of a building housing a bat roost is further reduced if located within an area of poor quality habitat such as hard standing or amenity grassland.

2.8 The surrounding habitat was assessed for its suitability as bat foraging or commuting habitat.

Activity surveys

2.9 A programme of 5 transect surveys were scheduled at the site as the development area is assessed as being of high foraging/commuting potential. The site has connectivity to better foraging/commuting habitat and there is good connectivity to the wider landscape with some fragmentation due to lit roads and being situated south and west of industrial / residential areas which do fragment some of the local habitat. The waterbody (swamp), scrub, hedgerows and woodland and woodland edges have the potential to provide foraging habitat and flyways for local bats. For the transect surveys from sunset, surveyors, equipped with bat detectors, walked a pre-arranged route around the habitat features within the site so that foraging/commuting bats could be detected. Bats were counted and the species, time and location of detected bats were noted, as was their direction of flight.

2.10 AES-Ltd staff were equipped with Echo Meter (EM3+) detectors which were used to record the calls of bats on site, these bat calls were transferred to Kaleidoscope for analysis of species composition. Elekon Batscanner or Batbox III bat detectors were used by the other surveyors to assist in bat detection. **Drawing 2** depicts a summary of bat activity across the site and shows the transect route taken by surveyors.

2.11 Static detectors (SM2+) were deployed at two fixed monitoring locations within the site on a monthly basis for five consecutive nights on each survey occasion between May and September. Detectors were programmed to simultaneously and automatically activate and

record ultrasonic activity 30 minutes before sunset and turn off 30 minutes after sunrise. This ensured that bat species which emerge early in the evening and return to roosts late, such as noctules, are included within the survey period. The location of the static detectors is shown on **Drawing 2**.

2.12 The surveys were carried out in May, June, July, August and September. Survey times are summarised in **Tables 2 and 3** and weather conditions for surveys undertaken summarised in **Tables 4 and 5**. A key for the Beaufort Scale is provided in **Table 6**.

Table 2: Transect Survey Times

Date	Sunset / Sunrise	Start Time	Finish Time
25 May 17	21:15	21:00	22:55
16 June 17	21:38	21:23	23:23
26 July 17	21:12	21:12	22:42
29 Aug 17	05:58	04:15	06:05
24 Sept 17	18:58	19:01	20:45

Table 3: Automated Survey Times

Date	Sunset / Sunrise	Start Time	Finish Time
24/25 May 17	21:14 / 04:51	20:44	05:21
25/26 May 17	21:15 / 04:50	20:45	05:20
26/27 May 17	21:17 / 04:49	20:47	05:19
27/28 May 17	21:18 / 04:48	20:48	05:18
28/29 May 17	21:20 / 04:47	20:50	05:17
19/20 June 17	21:41 / 04:37	21:11	05:01
20/21 June 17	21:41 / 04:32	21:11	05:02
21/22 June 17	21:41 / 04:32	21:11	05:02
22/23 June 17	21:41 / 04:32	21:11	05:02
23/24 June 17	21:42 / 04:33	21:12	05:03
06/07 July 17	21:37 / 04:42	21:07	05:12
07/08 July 17	21:36 / 04:43	21:06	05:13
08/09 July 17	21:36 / 04:44	21:06	05:13
09/10 July 17	21:35 / 04:45	21:05	05:14
11/12 July 17	21:35 / 04:46	21:05	05:14
22/23 Aug 17	20:19 / 05:57	19:49	06:27
23/24 Aug 17	20:16 / 05:58	19:46	06:28
24/25 Aug 17	20:14 / 06:00	19:44	06:30

25/26 Aug 17	20:12 / 06:02	19:42	06:32
26/27 Aug 17	20:09 / 06:04	19:39	06:34
13/14 Sept 17	19:25 / 06:36	18:55	07:06
14/15 Sept 17	19:23 / 06:38	18:53	07:08
15/16 Sept 17	19:20 / 06:40	18:50	07:10
16/17 Sept 17	19:18 / 06:41	18:48	07:11
17/18 Sept 17	19:15 / 06:43	18:45	07:13

Table 4: Transect Survey Weather Conditions

Date	Start Temp °C	Finish Temp °C	Wind speed / direction	Cloud cover %	Precipitation (mm)
25 May 17	21	21	B2 /SE	0	0
16 June 17	23	22	B2 / W	0	0
26 July 17	17	15	B3 /SW	40	0
29 Aug 17	13	14	B2 / W	0	0
24 Sept 17	16	15	B2 / SE	100	0

2.13 There were insects flying during all surveys.

Table 5: Automated Survey Weather Conditions

Date	Temp °C		Wind speed		Precipitation (mm)
	Sunset	Sunrise	Sunset	Sunrise	
24/25 May 17	18	10	B3	B1	0
25/26 May 17	18	14	B2	B1	0
26/27 May 17	18	11	B3	B2	0
27/28 May 17	18	15	B2	B2	0
28/29 May 17	16	12	B2	B2	0
19/20 June 17	21	14	B2	B2	0
20/21 June 17	15	14	B2	B2	0
21/22 June 17	23	18	B2	B2	0
22/23 June 17	16	14	B3	B3	0
23/24 June 17	17	15	B3	B3	0
06/07 July 17	19	15	B1	B3	0
07/08 July 17	16	11	B2	B2	0
08/09 July 17	15	12	B2	B2	0
09/10 July 17	16	12	B2	B1	0
11/12 July 17	15	12	B3	B1	0
22/23 Aug 17	20	16	B3	B3	0
23/24 Aug 17	17	13	B2	B2	0
24/25 Aug 17	16	11	B2	B1	0

25/26 Aug 17	17	14	B1	B2	0
26/27 Aug 17	16	10	B2	B1	0
13/14 Sept 17	11	9	B3	B3	0
14/15 Sept 17	13	10	B1	B2	0
15/16 Sept 17	11	10	B1	B4	0
16/17 Sept 17	10	10	B2	B2	0
17/18 Sept 17	13	9	B3	B3	0

Table 6: Key for Beaufort Scale

Beaufort wind scale	Limits of wind speed Metres per second	Descriptive terms
0	<1	Calm
1	1-2	Light air
2	2-3	Light breeze
3	4-5	Gentle breeze
4	6-8	Moderate breeze
5	9-11	Fresh breeze
6	11-14	Strong breeze
7	14-17	Near gale
8	17-21	Gale
9	21-24	Severe gale
10	25-28	Storm
11	29-32	Violent storm
12	33+	Hurricane

Data analysis

- 2.14 The RAW files recorded by the EM3+ and SM2+ were analysed using Wildlife Acoustics' Kaleidoscope post-processing software. The free version of this software can convert from WAC, WAV and Zero Crossing (ZC) formats whilst filtering out unwanted signals. Bat calls recorded in the field were analysed using AnaLook Analysis software. The output is recorded as WAC files which were analysed to produce sonograms and frequency spectra. The heterodyne channel also provided further audible verification of identity, especially for species with distinctive heterodyne calls.

3.0 RESULTS

PRE-SURVEY DATA SEARCH

- 3.1 All bat species present in Barnsley are a local priority. Nine species are listed which are common pipistrelle, soprano pipistrelle, Daubenton’s, noctule, brown long-eared Natterer’s, Brandt’s, whiskered and Leisler’s. Soprano pipistrelle, brown long-eared, and noctule bats are priority species in the UK BAP 2007 and Section 41 species under the NERC Act (2006), and remain national priority species for Biodiversity 2020.
- 3.2 Pipistrelle bats are the most abundant and widespread bat species in the UK, but are thought to have undergone a significant decline in numbers in the last century. Estimates from the National Bat Colony Survey suggest a population decline of approximately 73% between 1978 and 1993. The current pre-breeding population estimate for the UK stands at approximately 2,000,000. The problems of estimating population trends have been compounded by the recent discovery that there are 3 distinct species of pipistrelle bat in the UK.

DESIGNATED SITES

- 3.3 The desktop assessment indicates that there are no sites of International Nature Conservation Importance within 5km of survey area and one statutory site of Local Conservation Interest within 2km of the survey area (**Table 7**).

Table 7: Statutory Designated Sites

Designation	Site Name & Description	Grid Ref.	Distance & Direction from Site
LNR	Dearne Valley Park Acidic oak woodland with mosaic of wetland habitats	SE 360 069	1.40km SSE

- 3.4 Local Nature Reserve (or LNR) is a statutory designation made under Section 21 of the National Parks and Access to the Countryside Act 1949, and amended by Schedule 11 of the Natural Environment and Rural Communities Act 2006, by principal local authorities. LNRs are designated for their nature conservation interest, local importance for education or research, and they provide an opportunity for informal enjoyment of nature by the public.

NON-STATUTORY DESIGNATED SITES

3.5 There are 2 non-statutory designated sites (Local Wildlife Sites) within a 2km radius of the boundary of the proposed development site (**Table 8**).

3.6 Local Wildlife Sites (LWS) are areas of land which are rich in wildlife and are equivalent to Sites of Importance for Nature Conservation (SNCI). Criteria for selection take in threats and declines in certain species, national priorities and local distinctiveness. The LWS system is managed, in partnership, by The Wildlife Trust, local authorities, statutory nature conservation agencies, local naturalists and landowners. Local Wildlife Sites were previously known as County Wildlife Site (CWS) in the past. LWS are non-statutory sites of County level importance, and protected under planning policies of the component district authorities.

Table 8: Non-Statutory Designated sites

Designation	Site Name & Description	Grid Ref.	Distance & Direction from Site
LWS	Barnsley Canal at Wilthorpe Woodland / wet pasture & standing water	SE 337 084	0.37km SE to 1.94km E
LWS	Old Mill Lane Deciduous woodland, wetland and grassland	SE 348 075	0.71km SE

3.7 The statutory and non-statutory sites in the wider area will provide excellent foraging for local bats.

BAT RECORDS

3.8 SBRC returned 19 records of bats from between the years 2007 -2013. Seven of the records were of Daubenton's bats from Old Mill Lane LWS - only one of these records was of a roost. Six of the records were from Barnsley Canal at Wilthorpe LWS (Daubenton's and common pipistrelle). Three records were from the River Dearne at Wilthorpe Marsh 1.17km to the east of the site species present here were soprano pipistrelle and common pipistrelle. The remaining records were of common pipistrelle droppings from a private address 1.75km to the south east of the site boundary and one of a noctule bat commuting at North Gawber

3.9 SY bat group returned 15 roost records; the closest record (x2 records for same roost) was from 2010 for a private house, species unknown, 0.83km to the east of the site boundary. 10 of the records were for the same roost spanning between the years 2010 – 2013, a roost

of Daubenton's bats at a culvert / bridge on the River Dearne at Old Mill Lane. One of the records was for a common pipistrelle roost from 2014 from a private house located 1.98km to the south of the site boundary. Two records were from Monk Bretton, both private houses from 2007 and 2009 respectively; the first a roost of common pipistrelle located 1.74 km to the south east and the second of a roost of pipistrelle species located 2.01 km to the south east of the site. Nine of the records were of bat care i.e. for when a bat had been injured and collected and were from various locations. The rest of the records were of bats foraging or commuting, with the majority of the records from the River Dearne or Wilthorpe Marsh. Species represented in the records were common and soprano pipistrelle, Daubenton's, noctule and one Leiser's record (Wilthorpe Road, 2.39km the south south west of the site boundary). Bat records are illustrated on **Drawing 1**.

EPS LICENCE APPLICATIONS

- 3.10 A search on Magic website for granted European Protected Species Applications indicates that there is one licence applications relating to bats within 2km of the site. The application is EPSM 2013-6477 for the destruction of a resting place of common pipistrelle bats between 18th October 2013 and 30th September 2014 1.44km to the south, south west of the site.

FIELD SURVEYS

Activity surveys

- 3.9 Bat activity across the site was variable with low to moderate levels of bat activity noted. Bats recorded during the surveys included common pipistrelle, soprano pipistrelle, noctule, *Myotis sp.* and brown long-eared bat. Sonograms of species recorded are included in **Appendix 2**. **Drawing 2** summarises bat activity recorded during the transect surveys.

Activity survey – 25th May 2017

- 3.10 The first survey commenced at 20:00 under good weather conditions. 16 bats were recorded during the survey. The first bats recorded were two common pipistrelle (Ppip) foraging along the woodland edge in the western corner of the site at 21:49, 34 minutes after sunset, until 21:57. At 22:02 a common pipistrelle was noted foraging along the central hedgerow. A noctule (Nnoc) was then noted foraging to the south west of East Gawber Farm at 22:08 then a common and soprano pipistrelle (Ppyg) were noted foraging along the hedgerow at the north of the central hedgerow and a common pipistrelle was noted foraging around the scrub at 22:25 then 22:28. At 23:33 a common and soprano pipistrelle were noted foraging

near the sewerage outfall to the south east of the site and slightly further south at 22:42. At 22:46 a common and soprano pipistrelle were noted foraging along the hawthorn at the field edge and then to the north of the car wash and bus depot at 22:49. The last bats recorded were a soprano and common pipistrelle foraging around the north of the small northern field at 22:52. The survey ended at 22:55. Low levels of bat activity were recorded with a maximum of two bats seen at any one time.

Activity survey – 16th June 2017

- 3.11 The survey started at 21:23 under good weather conditions. 20 bats were recorded during the survey. The first bat recorded was a common pipistrelle foraging at the northern end of the central hedgerow at 22:15, 37 minutes after sunset, then 3 minutes later at 22:18 a noctule was noted foraging to the south east of East Gawber Farm. There was sporadic foraging around the dense and scattered scrub which runs through the site including two common pipistrelle at 22:23, one soprano pipistrelle at 22:25, one *Myotis sp.* (Msp) at 22:25 and two common pipistrelle at 22:26. Along the central hedgerow a soprano pipistrelle was noted foraging at 22:29, common pipistrelle at 22:29 and 22:33 and *Myotis sp.* at 22:33. Common pipistrelle were noted foraging back and forth along the woodland edge to the south west of the site at 22:38 and 22:43 (2 bats). Within the south of the site two common pipistrelle were noted foraging near the pond at 22:47, at 22:53 a noctule was noted foraging high above the field and at 22:53 a brown long-eared bat (*Paur*) and a common pipistrelle were recorded foraging along the tree line on the south eastern boundary. Low levels of bat activity were recorded with a maximum of two bats seen at any one time. The survey finished at 23:23.

Activity survey – 26th July 2017

- 3.12 The survey started at 21:12 under good weather conditions. The first bat recorded was a common pipistrelle which was heard but not seen at 21:48, 36 minutes after sunset in the south west corner of the site and again at 21:49. At 21:57 a common pipistrelle was noted foraging back and forth along the woodland edge on the south west boundary of the site. At 21:52 a noctule was heard but not at the woodland edge then at 21:53 a common pipistrelle was recorded foraging at the woodland edge and over the woodland then at 21:55 a noctule was recorded foraging above the woodland. Towards the central hedgerow a common pipistrelle was recorded foraging at the woodland edge at 21:55 and 21:56 then a noctule was heard but not seen in a similar location. At 21:59 a noctule was observed foraging just above the central hedgerow and low across the field to the west of the hedgerow and did so

for several minutes. This is slightly unusual behaviour as noctules are usually species that are considered to typically forage at a height. A common pipistrelle was then noted foraging back and forth along the central hedgerow at 22:00 and 22:02 and over the scrub to the east of the central hedgerow at 22:12, 22:14 and 22:15 and at 22:17 3 common pipistrelle were noted foraging north to south along the central hedgerow. At 22:38, 22:40 common pipistrelle were recorded foraging in the small field to the north east of East Gawber Farm, the last bat recorded was in this northern field at 22:41. The survey finished at 22:42 an hour and 30 minutes after sunset. There were moderate levels of bat activity with a maximum of three bats noted at any one time.

Activity survey – 29th August 2017

- 3.13 The survey started at 04:15 one hour and fifty five minutes before sunrise under suitable weather conditions. The first bat recorded was a common pipistrelle foraging around the scrub to the north of the car wash at the eastern boundary of the site at 04:20. Then at 04:27 a common pipistrelle was noted foraging in the south east corner of the site, then at 04:33 a common and soprano pipistrelle were recorded foraging around scattered scrub associated with the wet depression that runs through the site. At 04:41 a common pipistrelle was noted foraging at the southern end of the central hedgerow and at 04:41 and 04:48 a common pipistrelle was noted foraging along the woodland edge to the south west of the site. At 05:01 a noctule was noted foraging over the western pasture field and at 05:06 a *Myotis sp.* was foraging over the central hedgerow and adjacent scrub. Common pipistrelle were noted foraging along the central hedgerow at 05:11 and 05:20 and a soprano pipistrelle at 05:20. Common pipistrelle were noted foraging over the scrub at 05:34 and 05:39. The last bat recorded was a common pipistrelle at 05:47 foraging over the small field to the north of the site. There were low levels of bat activity with a maximum of one bat seen by surveyors at any one time. The survey finished at 06:05 in daylight.

Activity survey – 24th September 2017

- 3.14 The survey started at 19:01, at sunset under good weather conditions. The first bat recorded was a common pipistrelle foraging along the woodland edge in the south west corner of the site at 19:23, 22 minutes after sunset. The next bat recorded was a common pipistrelle foraging back and forth along the central hedgerow at 19:36 then at 19:52 foraging over the scrub to the east of the central hedgerow. At 20:03 a common pipistrelle was noted foraging at the woodland edge to the south of the central hedgerow. A soprano

pipistrelle was noted foraging around the sewage outfall channel at 20:14 then at 20:59 a common pipistrelle was foraging around scrub to the south of the entrance road at 20:29. The last bat recorded was a common pipistrelle foraging over the small field to the north of the site at 20:43. The survey finished at 20:45 one hour and 45 minutes after sunset. There were low levels of bat activity with a maximum of one bat seen by surveyors at any one time.

AUTOMATED SURVEY

3.15 Static detectors (SM2+) were deployed each month (May – September) at two fixed monitoring points. Detector A was placed approximately half way down the mature hedgerow feature that runs in a north south direction down the centre of the site at grid reference SE 34725 08697 and Detector B was placed in scrub habitat close to the swamp area in the south of the site at grid reference SE 34731 08592. Bats calls characteristic of the following species were recorded throughout the course of the surveys: common pipistrelle (Ppip), soprano pipistrelle (Ppyg) and noctule (Nnoc).

3.16 **Table 9** summarises the data obtained from each detector.

Table 9: Summary Data from Automated Surveys

Date	Detector ID	No. of Bat passes			Minutes after sunset first bat recorded	Minutes before sunrise last bat recorded	Total number of bat passes per night
		Ppip	Ppyg	Nnoc			
24/25 May 17	A	41			39	63	43
	B	2			51	392	
25/26 May 17	A	6			99	55	6
	B	0					
26/27 May 17	A	4			271	92	4
	B	0					
27/28 May 17	A	3			308	68	3
	B	0					
28/29 May 17	A	8			62	69	8
	B	0					
19/20 June 17	A	259			48	53	462
	B	200		3	28	47	
20/21 June 17	A	15			42	48	136
	B	121			20	40	
21/22 June 17	A	13			29	45	119
	B	99		7	24	40	
22/23 June 17	A	587			30	38	683
	B	87	9		26	33	
23/24 June 17	A	256		1	53	44	326
	B	69			19	39	
06/07 July 17	A	81			54	47	220
	B	131		8	27	35	
07/08 July 17	A	64			50	143	149
	B	85			31	40	

08/09 July 17	A	12			66	50	47
	B	35			31	113	
09/10 July 17	A	112			50	60	192
	B	80		2	25	48	
11/12 July 17	A	20			65	331	24
	B	4			27	401	
22/23 Aug 17	A	6			86	256	99
	B	91		2	3	27	
23/24 Aug 17	A	16			96	169	36
	B	20			44	270	
24/25 Aug 17	A	5			120	186	17
	B	12			50	35	
25/26 Aug 17	A	146			79	119	167
	B	22	1		12	93	
26/27 Aug 17	A	24			72	362	32
	B	8			64	248	
13/14 Sept 17	A	0					6
	B	4		2	33	493	
14/15 Sept 17	A	10			58	508	25
	B	15			29	571	
15/16 Sept 17	A	2			76	602	11
	B	9			18	617	
16/17 Sept 17	A	21			52	541	33
	B	12			20	616	
17/18 Sept 17	A	8			65	541	49
	B	41			18	499	

3.17 During the May automated surveys all call recorded on the static detectors were characteristic of common pipistrelle bats. Although recorded on site each night, common pipistrelle was only recorded on the first night on detector B (near to the swamp). The most bat passes were recorded on detector A (central hedgerow) on the 24/25th May; 41 calls were recorded on this night / following morning period. The first bat on site throughout the survey period was at 21:53, 39 minutes after sunset on the 24th May. Bats were not recorded close to sunrise. A mean of 13 bat passes per night were recorded throughout the May survey period.

3.18 During the June automated surveys the majority of passes were made by bats with calls characteristic of common pipistrelle (99%), and this species was recorded each night. Calls characteristic of noctule bats were recorded on three nights and soprano pipistrelle rarely which was recorded on just one night out of the 5 day period. The most bat passes were recorded on detector A (central hedgerow) on the 22/23rd June. First bats recorded were always characteristic of common pipistrelle and the first bat on site throughout the survey period was at 22:00 19 minutes after sunset on the 24th June. Bats were not recorded close to sunrise and calls made by last bats on site were again characteristic of common

- pipistrelle. A mean of 345 bat passes per night were recorded throughout the June survey period.
- 3.19 During the July automated surveys the majority of passes were made by bats with calls characteristic of common pipistrelle (98%), and this species was recorded each night. Calls characteristic of noctule bats were recorded on two nights. The most bat passes were recorded on detector B on the 06/07th July. First bats recorded were always characteristic of common pipistrelle and the first bat on site throughout the survey period was at 22:04, 27 minutes after sunset on the 7th July. Bats were not recorded close to sunrise and calls made by last bats on site were again characteristic of common pipistrelle. A mean of 126 bat passes per night were recorded throughout the June survey period.
- 3.20 During the August automated surveys the majority of passes were made by bats with calls characteristic of common pipistrelle (99%), and this species was recorded each night. Calls characteristic of noctule bats and soprano pipistrelle bats were rare throughout the survey session and these calls were recorded on just one night. The most bat passes (146) were recorded on detector A (central hedgerow) on the 25/26th August. First bats recorded were always characteristic of common pipistrelle and the first bat on site throughout the survey period was recorded on Detector B at 20:22 just three minutes after sunset on the 22nd August, an early bat was again recorded on Detector B on the 25th August at 20:24, 12 minutes after sunset. Calls made by last bats on site were again characteristic of common pipistrelle. The last bat pass on site was recorded on detector B on the 23rd of August at 05:30, 27 minutes before sunrise. A mean of 70 bat passes per night were recorded throughout the June survey period.
- 3.21 During the September automated surveys the majority of passes were made by bats with calls characteristic of common pipistrelle (98%), and this species was recorded each night (although not on Detector A on the first night). Calls characteristic of noctule bats were recorded rarely on just one night (x2 passes). The most bat passes were recorded on detector B on the 17th / 18th September (41 passes). First bats recorded were always characteristic of common pipistrelle and the first bat on site throughout the survey period was at 19:38, 18 minutes after sunset on the 15th September and again on Detector B at on the 17th September at 19:33 again 18 minutes after sunset. Bats were not recorded close to sunrise and calls made by last bats on site were again characteristic of common pipistrelle. A mean of 25 bat passes per night were recorded throughout the June survey period.

4.0 SITE ASSESSMENT

CONSTRAINTS ON SURVEY INFORMATION

- 4.1 There were no constraints associated with the survey information; the site was accessible and all survey work was led by suitably qualified/licensed ecologists during the optimum season for recording bat activity, and was undertaken within recommended weather parameters (BCT, 2011). This avoided periods of heavy rain, strong winds (maximum gentle breeze) and dusk temperatures below 7°C (minimum dusk starting temperature 16°C, pre-dawn temperature 14°C). During the July automated surveys there was a thunderstorm on the afternoon of the 6th July, however this had passed prior to emergence time and bat calls were recorded on the static detectors.

CONSTRAINTS ON EQUIPMENT USED

- 4.2 There were no constraints associated with the equipment.

POTENTIAL IMPACTS OF THE DEVELOPMENT

Designated sites

- 4.3 No impact is expected on the statutory site as a result of the housing development. Dearne Valley Park LNR lies 1.4km to the south south east of the site and there is no feasible mechanism by which the housing development could have a negative impact on this site. There are 2 non-statutory designed sites, the nearest being Barnsley Canal at Wilthorpe 0.37km to the south east at its nearest point and Old Mill Lane 0.71km to the south east. No impact is expected on either of the Local Wildlife Sites as a result of the housing development.

Roosts

- 4.4 The impact on roosting bats as a result of development of the site is assessed as negligible. There are no potential roost sites within the survey area, any impact is not likely to be significant and is unlikely to have a negative impact on the conservation status of bats in the local area.

Foraging and commuting habitat

- 4.5 The illustrative layout design of the proposed residential development involves retaining the substantial tree belt to the south eastern and south western boundary of the site with a sizeable buffer of greenspace along these boundaries and a wedge of the area with a valley

landform being retained as open space within the site. These areas were important areas for local bats, with low to moderate levels of foraging. The central hedgerow will be lost to accommodate the development. This area along with the scrub to the east and the woodland area were the main areas of bat activity within the survey area. This could have a moderate impact on the foraging pattern of local bats and have a negative impact on foraging bats due to fragmentation of habitat. Mitigation for the loss of this hedgerow will involve the establishment of a 10m wide woodland buffer comprising native species of local provenance to establish alternative foraging and commuting routes for local bats prior to the development of the site. This woodland buffer will link the site to areas of semi-improved and unimproved grassland and scrub to the north west of the site and maintain habitat continuity across the landscape.

LEGISLATION AND POLICY GUIDANCE

- 4.6 This legal information is a summary and intended for general guidance only. It is recommended that the original documentation is referred to for detailed and definitive information. Web addresses are located in the References section of this report.

HABITAT REGULATIONS

- 4.7 The Conservation of Habitats and Species (Amendment) Regulations 2012 SI No 1927 (Habitat Regulations) transpose into UK law Council Directive 92/43/EEC of 21st May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora (often referred to as the 'Habitats [and Species] Directive'). All bats are listed on Annex IV of the Directive and some are also listed on Annex II. The latter annex relates to the designation of Special Areas of Conservation (SACs) and covers greater and lesser horseshoe bats, barbastelle and Bechstein's bat. Inclusion on Annex IV ('European protected species') means that member states are required to put in place a system of strict protection as outlined in Article 12; this is done through inclusion on Schedule 2 of the Regulations. Regulation 39 makes it an offence to:
- Deliberately capture or kill a bat [Regulation 39(1)(a)]
 - Deliberately disturb a bat [R. 39(1)(b)]
 - Damage or destroy a breeding site or resting place of a bat [R. 39(1)(d)]
 - Keep, transport, sell or exchange, or offer for sale or exchange a live or dead bat or any part of a bat [R. 39(2)]
- 4.8 Licences permit otherwise unlawful activities, and can only be granted for certain purposes.

WILDLIFE & COUNTRYSIDE ACT 1981

- 4.9 All bat species are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and are therefore subject to provisions under Section 9 which makes it an offence to:
- Intentionally kill, injure or take a bat [Section 9(4)(a)]
 - Possess or control any live or dead specimen or anything derived from a bat [Section 9(2)]
 - Intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by a bat [Section 9(3)]
 - Intentionally or recklessly disturb a bat while it is occupying a structure or place that it uses for that purpose [Section 9(4)(b)]
- 4.10 The addition of reckless destruction or disturbance was also made through Schedule 12 of the 2000 CRoW Act.
- 4.11 All wild birds are protected under Section 1 of the Wildlife & Countryside Act (1981), as amended when they are nesting. Some species are given additional protection under part 1 of the act where it is also an offence to intentionally or recklessly disturb the birds close to their nest during the breeding season. Violation of the law can attract fines up to £5,000 per offence and/or a prison sentence of up to six months. Council Directive 2009/147/EC on the conservation of wild birds (the 'Birds Directive') provides for the conservation and management of all wild bird species naturally occurring in the European Union, their nests, eggs and habitats. The Birds Directive bans activities that directly threaten birds (e.g. deliberate killing and destruction of nests and young), regulates hunting of selected species, bans non-selective and large scale killing of birds, and promotes research for bird conservation and management.
- 4.12 Article 4(4) of the Birds Directive requires that member states "should strive to avoid pollution or deterioration of habitats." The Conservation of Habitats and Species (Amendment) Regulations 2012 provide a fuller transposition of the Birds Directive into English law. Regulation 8 introduces a new Regulation 9A to the Habitats Regulations for duties of appropriate authorities in relation to wild bird habitat. Regulation 9A(3) addresses the transposition of Article 2 of the Birds Directive, while Regulation 9A(8), requiring competent authorities to "use all reasonable endeavours" to "avoid any pollution or deterioration of habitats of wild birds."

4.13 In summary, it is an offence to:

- Intentionally kill, injure or take any wild bird or their eggs or nests (with certain exceptions) and disturb any bird species listed under Schedule 1 to the Act, or its dependent young while it is nesting;
- Intentionally kill, injure or take any wild animal listed under Schedule 5 to the Act; intentionally or recklessly damage, destroy or obstruct any place used for shelter or protection by any wild animal listed under Schedule 5 to the Act; intentionally or recklessly disturb certain Schedule 5 animal species while they occupy a place used for shelter or protection.

NATIONAL PLANNING POLICY FRAMEWORK (NPPF)

4.14 The NPPF outlines the Governments national planning policies. The NPPF places an emphasis on sustainable development, encouraging the re-use of land that has previously been developed over using land that has a higher environmental value and by minimising impacts on biodiversity. It states that developments should aim to conserve or enhance biodiversity and encourages opportunities to incorporate biodiversity in and around developments.

4.15 In England the National Planning Policy Framework (NPPF) references the ODPM Circular 06/2005 (Biodiversity and Geological Conservation - Statutory Obligations and Their Impact Within The Planning System) which states that 'The presence of a protected species is a material consideration when a planning authority is considering a development proposal that, if carried out, would be likely to result in harm to the species or its habitat'.

BIODIVERSITY ACTION PLANS

4.16 The original objective of the UK Biodiversity Action Plan (UKBAP) was to fulfil the requirements of the Rio Convention on Biological Diversity in 1992, to which the UK is a signatory. A list of national priority species and habitats has been produced with specific action plans defining the measures consider necessary to ensure their conservation. Regional and local BAPs have also been developed for species/habitats of nature conservation importance both regionally and locally.

4.17 National BAP species of bat are barbastelle bat *Barbastella barbastellus*, Bechstein's bat *Myotis bechsteinii*, noctule *Nyctalus noctula*, soprano pipistrelle *Pipistrellus pygmaeus*, brown long-eared bat *Plecotus auritus*, greater horseshoe bat *Rhinolophus ferrumequinum* and lesser horseshoe bat *Rhinolophus hipposideros*. All bat species present in Barnsley are a

local priority. Nine species are listed which are common pipistrelle, soprano pipistrelle, daubenton's, noctule, brown long eared natterer, brandt's, whiskered and Leiser.

LOCAL PLANS

- 4.18 District and Local Councils have Local Plans and other policy documents that include targets and policies which aim to maintain and enhance biodiversity through the planning system.

5.0 RECOMMENDATIONS AND MITIGATION

FURTHER SURVEY

- 5.1 No further survey work is proposed at this site. If there is significant time lapse between survey and planning it may be necessary to update surveys.

MITIGATION MEASURES

Mitigation for roosting habitat

- 5.2 None required on site. It is good practice to enhance/introduce roosting opportunities for bats in new developments. It is therefore recommended that roosting opportunities are incorporated into a proportion of the new dwellings.

Proposed mitigation for foraging and commuting habitat

- 5.3 To minimise impact on foraging and commuting bats a sympathetic lighting strategy which avoids strong illumination of the woodland edge and tree lines is recommended. The Institute of Lighting Engineers and The Bat Conservation Trust (BCT & ILE 2008) have produced guidance on lighting to minimise impact on bats and an excerpt is reproduced below.

2. FORAGING AND COMMUTING

Type of lamp (light source)

The impact on bats can be minimised by the use of low pressure sodium lamps or high pressure sodium instead of mercury or metal halide lamps where glass glazing is preferred due to its UV filtration characteristics.

Luminaire and light spill accessories

Lighting should be directed to where it is needed and light spillage avoided. This can be achieved by the design of the luminaire and by using accessories such as hoods, cowls, louvres and shields to direct the light to the intended area only. Planting can also be used as a barrier or manmade features that are required within the build can be positioned so as to form a barrier.

Lighting column

The height of lighting columns in general should be as short as is possible as light at a low level reduces the ecological impact. However, there are cases where a taller column will enable light to be directed downwards at a more acute angle and thereby reduce horizontal spill. For pedestrian lighting this can take the form of low level lighting that is as directional as possible and below 3 lux

at ground level. The acceptable level of lighting may vary dependent upon the surroundings and on the species of bat affected.

Predicting where the light cone and light spill will occur

There are lighting design computer programs that are widely in use which produce an image of the site in question, showing how the area will be affected by light spill when all the factors of the lighting components listed above are taken into consideration. This should be a useful tool to inform the mitigation process.

Light levels

The light should be as low as guidelines permit. If lighting is not needed, don't light.

Timing of lighting

The times during which the lighting is on should be limited to provide some dark periods. Roads or trackways in areas important for foraging bats should contain stretches left unlit to avoid isolation of bat colonies. These unlit stretches should be 10 metres in length either side of commuting route.

Habitat Enhancement

- 5.4 Habitat enhancement within the development will include preventing sewage effluent entering the pond to the south of the site therefore improving water quality and thus freshwater invertebrate diversity for foraging bats. The master plan also states that a 10m wide woodland buffer will be created to reduce the visual impact of the development and provide new foraging and commuting habitat for local bats. Retaining and gapping up sections of hedgerow within the site where possible is also noted.

Bat box

- 5.5 An excellent way to enhance habitat for bats is to introduce new roosting habitat into the new builds. The Habibat bat box (<http://www.habibat.co.uk/>) is recommended by the Bat Conservation Trust for enhancing homes for bats. Manufactured to suit any existing brick or stonework finish. Unobtrusive and aesthetically pleasing, Habibats can be joined side by side to increase the roost space. This box is made to order and faced in brick to match your building. Facing products include brick, granite, slate, tile timber, stone, masonry and terracotta or they can be bespoke if provided with a specific facing material.
- 5.6 It is recommended that a habibat bat box is incorporated into the south western aspect of four of the houses situated adjacent to the woodland edge to the south west of the site to

enhance the roosting opportunities for local bats. It is recommended that they are not positioned over windows or doors and that they are at a height of 3 – 5m from the ground. In addition two 2F Schwegler bat boxes will be placed in trees to the east of the site.



Habat bat box

MITIGATION LICENCES

- 5.7 A NE protected species licence is not required.

6.0 SUMMARY

- 6.1 There is one statutory site within 2km of the proposed development and 2 non statutory sites. No significant negative impacts are expected on any of the statutory and non-statutory sites as a result of the proposed residential development.
- 6.2 There were 16 records of roosts within a 2km radius of the site. The closest was from 2010 for a private house 0.83km to the east of the site boundary although the species of bat is reported as unknown. 10 of the records were from the same roost – a daubenton’s roost at a culvert / bridge on the River Dearne at Old Mill Lane. All the other records were over 1.5km distant from the site. Bat species reported in the records include common pipistrelle, daubenton’s, soprano pipistrelle, noctule, and one Leiser’s record (Wilthorpe Road, 2.39km the south south west of the site boundary).
- 6.3 There were no structures within the site that had the potential to support roosting bats. No impact on roosting bats was likely as a result of the proposed development.
- 6.4 Bat activity across the site was variable, activity across the site was generally low with some episodes of moderate bat activity. Activity mostly associated with the central hedgerow and adjacent scrub, woodland edge and over the sewage outfall. Most of the bats were common pipistrelle with lower numbers of soprano pipistrelle and noctule and rarely recorded brown long-eared bats and *Myotis sp.*
- 6.5 To mitigate for the loss of the central hedgerow it was recommended that a bat flyway was created along the north western boundary of the site before any works were undertaken within the site. The illustrative masterplan indicates that the flyway will be a 10m wide wooded buffer along the north western boundary to maintain habitat continuity from north east to south west and to link with grassland and scrub habitats to the west of the site.
- 6.6 A lighting strategy was recommended to avoid impacting on foraging and commuting bats.
- 6.7 In line with best practice, recommendations were made to enhance roosting habitat for bats as part of the development of the site.

7.0 REFERENCES

Collins J. (Ed.) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn). The Bat Conservation Trust, London.

UK LEGISLATION AND POLICY WEB ADDRESS:

Conservation of Habitats and Species Regulations 2010:

http://www.opsi.gov.uk/si/si2010/uksi_20100490_en_1

Wildlife and Countryside Act 1981:

www.opsi.gov.uk/RevisedStatutes/Acts/ukpga/1981/cukpga_19810069_en_1

Countryside and Rights of Way Act 2000:

www.legislation.hmso.gov.uk/acts/acts2000/20000037

Natural Environment and Rural Communities Act 2006:

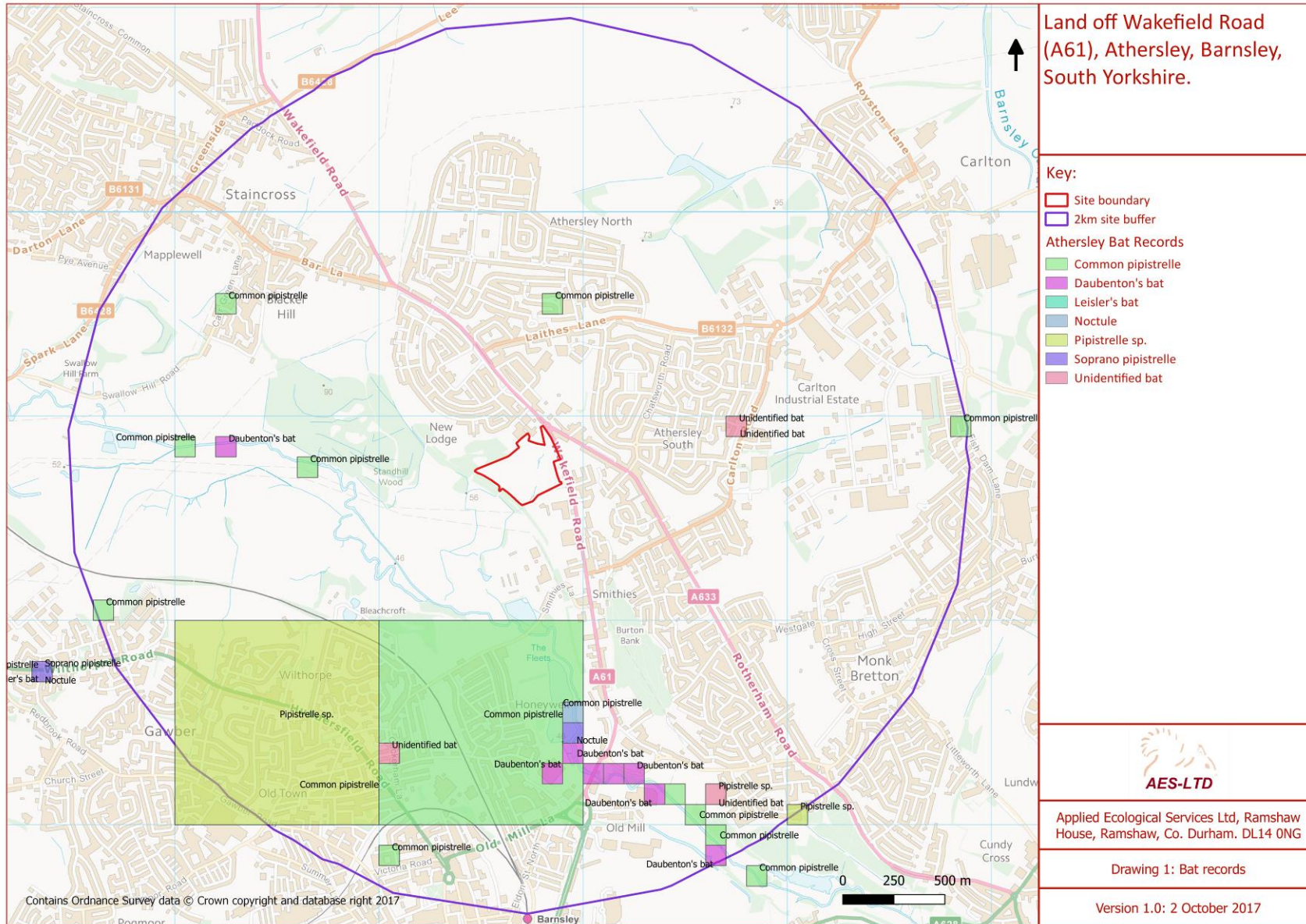
http://www.opsi.gov.uk/acts/acts2006/ukpga_20060016_en_1

National Parks and Access to the Countryside Act 1949:

http://www.opsi.gov.uk/RevisedStatutes/Acts/ukpga/1949/cukpga_19490097_en_1

National Planning Policy Framework:

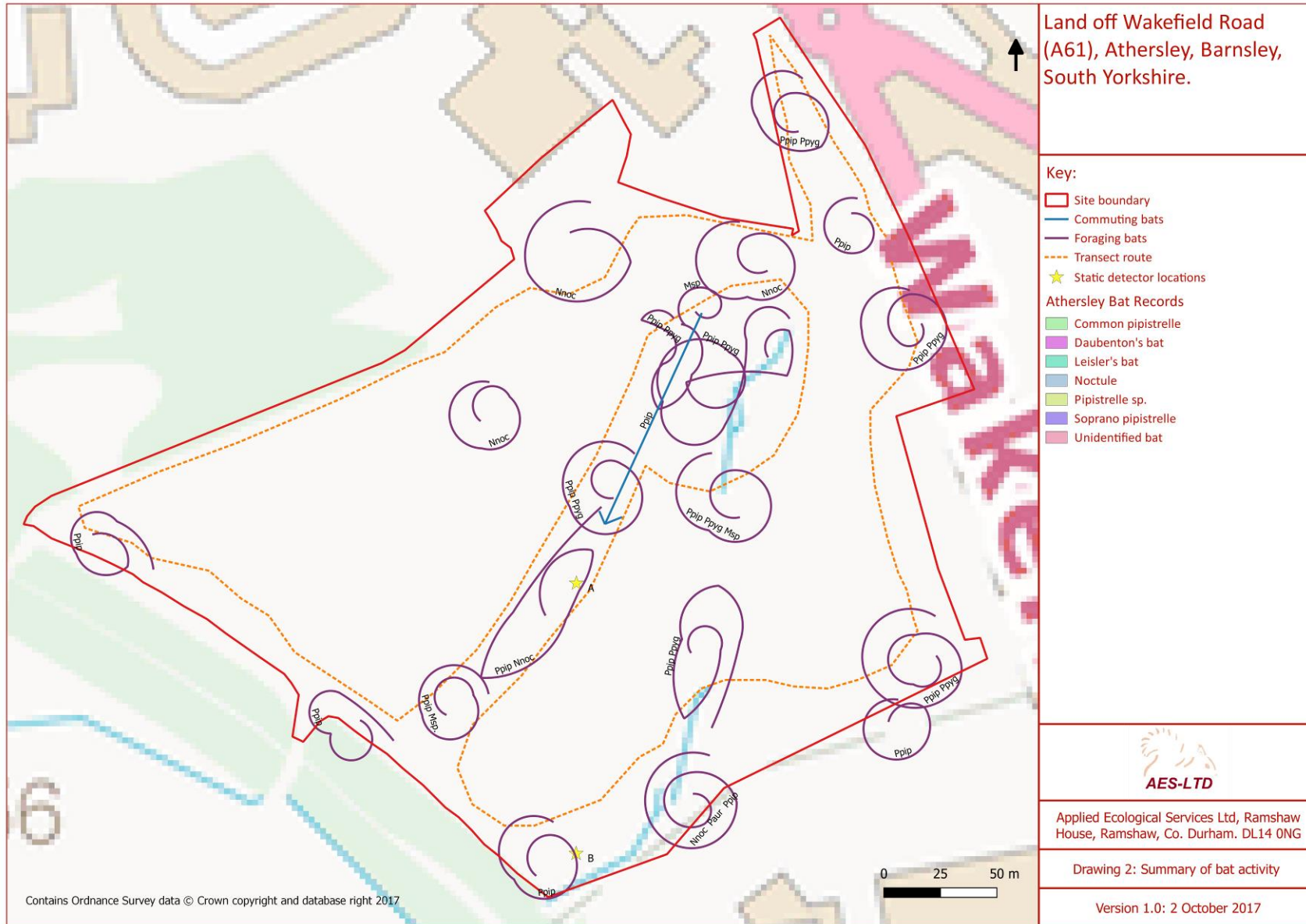
<http://www.communities.gov.uk/publications/planningandbuilding/nppf>



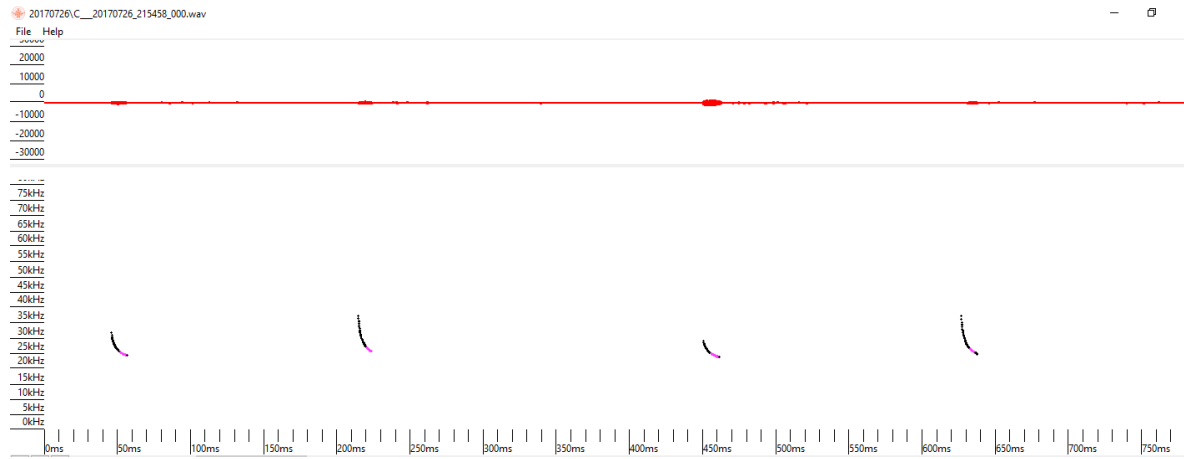
Applied Ecological Services Ltd, Ramshaw House, Ramshaw, Co. Durham. DL14 0NG

Drawing 1: Bat records

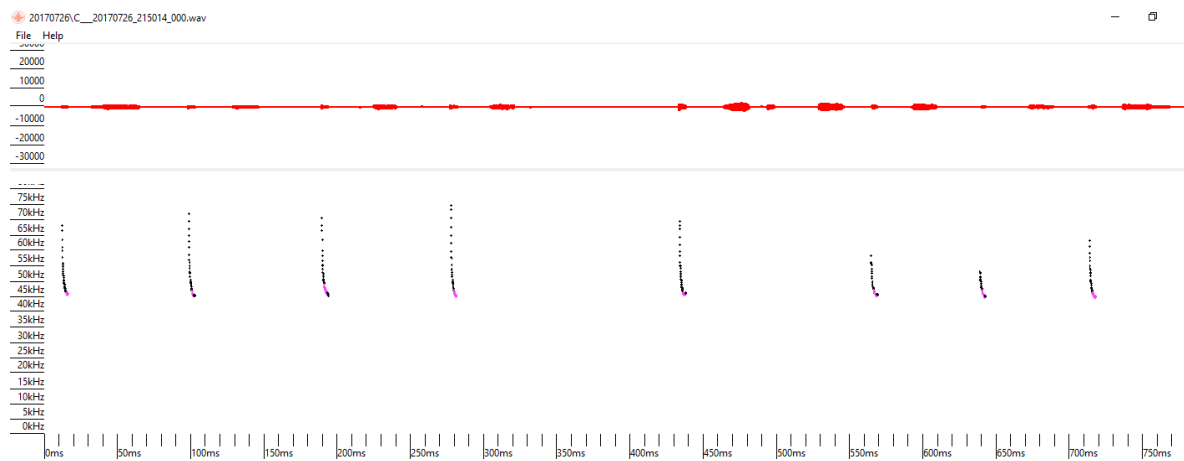
Version 1.0: 2 October 2017



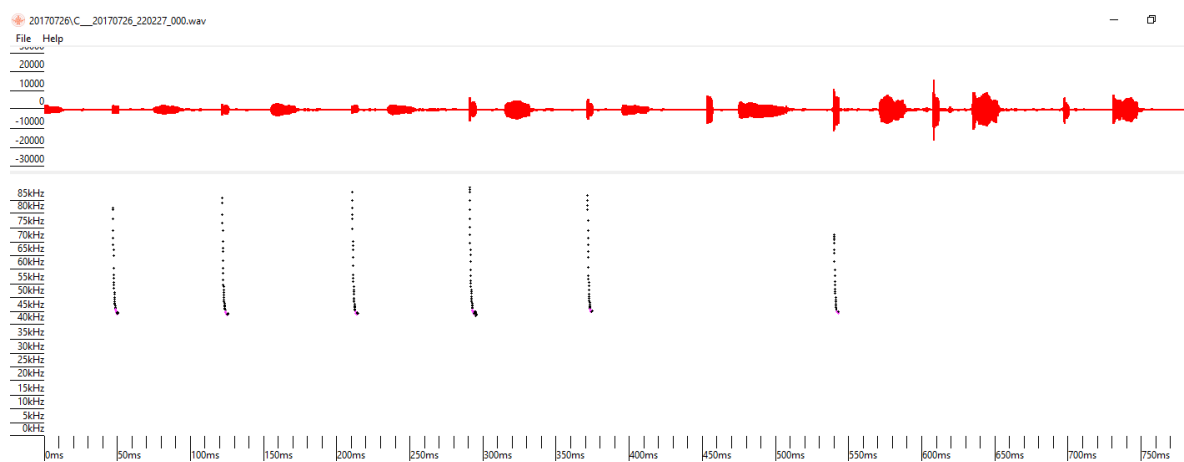
APPENDIX 1: SONOGRAMS



Sonogram 1 Noctule foraging over woodland to south west on 26/07/17 at 21:54.



Sonogram 2 Common pipistrelle foraging in south west corner of the site on 26/07/17 at 21:50.



Sonogram 3 Common pipistrelle foraging along central hedgerow on 26/07/17 at 22:02.