Land off Darton Lane, Mapplewell

Bat Activity Survey- Interim Report

01/08/2023

ER-6517-03

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Author	Victoria Baker BSc (Hons) MSc MCIEEM Senior Ecologist
Technical Review	Sam Kitching BSc (Hons) MCIEEM Principal Ecologist
QA	Joanna Bertwistle BSc (Hons) ACIEEM Ecologist
Authorised	Sam Kitching BSc (Hons) MCIEEM Principal Ecologist
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Report duration	In accordance with CIEEM (2019), unless otherwise stated the findings of this report remain valid for a period of 18 months. After this period advice should be sought on the scope of any updating work required.

Summary Statement

Activity survey in Spring and Summer 2023 has found the Site's interior to attract a small range of common bat species at low and moderate levels respectively. Autumn survey is scheduled for September / October 2023 to corroborate these findings.

With the Site being linear and running parallel with an off-site, tree'd railway line, it is assessed that at least some of the activity recorded is in association with this feature. However, the rough grassland and scrub habitats are likely providing a good source of invertebrate prey.

A sensitive masterplan has been devised which retains an area of grassland to the west and incorporates new habitat areas. A sympathetic lighting plan will need to be produced to ensure new and retained habitats on Site and the off-site railway line remain unilluminated.

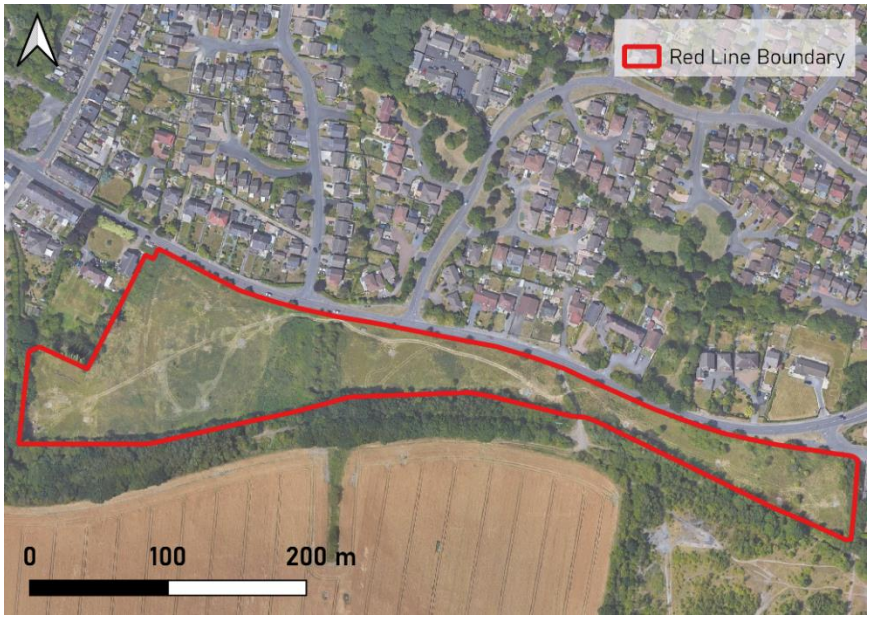
Introduction

1. Brooks Ecological was commissioned by Duchy Homes to carry out detailed Bat Activity Survey at the proposed development Site at Land off Darton Lane, Mapplewell (grid ref. SE 3197 0985).

2. These surveys are required to provide evidence of the baseline use of the Site by the local bat population, which will enable mitigation and enhancement strategies to be devised to support a planning application.

3. The scope of the survey has been devised based on an assessment of the habitats present, and in accordance with current best practice guidelines (Bat Conservation Trust, 2016).

Figure 1 Site location plan.



Method

4. Surveys were directed by Victoria Baker BSc (Hons) MSc MCIEEM. Victoria has over 9 years' experience of carrying out bat surveys in a professional capacity and is registered to use the Class Survey Licence WML CL18 (Bat Survey Level 2).

5. The objective of the survey was to collect information on the Site's use by local bat populations, so that an accurate assessment of the potential impacts of development could be made. A transect and remote monitoring survey was carried out to collect the following data (Bat Conservation Trust, 2016):

    - 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

Survey Conditions

6. Walked transects were undertaken in May and July 2023 during optimal survey conditions. The autumn survey is scheduled for September / October 2023. Survey conditions are summarised below:

Table 1 Survey conditions.

Survey	Date	Sunset	Weather	Invertebrate Activity
Spring	11.05.2023	20:53	12°C-10°C, 50% cloud, dry, low wind (B1).	Low
Summer	03.07.2023	21:37	13°C-12°C, clear skies, dry, low wind (B1).	Moderate
Autumn	Scheduled for September / October 2023			

Transects

7. Transects began around sunset and continued up to two hours after when all bats were thought to have emerged, and thus were actively foraging and commuting.
8. The transects were walked by a team of two surveyors, equipped with a heterodyne detector as well as a Titley Scientific Anabat Express, used to track the transect route and aid species identification.

Remote Monitoring

9. To supplement data collected during the walked transect, a static monitoring device (Wildlife Acoustic SM4) was deployed in a strategic location on-Site prior to the start of the walked transect.
10. Data collected during the period of remote monitoring has been run through Kaleidoscope Pro software, which can identify bat calls down to species level (except for *Myotis* spp.). Identification is generally correct when using this software; however, results are double checked to ensure accurate data analysis.
11. Every effort is made to split up myotid calls down to species level. This is done by analysing calls on Analook software and looking at parameters such as inter-pulse interval, call duration, slope, and maximum/minimum/peak call frequency. However, this can often be difficult when registrations are short in duration, faint, or distorted by cluttered environments.

Limitations

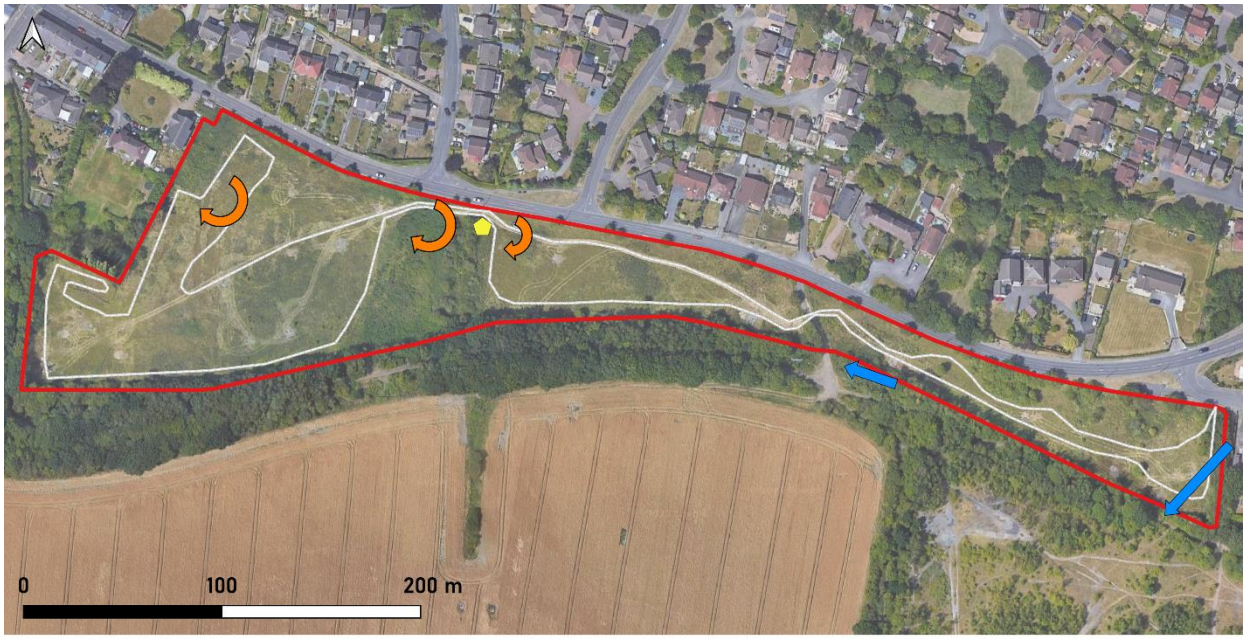
12. Static monitoring can only reliably provide information on what species of bat are regularly making use of a site. More detailed information on bat activity, such as frequency of bats and nature of activity (foraging, commuting, flight path) can only be gleaned through walked transects.
13. The frequency of calls recorded can, to some extent, suggest whether activity on-Site is low, moderate, or high, by comparing data collected with that of similar sites that have been surveyed.
14. A single registration can account for up to 15 seconds of continuous bat call. Large batches of registrations can be interpreted in several different ways: for instance, a single bat foraging continuously for only an hour can result in many hundreds of registrations being logged; similarly, many hundreds of bats commuting quickly past the detector can result in the same number of registrations.

Spring Results

Walkover Transect

15. The transect began in the north-east corner of the Site and headed west, before circling the Site in an anti-clockwise direction. The route was walked twice.
16. Five bat contacts were logged during the walked transect. The first was at 21:35, 42 minutes after sunset when a common pipistrelle was recorded commuting across the eastern end of the Site.
17. The second bat contact was at 21:38 when a common pipistrelle was heard but not seen, likely commuting along the woodland off-Site to the south.
18. Following this, activity related to single common pipistrelles foraging to the west at 22:29, 22:35 and 22:42- these are likely to have been the same bat recorded on different parts of the transect.
19. No other species were recorded either by the surveyor or by the Anabat Express.

Figure 2 Summary of bat activity observed during the Spring walked transect.



Spring Results

Remote Monitoring

20. A single remote detector (Song Meter SM4BAT FS) was deployed in the location shown in Figure 2. This was left to run for five consecutive nights, from 6th-10th June 2023. The spring period (April–May) could not be sampled due to repeat failing of recording equipment; data collected in early June was used in its place and this is not thought to be of significance to the overall Spring assessment.

21. Activity was generally consistent across the monitoring period, averaging 123 bat registrations per night- this equates to low bat activity. Lowest numbers were recorded on the first night of recording, the 6th, with 74 registrations; highest levels were recorded on the final night, the 10th, with 158 registrations. These figures generally indicate very low activity by bats.

22. The most frequent species were common pipistrelle and Leisler's bat, accounting for 74% and 23% of records respectively. The remaining records were of noctule, brown long-eared bat, and soprano pipistrelle, indicating that these species are less common in the local environment, or have less reliance on the Site for foraging and/or commuting.

23. Activity for all species peaked in the two hours after sunset, with a smaller peak in the two hours before sunrise; such an activity pattern generally indicates the presence of bats leaving and returning to roosts in the surrounding area.

24. Lower levels of activity were fairly consistent throughout the night, indicating that single or very low numbers of bats use the Site (or nearby Off-Site habitats) as a foraging resource.

Table 2 Total number of registrations logged for each bat species, per night across the spring period.

SPECIES	6th June	7th June	8th June	9th June	10th June	TOTAL
Common pipistrelle	62	60	81	126	127	**456**
Leisler's bat	8	41	43	25	24	**141**
Noctule	2	1	0	0	4	**7**
Brown long-eared bat	2	3	0	0	0	**5**
Soprano pipistrelle	0	1	0	1	3	**5**
TOTAL	**74**	**106**	**124**	**152**	**158**	**614**

Figure 3 Number of registrations per species over the spring monitoring period.

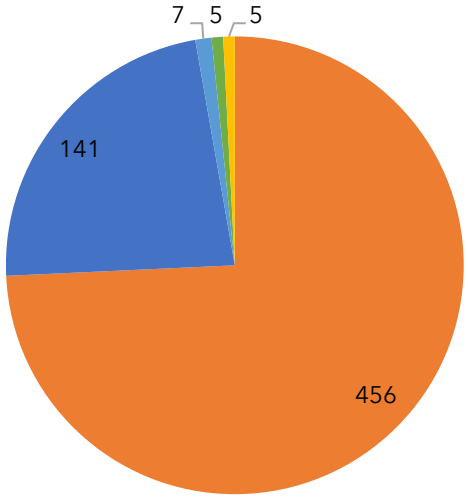
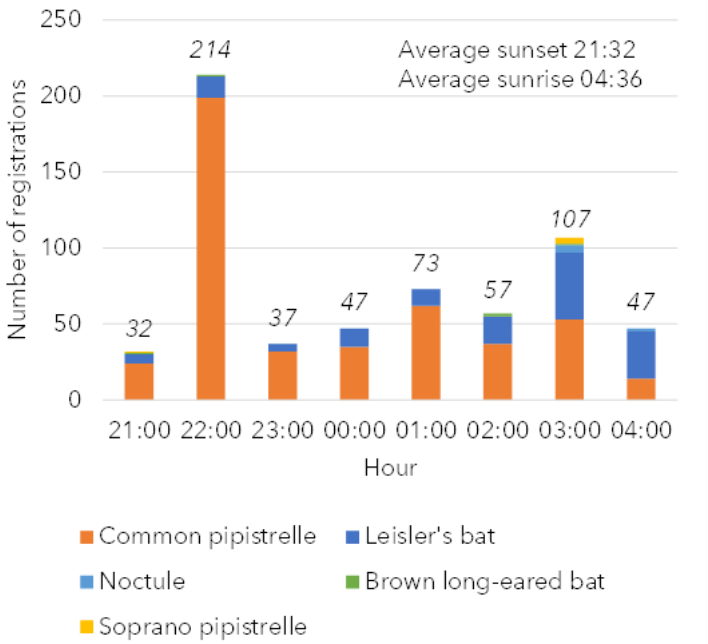


Figure 4 Number of records per hour over the spring monitoring period, divided by species. Callouts indicate total number of registrations made in an hour for all species.

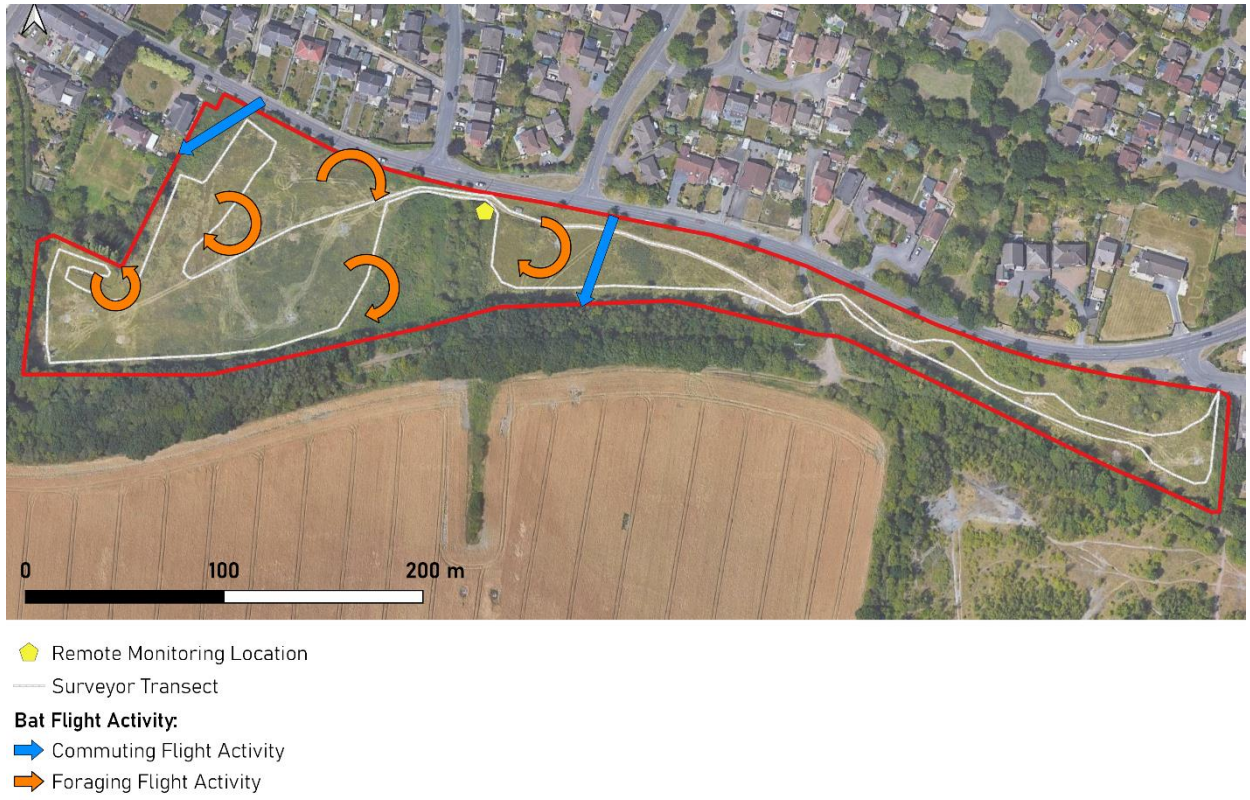


Summer Results

Walkover Transect

25. The transect began in the north-east corner of the Site and headed west, before circling the Site in an anti-clockwise direction. The route was walked twice.
26. Bat activity was slightly higher then Spring, but the vast majority of bat contacts still relate to common pipistrelle.
27. Bat activity began at 22:08, 31 minutes after sunset when a single common pipistrelle was recorded commuting over the centre of the Site north – south.
28. Following this, bat activity comprised of single, occasionally 2 common pipistrelles foraging around the western portion of the Site. Due to the Site's relatively small nature, it is likely that some of these bats were encountered multiple times.
29. In addition, a noctule was recorded at 22:24 commuting over the north-western corner of the Site.
30. No other species were recorded either by the surveyors or by the Anabat Express.

Figure 5 Summary of bat activity observed during the Summer walked transect.



Summer Results

Remote Monitoring

31. A single remote detector (Song Meter SM4BAT FS) was deployed in the same location as before and left to run for five consecutive nights, from 4th–8th July 2023.

32. Activity was generally consistent across the monitoring period, averaging 647 bat registrations per night. Lowest numbers were recorded on the final night of recording, the 8th, with 524 registrations; highest levels were recorded on the night of the 5th, with 774 registrations. These figures indicate relatively consistent, moderate bat activity levels on-Site.

33. Common pipistrelle was by far the most common species recorded, accounting for 93% of all registrations. Leisler's bat formed a much smaller proportion than in spring, with 5% of registrations; noctule and soprano pipistrelle are much less frequent, as in spring. Brown long-eared bat was not recorded over the summer period, although a single registration of Nathusius' pipistrelle was made.

34. As in spring, activity peaked in the two hours following sunset, and again in the hour preceding dawn, lending further support to the hypothesis of a roost being present nearby.

35. Activity dropped off strongly throughout the night. Compared to the consistent activity levels through the spring monitoring period, this indicates a reduced reliance by bats on the Site in summer.

Table 3 Total number of registrations logged for each bat species, per night across the summer period.

SPECIES	4th July	5th July	6th July	7th July	8th July	TOTAL
Common pipistrelle	544	763	659	565	487	**3018**
Leisler's bat	39	11	55	22	25	**152**
Noctule	6	0	35	9	12	**62**
Soprano pipistrelle	0	0	0	3	0	**3**
Nathusius' pipistrelle	0	0	1	0	0	**1**
TOTAL	**589**	**774**	**750**	**599**	**524**	**3236**

Figure 6 Number of registrations per species over the summer monitoring period.

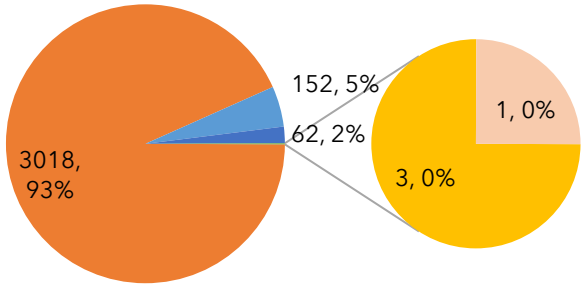
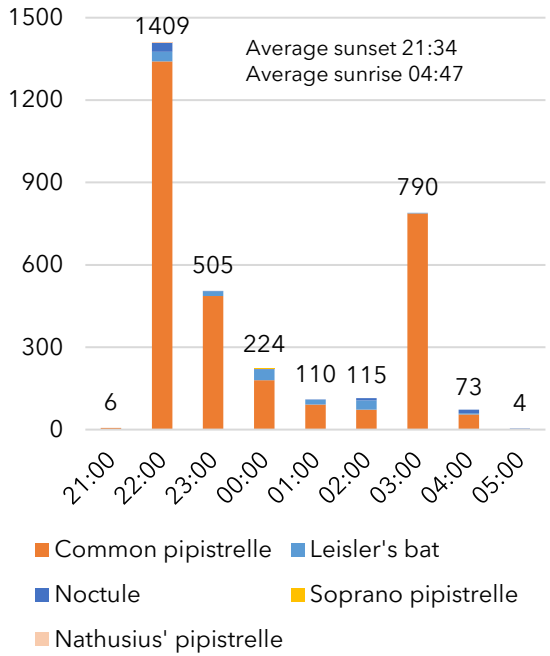


Figure 7 Number of records per hour over the summer monitoring period, divided by species. Callouts indicate total number of registrations made in an hour for all species.



Evaluation

36. Transect and remote monitoring surveys in Spring and Summer 2023 have found the Site to be of varying value to bats.

37. Spring survey recorded low levels of bat activity during both walked transects and remote monitoring with 74% of the registrations made during the latter associated with common pipistrelle.

38. Summer surveys found greater levels of bat activity, but only to the extent of moderate activity, and still dominated by common species of bats- common pipistrelle accounted for 93% of all registrations.

39. No significant commuting routes have been identified.

40. Other species recorded in order of abundance comprised Leisler's bat, noctule, soprano pipistrelle and Nathusius pipistrelle- a group of species that is typical of the urban / farmland fringe.

41. Due to the Site's linear nature and the adjacent tree'd former railway line which will undoubtably be a higher value feature for local bat populations moving through the landscape, bat activity recorded on Site is likely to have been heightened by this association. This data from both Spring and Summer supports this theory with bat activity peaking in the two hours after sunset and to a lesser extent in the hour preceding sunrise.

42. However, it is still assessed that the on-Site unmanaged grassland and scrub habitats will support a good prey source and be utilised to a lesser degree by single or low numbers of bats for foraging throughout the night.

Conclusions and Recommendations

43. The Site has been subject to detailed bat survey in Spring and Summer 2023.

44. Autumn survey is scheduled for September / October 2023 to corroborate these findings although data collected to date gives a good representation of general bat activity across the Site.

45. The proposed development looks to retain and enhance the western part of the grassland, with new scrub areas, tree & hedgerow planting, SuDS and gardens providing a mosaic of additional habitats.

46. Through this retention and creation of habitats and through the protection of the railway line feature, it is assessed that the proposed development is unlikely to impact significantly on the local bat populations.

47. In order for this to be achieved, a sensitive lighting plan must be designed by a specialist to show how light spill will be avoided along the off-site railway line and either avoided or minimised on new public open space areas.

48. The Site lacks any potential roost features and it is recommended that bat boxes are installed on at least 25% of new builds.

References

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