Bat Survey

North Gawber

Harworth Estates

AES-LTD

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Field Investigations and Data
Where field investigations have been carried out these have been restricted to a level of detail required to achieving the stated objectives of the work. Where any data supplied by the client or from other sources have been used it has been assumed that the information is correct. No responsibility can be accepted by AES - Ltd for inaccuracies in the data supplied by any other party.

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Report Reference & History: Document 1, version 1			
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Approved By	AES - LTD		November 2013

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1.0 INTRODUCTION

1.1 Applied Ecological Services Ltd. was commissioned to undertake a bat activity survey on the North Gawber site. The objective of the survey was to determine the presence and activity of bats within the site. The bat activity survey was undertaken in accordance with BCT, Bat Surveys – Good Practice Guidelines (2nd Edition) 2012[1].

PROPOSED WORKS

1.2 The proposed works are site reclamation and housing development, a wildlife corridor is to be created along the south edge of the site.

AIMS OF SURVEY

1.3 The bat surveys were designed to collect the following information:

- The assemblage of bat species using the site;
- The relative frequency with which the site is used by different species;
- The nature of activity for different bat species, for example foraging, commuting and roosting (where possible).

2.0 SITE SETTING AND DESCRIPTION

2.1 The North Gawber site was located east of the village of Staincross in the Metropolitan Borough of Barnsley, grid reference SE 330 097 (approximate central point) and occupies an area of around 36 acres. The site was delineated by the B6428 Spark Lane to the west and Carr Green Lane to the east. The North Gawber site is a mix of unimproved grassland, juvenile semi-natural broadleaved woodland, bare ground, and standing water.

[1] Hundt L (2012) Bat Surveys: Good Practice Guidelines, 2nd edition, Bat Conservation Trust

3.0 CONSERVATION STATUS

3.1 All UK species of bat are fully protected under The Conservation of Habitats and Species Regulations 2010 (as amended). This law makes it illegal to:

- Deliberately capture, injure or kill a bat
- Deliberately disturb a bat
- Damage or destroy a bat roost or resting place
- Disturbance of bats includes in particular any disturbance which is likely to:
- Impair their ability to survive, breed or reproduce, or to rear or nurture their young; or to hibernate or migrate
- Affect significantly the local distribution or abundance of the species to which they belong.

4.0 METHODOLOGY

ECOLOGICAL RECORDS SEARCH

4.1 A desk study was undertaken in August 2013. Protected species information for the site and surrounding area (up to two kilometres around grid reference SE 330 097) was requested from:

- South Yorkshire Bat Group

FIELD SURVEY

4.2 Methodology was discussed and agreed with Trevor Mayne (Biodiversity Officer) at Barnsley Metropolitan Borough Council.

Table 1: Schedule of bat surveys undertaken at the North Gawber site 2013

Survey type	Equipment used	Period	Date of survey
Transect survey	2 x transect routes using EM3 and GPS	August	01/08/2013 (Dusk MP 1>6)
		August	14/08/2013 (Dusk MP 2>1)
		August	29/08/2013 (Dusk MP 3>2)
		September	10/09/2013 (Dusk MP 4>3)
		September	25/09/2013 (Dusk MP 5>4)

PERSONNEL

4.2 The following staff completed the transect surveys: Christopher Madine, Paul White, Simon Middleton, and Jonathan Smith all experienced bat surveyors with AES-LTD supervised by Ruth Hadden - Bat Consultant since 1996, Class Survey Licence WML CL20 (Bat Survey Level 4). Registration number: CLS0 2762. Licensed to handle bats and enter known roosts since 1986. Class Survey Licence WML CL15 (Volunteer Bat Roost Visitor Level 1).

4.3 There were no mature trees or other suitable structures located within the site that would provide roosting potential for bats. Activity surveys were undertaken to assess the sites suitability for commuting and foraging bats.

TRANSECT SURVEYS

4.4 Ground level manual surveys were conducted in the form of transects within the site. Two transect routes were used to sample different habitat types within the site. Transect 1 was a circular route to the north of the site. Transect 2 was also circular route that crossed areas of habitat to the south of the site. Both transects are illustrated in **Figure 1:** Bat Transect Plan.

4.5 Activity surveys began on the 1st August and concluded on the 25th September 2013 (see Table 1). Surveyors were equipped with Wildlife Acoustics, Echo Meter, EM3+, allowing real time data analysis and post survey data analysis to be conducted.

4.6 Surveyors slowly walked the full transect route stopping at each fixed monitoring point for 10 minutes to listen for bat calls. Transects surveys commenced 15 minutes before sunset with each transect taking at least 2 hours to complete.

Table 2: Transect start and end points

Date	Transect	Start Point	End Point
01.08.13	1	1	3
	2	1	3
14.08.13	1	2	4
	2	2	4
29.08.13	1	3	5
	2	3	5
10.09.13	1	4	6
	2	4	6
25.09.13	1	5	1
	2	5	1

4.7 Monitoring points were designed to incorporate sampling of different habitat features across the site. Environmental conditions on site were recorded by the surveyor at the time of survey.

SUMMARY OF DATA ANALYSIS METHODS

4.8 Data was downloaded from the Echo meter EM3+ and analysed in AnaLookW 3.9f to identify bat echolocation pulses to species level where possible using the parameters published by Russ (2012). Data management and statistical analyses were undertaken using the software package *Microsoft Excel 2010.*

4.9 Where there was insufficient data in the ultrasound to accurately identify a bat species or genera, the echolocation pulses were marked as unidentified bats. A bat pass is defined as the presence of bat echolocation pulses within the data file.

4.10 **Table 3** gives details of the codes used labelling files in this report.

Table 3: Showing the species codes used to label files and results for corresponding species.

Species code	Scientific name	Common name	Constraints
Pip.pip	*Pipistrellus pipistrellus*	Common pipistrelle	None
Nyc.noc	*Nyctalus noctula*	Noctule	None

5.0 CONSTRAINTS TO SURVEY

5.1 Methodology was discussed and agreed with Trevor Mayne in late July 2013. The site is heavily used by the public and is subject to vandalism. It was considered that the site would be an 'unsafe' area in which to place and leave unattended static detectors. Static detectors are expensive equipment and if removed or stolen from site unfortunately the data is lost with the detector – in this situation it was agreed that an additional transect survey would be undertaken per month instead of placing static detectors i.e. two transect surveys per month (instead of the guideline recommended one per month) would be a good option.

5.2 Heavy rain at the end of July 2013 prevented a transect survey being undertaken at that time – the first survey was undertaken as soon as weather conditions were suitable to proceed (1st August).

5.3 There were no significant constraints to the transect surveys.

6.0 RESULTS

ECOLOGICAL RECORDS SEARCH

6.1 92 records of bats were received from South Yorkshire Bat Group, recorded between the year 2000 and April 2013. (Data available on request). The nearest record was 1.31 km to the south-west of the approximate centre of the site (grid ref: SE330097) the species was not recorded.

6.2 The nearest roost was a Leisler's maternity roost approximately 2.5km south southwest of the site in Gawber, the record was from 2003 and has not been reported since. There was one other record of a Leisler's nursery roost to the south southeast of the site again from 2003. There were records of three Daubenton's roosts (c.80 bats) approximately 3.26, 3.30 and 3.43km south east from the site – these records were the most recent records of roost sites and were from 2011 and 2012. A pipistrelle roost was recorded in 2002 approximately 3.78km away from the site in a south easterly direction and one further unidentified bat roost was recorded in 2010 approximately 2.85km east southeast of site. There were no records of roosts of other species.

6.3 There were field records of common pipistrelle, soprano pipistrelle, noctule, Leisler's and Daubenton's bats.

PRE-EXISTING INFORMATION ON UK BAT SPECIES ABUNDANCE

Pipistrelle 45KHz Bats (Common Pipistrelle)

6.4 Nationally - native and the most common bat throughout the United Kingdom. Population estimate for this species is UK 2,430,000*[2].

Pipistrelle 55KHz Bats (Soprano Pipistrelle)

6.5 Nationally - native and one of the most common bats throughout the United Kingdom. Population estimate for this species is UK 1,300,000*.

[2] * *UK Mammals: Species Status and Population Trends*. JNCC/Tracking Mammals Partnership. 2005

Whiskered/Brandt's Bats

6.6 Nationally - native and relatively common throughout England, appears to become uncommon in Scotland. Population estimate for both species is UK 94,000*.

Brown Long-eared Bats

6.7 Nationally – native and relatively common bat throughout the United Kingdom. Population estimate for this species is UK 245,000*.

Natterer's Bats

6.8 Nationally – native and fairly common bat throughout the United Kingdom. Population estimate for this species is UK 148,000*.

Daubenton's Bats

6.9 Nationally – a native and common bat throughout the United Kingdom. Population estimate for this species is UK 560,000*.

Nathusius' Bats

6.10 Nationally - native and rare bat throughout the United Kingdom. Population estimate for this species is UK 16,000*

Noctule Bats

6.11 Nationally - Native, generally uncommon, but more numerous in well wooded areas in the United Kingdom. Population estimate for this species is UK 50,000*.

FIELD SURVEY

6.12 Details of weather conditions on site that were recorded during surveys are given in **Table 4** below.

WEATHER CONDITIONS

Table 4: Weather conditions

Nights	Weather Conditions			
	Precipitation	Cloud cover (%)	Average wind speed (Beaufort scale*)	Average temperature (°C)
1st August	Dry	30	B2	21
14th August	Dry	100	B0	16
29th August	Light rain	30	B0	15
10th Sept	Dry	70	B2	11
25th Sept	Dry	90	B1	11

***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

TRANSECT SURVEY

6.13 **Tables 5** and **6** provide a summary of the species identified during the activity survey and the time of each of the bat passes.. **Figures 2, 3, 4** and **5** show the locations of bats observed during the transect surveys. Two species of bat were recorded on the site during the transect surveys, these were: Noctule and Common pipistrelle.

6.14 One noctule bat was observed commuting over the site on the 1st August, by both surveyors. It was flying fast and high; this noctule bat has been marked once on

Figure 2: Bat Transect Survey 01/08/13, showing the direction of flight. Both sightings of the noctule (from transect 1 and 2) were at the same time and were identified as the same bat.

6.15 Common pipistrelle were observed utilising the site for foraging and commuting on the 1st August, 14th August, 29th August and 10th September 2013. Common pipistrelle activity was observed in the central and north eastern areas of the site (transect route 1) and the central and southern areas of the site (transect route 2) around the juvenile broadleaved woodland area.

6.16 No bat activity was recorded on Transect route 1 on the 10th and 25th September. No bat activity was recorded on Transect route 2 on the 25th September.

Table 5: Results from transect survey 1

Survey Date									
01/08/13		14/08/13		29/08/13		10/09/13		25/09/13	
Transect Start Time									
MP	**20.45**	**MP**	**20.25**	**MP**	**19.50**	**MP**	**19.20**	**MP**	**18.41**
1		2		3		4		5	
2		3		4		5		6	
3		4		5		6		1	
4		5	CP F 21.14	6		1		2	
					CP F 20.43				
5		6	CP F 21.21	1	CP F20.45	2		3	
					CP F20.54				
6	Noc C 21.47 CP F 22.02	1	CP F 21.39	2	CP F21.01	3		4	
1		2	CP F 21:48	3		4		5	
2		3		4		5		6	
3	**END 22:48**	4	**END 22:26**	5	**END 21:54**	6	**END 21:20**	1	**END 20:42**

* Key:
Pale grey rows represent locations between monitoring points
Noc = Noctule, CP = Common pipistrelle, SP = Soprano pipistrelle, Myo=Myotis spp.
Bat= Species unconfirmed, C = Commuting, F = Foraging/Feeding, ? = activity unknown, Blank Cells = no bat observations

Table 6: Results from transect survey 2

Survey Date									
01/08/13		14/08/13		29/08/13		10/09/13		25/09/13	
Transect Start Time									
MP	20.45	MP	20.25	MP	19.50	MP	19.20	MP	18.41
1		2		3		4		5	
2		3		4		5		6	
3		4		5		6		1	
4		5	CP F 21.15	6		1		2	
5		6	CP F 21.25	1		2	CP F 20.10	3	
	CP F 21.42								
6	NocC21.47 CP F 21.51	1	CP F 21:36	2	CP C 21.05	3		4	
1		2		3		4		5	
2		3		4		5		6	
3	END 22:46	4	END 22:28	5	END 21:55	6	END 21:18	1	END 20:42

* Key:
Pale grey rows represent locations between monitring points
Noc = Noctule, CP = Common pipistrelle, SP = Soprano pipistrelle, Myo=Myotis spp.
Bat= Species unconfirmed, C = Commuting, F = Foraging/Feeding, ? = activity unknown, Blank Cells = no bat observations

6.17 A total of 18 bat passes was recorded over the two transects throughout all surveys. 89 % of all bat passes were made by Common pipistrelle bats and 11% of bat passes were made by a single noctule bat. A peak count of seven common pipistrelle bat passes was recorded on the 14th August.

6.18 The first bat pass recorded on the transect surveys was made by a common pipistrelle and was 21:14, 36 minutes after sunset.

6.18 No evidence of roosting activity was recorded during any of the transect surveys.

7.0 INTERPRETATION AND EVALUATION OF RESULTS

DESK STUDY

7.1 South Yorkshire Bat Group provided records of bats in proximity to the site; records of roosts were in excess of 2.5km away. A total of five bat species were present in the records.

ACTIVITY SURVEY

7.2 Activity at the site throughout the surveys was considered to be low, with a low number of bats foraging or commuting across the site. The majority of activity was identified as common pipistrelles, with a single pass from a noctule bat.

7.3 Common pipistrelle were observed utilising the site, in relatively low numbers, for foraging and commuting purposes on the 1st August, 14th August, 29th August and 10th September. Common pipistrelle foraging activity was recorded around the juvenile broadleaved woodland area, where activity was noted along the woodland edge, and on the periphery of the site. One noctule bat was observed commuting high over the site on the 1st August. No bats were observed on the site on the 25th September.

INTERPRETATION OF RESULTS

7.4 No bat roosts were recorded during the survey. At the time of survey the trees on site are of insufficient age to have developed suitable bat roosting features, and are currently of little value to roosting bats.

7.5 The common pipistrelle activity recorded at the site may be bats commuting from roost locations outwith the immediate area. Data would suggest that small numbers of these bats may be briefly foraging whilst commuting through the site to other nearby foraging areas.

ECOLOGICAL ENHANCEMENT

7.6 In line with the National Planning Policy Framework all developments should include elements of ecological enhancement.

- Bat boxes – It is recommended that bat boxes are included within the development. Woodcrete Bat boxes should be sited on semi-mature or mature trees over 12 foot above the ground, away from external lighting, and with sufficient space free of branches and foliage to allow flying bats to access the box. Boxes may also be incorporated into the buildings. Such boxes are self-contained and do not allow bats into the cavity of the house. They may be either surface mounted or built into walls. Generally when placing a number of boxes it is advisable to vary the aspect faced in order to offer a range of temperature and humidity conditions. Typically south and west facing bat boxes experience a higher rate of uptake by summer roosting bats.

- Lighting scheme – Bats and other wildlife can be disturbed by bright lighting. It is recommended that lighting is kept to a minimum on site and where it is required that the type of light be downward facing. Lights should not shine on vegetation, any bat or bird boxes or into the sky.

  where possible, lighting should:

  - Be uni-directional
  - Not shine on vegetation or upwards towards the sky
  - Be low-level
  - Be movement activated

NESTING BIRDS

7.7 Any proposed felling and pruning works should be undertaken outside of the main bird nesting period (March-August). In order to reduce the potential of damaging nests, eggs or young, tree felling and ground level vegetation clearance will commence outside of the bird breeding season (i.e. outside of March to August inclusive). If it is not possible to avoid the bird breeding season entirely, a search should first be made for nesting birds by a suitably qualified ecologist, and any active nests (if found) protected until the young have successfully fledged. Where no nests or any other bird matters are identified, a post survey period of two days will stand within which time clearance of that section may proceed. A further survey would be required if the vegetation surveyed was not removed within this time.

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Russ, J. (1999). The bats of Britain and Ireland: echolocation calls, sound analysis, and species identification. Alana Books, Bishop's Castle.

UK Mammals: Species Status and Population Trends. JNCC/Tracking Mammals Partnership. 2005

UK LEGISLATION AND POLICY WEB ADDRESS:

Conservation of Habitats and Species Regulations 2010:

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

Habitats Directive:

www.europa.eu.int/eur-lex/en/lif/dat/1992/en_392L0043

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


M3
M2
M4
M1
M5
M6
KEY
Transect route 1
Transect route 2
M Monitoring point
SITE
North Gawber
Figure 1: Bat Transect Plan 2013
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M3
M2
M4
M4
M1
M5
M6
M3
M6
M5
M2
M1
KEY
Transect route 1
Transect route 2
M Monitoring point
Common pipistrelle
Noctule
SITE
North Gawber
Figure 2: Bat Transect Survey 01/08/13
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M3
M2
M4
M1
M5
M6
M4
M3
M5
M6
M2
M1
KEY
Transect route 1
Transect route 2
M Monitoring point
Common pipistrelle
SITE
North Gawber
Figure 3: Bat Transect Survey 14/08/13
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M3
M4
M2
M4
M5
M1
M6
M3
M6
M5
M2
M1
KEY
Transect route 1
Transect route 2
M Monitoring point
Common pipistrelle
SITE
North Gawber
Figure 4: Bat Transect Survey 29/08/13
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M3
M4
M2
M4
M5
M1
M6
M3
M6
M5
M2
M1
KEY
Transect route 1
Transect route 2
M Monitoring point
Common pipistrelle
SITE
North Gawber
Figure 5: Bat Transect Survey 10/09/13
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