



**MAPLE ROAD, TANKERSLEY
BAT SURVEY REPORT**

SEPTEMBER 2017

Prepared By:

Surface Property

1C Swinegate Court East
3 Swinegate
York
North Yorkshire
YO1 8AJ

T +44 (0)1904 682 770 | **E** contact@surface-property.co.uk
W www.surface-property.co.uk

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& Wales No. 5644976

Prepared By:	C Airson MBiolSci (Hons) ACIEEM
Reviewed By:	Peter Owens MSc, BSc, MCIEEM
Date of Issue:	6 th September 2017
Version:	2.0

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1 INTRODUCTION

Surface Property (Surface) was commissioned by Company Shop and Rula Developments Ltd to undertake bat activity surveys in relation to a planning application for a Distribution Centre with two-storey offices, a service yard and car parking (henceforth referred to as the Development) at Maple Road, Tankersley (henceforth referred to as the Site).

This report is submitted in conjunction with the Ecological Appraisal produced by Surface in support of a planning application for the Development.

This report details previous survey work completed by Surface and four months of additional survey work completed between April and July 2017, comprising four dusk transects and a dawn transect, as well as over five nights of static monitoring per month.

This report supersedes the August 2017 Bat Survey Report previously submitted, following comments from Barnsley Metropolitan Borough Council (BMBC). Revisions have been made to Section 5: *Potential Effects of the Development* due to a change in scheme layout.

2 LEGISLATION

There are 17 species of bat known to breed in the UK. All species are legally protected by *The Wildlife and Countryside Act 1981* (as amended) and *The Conservation of Habitats and Species Regulations 2010* (as amended). As a signatory to the *Bonn Convention (Agreement on the Conservation of Bats in Europe)* the UK is also required to protect bat habitats. This legislation makes it illegal to kill, injure, capture or disturb bats or to obstruct access to, damage or destroy bat roosts and protection from damage or disturbance of important feeding areas. Under the law, a roost is any structure or place used for shelter or protection.

3 METHODS

3.1 Desk Study

A search for records of bats within 2 km of the Site (hereafter referred to as the Study Area) was undertaken using publicly available records and third-party data providers. Full details of the scope of the desk study are reported in the Ecological Appraisal submitted in conjunction with this Bat Survey Report and are not repeated herein.

3.2 Roost Assessment

Bat roost assessments were undertaken during an ecological walkover of the Site on 28th March 2017. Details of the methods are reported in the Ecological Appraisal submitted in conjunction with this Bat Survey Report and are not repeated herein.

3.3 Bat Transect Survey

Bat transect surveys were undertaken to record the activity of bats within the Site and wider area. A single dusk transect was walked on four separate occasions (at approximately monthly intervals) between April and July 2017, with a dawn transect also completed in June. Dusk surveys started 0.25 hours before sunset and lasted for up to 2.50 hours. Dawn surveys started 2.00 hours before sunrise and lasted until sunrise.

Surveyors recorded bat activity with AnaBat SDI detectors connected to a GPS. Recordings were analysed using AnaLook software.

In addition to the digital recordings, information about bat registrations was recorded on maps and standardised recording sheets, including, if possible:

- Time of bat registration
- Direction of flight
- Bat behaviour e.g. foraging
- Environmental variables, including cloud cover, wind strength, precipitation, and air temperature were recorded at the start and end of the survey (Table 3..2)

Table 3.2: Transect Survey Weather Conditions

Survey Date	Weather							
	Temperature (°C)		Wind strength (Beaufort) [Gusting]		Cloud (oktas)		Rain*	
	Start	End	Start	End	Start	End	Start	End
27/04/2017 (Dusk)	9	8	1	2	7	8	2	2
22/05/2017 (Dusk)	20	19	0	0	3	3	0	0
20/06/2017 (Dusk)	17	15	1	2	8	8	0	0
21/06/2017 (Dawn)	14	13	0	0	8	3	0	0
19/07/2017 (Dusk)	19	15	1	1	8	8	0	0

*Rain: 0 = None; 1 = Drizzle/Mist; 2 = Light showers; 3 = Heavy showers; 4 = Heavy rain

3.4 Remote Monitoring

Remote Monitoring surveys were undertaken using an AnaBat SDII detector. Four surveys were undertaken at a single location in woodland edge habitat, between April 2017 and July 2017. The duration of deployment ranged 7–17 nights.

The detector was programmed to record from approximately 0.5 hours before sunset until approximately 0.5 hours after sunrise. Recordings were analysed using AnaLook software.

Each night of remote monitoring will include two separate dates as surveys are carried out throughout the night from dusk on one day to dawn on the next. To assist with interpreting the data, each survey night is identified by the date on which the remote monitoring survey began.

3.5 Deviation from Guidance

The Site, determined as a result of the ecological walkover, was assessed, in accordance with BCT guidelines¹, as being of moderate commuting and foraging habitat suitability for bats.

The scope of surveys recommended by the BCT for this level of suitability to inform the assessment of potential effects applicable to the Development and the scope of survey completed are detailed in Table 3.3

Table 3.3: Scope of work comparison

Survey	Guidance	Undertaken
Transect	One walked transect per month (April to October), at least one of which should comprise dusk and pre-dawn (or dusk to dawn) within one 24-hour period.	One walked transect per month (April to July), at least one of which should comprise dusk and pre-dawn (or dusk to dawn) within one 24-hour period.
Remote Monitoring	Automated bat detectors deployed at two locations per transect for five consecutive nights per month (April to October).	Automated bat detectors deployed at one location per transect for 7–17 consecutive nights per month (April to July).

3.5.1 Survey period

The duration (number of months) for which transect and remote monitoring surveys were undertaken was shorter than the survey period recommended for a site of moderate bat suitability. Due to overarching programme restrictions, completion of the recommended survey period was not feasible. The assessment of likely effects is therefore based on the available information and conclusions drawn are done so with an appropriate level of confidence.

3.5.2 Remote Monitoring Location

The transect route (a single “loop” of the transect) measured approximately 2.0 km and was traversed twice during each survey (shown on Figure 4). A 0.5 km section of the transect route, connecting the south east and north west corners of the survey area, was traversed twice per loop of the transect route. The effective length of the transect was therefore 1.5 km, a relatively short distance in the context of bat survey design. Although strictly a deviation from guidance, due to the short length of the transect, a single automated bat monitoring location was considered sufficient to inform this assessment.

3.6 Call Analysis

There are limitations associated with species identification from acoustic monitoring. Echolocation calls from congeneric species often exhibit a large degree of overlap in their call structures making definitive identification difficult. Also, a bat will vary the structure of its echolocation calls to reflect its proximate needs. This behaviour results in a large degree of variation in the call structure of any given bat species and can also result in the structure of echolocation calls overlapping with those of other bat species. Species identification is therefore applied with a level of confidence, especially where deterministic call characteristics are not present within a recording.

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

Six species belonging to the *Myotis* genus are known to be resident in the UK. There is a large amount of overlap between the characteristics of the echolocation calls of these congeneric species and so a definitive identification of *Myotis* bats to species level is rarely possible from frequency division recordings. As such, all calls from *Myotis* species bats were identified to genus as unidentified *Myotis* species.

3.7 Equipment Calibration

In line with Bat Conservation Trust (BCT) guidance² all AnaBat detectors are subject to routine maintenance and testing. Detectors used for remote monitoring are routinely calibrated using appropriate equipment and software supplied by the detector's manufacturer.

4 RESULTS

4.1 Desk Study

Records of eight bat taxa were identified during the Desk Study.

- Soprano pipistrelle (*Pipistrellus pygmaeus*)
- Daubenton's bat (*Myotis daubentonii*);
- Noctule bat (*Nyctalus noctula*);
- Leisler's bat (*Nyctalus leisleri*);
- Brown long-eared bat (*Plecotus auritus*);
- Undetermined *Pipistrellus* species;
- Whiskered/Brandt's bat (*M. mystacinus*/*M. brandtii*); and
- Undetermined Bat Species.

Full details of the Desk Study are presented in the Ecological Appraisal submitted in conjunction with the Bat Survey Report and are not repeated herein.

4.2 Roosts Assessment

Results of the bat roost assessments are reported in the Ecological Appraisal submitted in conjunction with this Bat Survey Report, full details of which are not repeated herein. However, a summary of the information has been provided.

Eight mature oak trees were considered to provide moderate roosting potential for small numbers of roosting bats. The majority of the other trees were semi-mature and in good condition with no evident potential roosting features (PRFs) for bats.

Six trees identified with PRFs within the woodland are scheduled to be retained; no further survey work on these trees is therefore required.

It is currently unknown whether or not the two remaining trees will be retained. Should pruning or felling be required to these two trees, then further survey work, including a detailed PRF inspection survey, will be required.

4.3 Bat Transect Survey

Transect surveys recorded four taxa: common pipistrelle, soprano pipistrelle, unidentified *Myotis* species and noctule (Table 4.2).

Table 4.2: Transect Survey Results – Number of Bat Passes per Survey

Survey Date	Common pipistrelle	Soprano pipistrelle	Noctule	Unidentified <i>Myotis</i> species	Total
April	0	0	0	0	0
May	21	4	1	0	26
June (Dusk)	50	2	0	12	64
June (Dawn)	19	0	0	6	25
July	54	7	0	9	70
Total	144	13	1	27	185

Bat activity was concentrated along the western woodland, both on the Site and in the wider area to the north (Figures 1, 2a, 2b and 3). Bat activity was limited within the grassland on site, with a low number of bat passes recorded (Figures 1, 2a, 2b and 3). The locations at which activity was recorded did not vary markedly between surveys. Only two bat passes were recorded in the half of the Site that experienced high light levels from the adjacent building to the east (Figure 1 and 3).

4.4 Remote Monitoring

Five taxa were identified during the remote monitoring surveys (Table 4.3). Four taxa were identified to species level: noctule, common pipistrelle, soprano pipistrelle and brown long-eared bat. The remaining taxa was only identifiable to genus: unidentified *Myotis* species.

Table 4.3: Number of AnaBat Files per Taxon and Monitoring Month

Monitoring Month	Noctule	Common pipistrelle	Soprano pipistrelle	Unidentified <i>Myotis</i> species	Brown long-eared bat	Total
April	1	12	1	0	0	14
May	1	426	1	4	0	432
June	1	96	2	42	4	145
July	0	1,443	20	48	0	1,511
Total	3	1,977	24	94	4	2,102
% of Total (n=2,102)	0.1	94.1	1.1	4.5	0.2	

Common pipistrelle was the most frequently recorded taxon, contributing c. 94 % of the total number of AnaBat files, followed by unidentified *Myotis*, which contributed c. 5 % of the AnaBat files. The remaining three taxa, combined, contributed c. 1 % of the total number of AnaBat files.

In order to account for the variation in the number of monitoring nights completed per month, and the varying length of time between sunset and sunrise between surveys, a bat activity index (BAI) was calculated (Table 4.4). The BAI represents the mean number of bat per hour for each taxon during each month.

Table 4.4: BAI per Taxon and Monitoring Month

Monitoring Month	Noctule	Common pipistrelle	Soprano pipistrelle	Unidentified <i>Myotis</i> species	Brown long-eared bat
April	0.11	0.26	0.11	0.00	0.00
May	0.13	4.05	0.13	0.25	0.00
June	0.13	1.82	0.27	0.80	0.18
July	0.00	8.44	0.34	0.48	0.00

Activity for each of the five taxa was recorded at low intensities during each survey. BAI varied nominally between surveys for all species. Common pipistrelle displayed the largest level of BAI variation between surveys (range 0.26–8.44), but this degree of variation was still considered small.

4.5 Summary

A bat assemblage typical of the local region was recorded during the activity surveys.

The data suggest the grassland comprising the majority of the Site provides low value habitat for commuting and foraging bats, with only four bat passes recorded within this habitat during the transect surveys.

Habitats to the west of the Site appear to be of greater value to bats, with the majority of the bat activity being recorded in the area to the west.

The remainder of the passes were recorded either within the on-site woodland or further along the woodland to the north. In line with good practice, the start point of each transect was varied between surveys and, consequently, the location of the surveyors during the period of peak activity varied between surveys. It is therefore likely that the similar distribution and levels of bat activity between surveys accurately reflects bat behaviour in the local area, rather than being an artefact of survey methods.

The highest intensity of activity was recorded along the western woodland and only limited activity was recorded in the grassland areas of the Site. The results suggest that the habitats within the centre of the Site are less favourable to foraging bats, in the context of the Site itself. The woodland was considered to be of moderate value for foraging bats, which is in line with the initial ecological appraisal of the Site.

5 POTENTIAL EFFECTS OF DEVELOPMENT

Trees with potential to support roosting bats are scheduled to be retained during the clearance works required for the Development. Potential effects on roost features are therefore not considered further.

The Development will result in a loss grassland habitat and a reduction in the area of woodland at the western extent of the Site and therefore has potential to negatively affect foraging and commuting bats.

The grassland, of which the majority of the Site is comprised, is considered to be of low value to local bat population. In the context of the wider environment, the importance of the grassland area, as a foraging resource, is further reduced due to the extensive area of woodland in the surrounds and the unmanaged grassland to the west of the Site, both of which are of greater suitability for foraging bats than the grassland within the Site. It is therefore likely that although the Development may result in displacement of bats using the grassland area within the Site, adequate, alternative foraging resources are present in the immediate vicinity of the Site, such that negative effects to local bat population as a result of this displacement are likely to be temporary and negligible.

The woodland edge at the western extent of the Site was frequently used by foraging and commuting bats. A peripheral section of the woodland will be removed to facilitate the Development, with approximately 83% of the woodland scheduled to be retained. Following removal of the section of woodland, the measurable length of woodland edge habitat will be maintained. The Development will therefore not result in the severance of established commuting routes or a reduction in the woodland edge foraging resource.

Supplementary tree and shrub planting will be undertaken around the retained woodland. Further tree planting will take place in other parts of the Site at a ratio of at least one new tree to each tree removed (as detailed in the Arboricultural Impact Assessment²).

Artificial lighting associated with the Development would have potential to negatively affect foraging and commuting bats. Mitigation will be implemented to minimise light spill along the surrounding woodland edge, thereby adequately reducing potential negative effects to bats.

The period in which surveys were undertaken to inform this appraisal was shorter than the survey period recommended in good practice guidance. Due to the low value nature of the Site for bats, it is unlikely that bat surveys, if undertaken for the remainder of the traditional survey period, would identify notably different levels of bat activity, or species diversity, to those recorded to date. Additionally, as discussed above, the Development is likely to result in a negligible negative effect on local bat populations. It is considered highly unlikely that further survey would identify bat activity levels or bat species, even if significantly higher, or more specious, than those recorded to date, that would be sufficient to qualitatively affect the conclusion regarding potential effects from the Development. Further surveys are therefore not required to inform this appraisal.

In summary, it is considered that bats within the vicinity of the Site are at low risk from the Development.

² Surface Property (April 2017), *Arboricultural Impact Assessment*

APPENDIX A – Figures



- Site Boundary
- Noctule
- Common pipistrelle
- Soprano pipistrelle



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Checked By: CA	Date: 11/08/2017

May Transect Results
Figure 1

Bat Survey Report
Maple Road, Tankersley



- Site Boundary
- Myotis species
- Common pipistrelle
- Myotis species and common pipistrelle
- Soprano pipistrelle
- Soprano pipistrelle and Common pipistrelle



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June Transect Results - Dusk
Figure 2a

Bat Survey Report
Maple Road, Tankersley



- Site Boundary
- Myotis species
- Myotis species and common pipistrelle
- Common pipistrelle



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June Transect Results - Dawn
Figure 2b

Bat Survey Report
Maple Road, Tankersley



- Site Boundary
- Myotis species
- Common pipistrelle
- Common pipistrelle and myotis species
- Soprano pipistrelle and common pipistrelle
- Soprano pipistrelle
- Soprano pipistrelle and myotis species



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July Transect Results
Figure 3

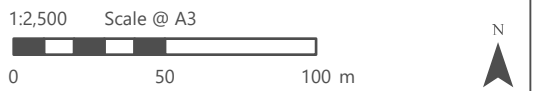
Bat Survey Report
Maple Road, Tankersley

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Surface

- Site Boundary
- Transect Route



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Bat Transect Route
Figure 4

Bat Survey Report
Maple Road, Tankersley