Brooks Ecological
Grounded advice

Interim Bat Activity Survey

North Bierley, Phase 2

Keyland

Report Reference: ER-5528-02

21/10/2021

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Report Reference:	ER-5528-02
Written by:	Victoria Baker BSc (Hons) MSc ACIEEM Ecologist
Technical Review:	Sam Kitching BSc (Hons) MCIEEM Senior Ecologist
QA:	Jon Roberts MSci (Hons) Biodiversity Technician
Approved for Issue:	Sam Kitching BSc (Hons) MCIEEM Senior Ecologist
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Unit A, 1 Station Road, Guiseley,
Leeds, LS20 8BX
01943 884451
admin@brooks-ecological.co.uk
www.brooks-ecological.co.uk
Registered in England Number 5351418

Summary Statement

The Site attracts only low-level, irregular foraging by a limited range of common bat species.

A sensitive masterplan has been devised which retains much of the favoured habitat and presents opportunities for ecological enhancement. Standard mitigation is recommended to minimise any residual impacts.

Introduction

1. Brooks Ecological was commissioned by Keyland to carry out a detailed Bat Activity Survey at the proposed development Site at North Bierley, Phase 2, grid reference SE181271.

2. These surveys are required to provide evidence of the baseline use of the Site by the local bat population, which in turn 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, the results of previous activity surveys, and in accordance with current best practice guidelines (Bat Conservation Trust, 2016).

Figure 1 Site location plan.

Method

4. Survey and assessment was directed by Sam Kitching BSc (Hons) MCIEEM. Sam 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. Summer and Autumn walked transects were undertaken in August and October 2021 respectively, during optimal survey conditions. Spring survey is scheduled for April / May 2022. Survey conditions are summarised below:

Table 1 Survey Conditions.

Survey	Date	Sunset	Weather	Invertebrate Activity
Spring	Scheduled for April / May 2022			
Summer	17.08.21	20:33	18°-16°C, light breeze B1, dry, 20% cloud.	Low
Autumn	06.10.21	18:31	12°-10°C, light breeze B1, dry full cloud.	Low

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. Notes taken during the survey were then used to produce the activity 'heat map' seen in the below figures.

9. Blue shades on the heat map correspond with low activity defined by up to 2 individuals intermittently recorded, yellow tones indicate more prolonged spells of activity by 2-5 individuals, whilst red tones indicate higher and consistent activity levels of 5 or more bats.

Remote Monitoring

10. To supplement data collected during the walked transect, static monitoring device/s (Wildlife Acoustic SM4) were deployed in a strategic location on-site prior to the start of the walked transect.

11. 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*). Identification is generally correct when using this software; however, results are double checked to ensure accurate data analysis.

12. 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

13. 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, nature of activity (foraging, commuting, flight path), etc., can only be gleaned through walked transects.

14. 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.

15. 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, i.e., 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.

Summer Results

Walkover Transect

16. An approximate route walked by the surveyor is shown in Figure 2 opposite. The survey started at the north-eastern corner of the Site, before proceeding west and entering the fields. Following this, the transect continued south and encircled the water treatment works, taking in the Hunsworth Beck boundary, and the field boundaries and centres. The route was walked 3 times.

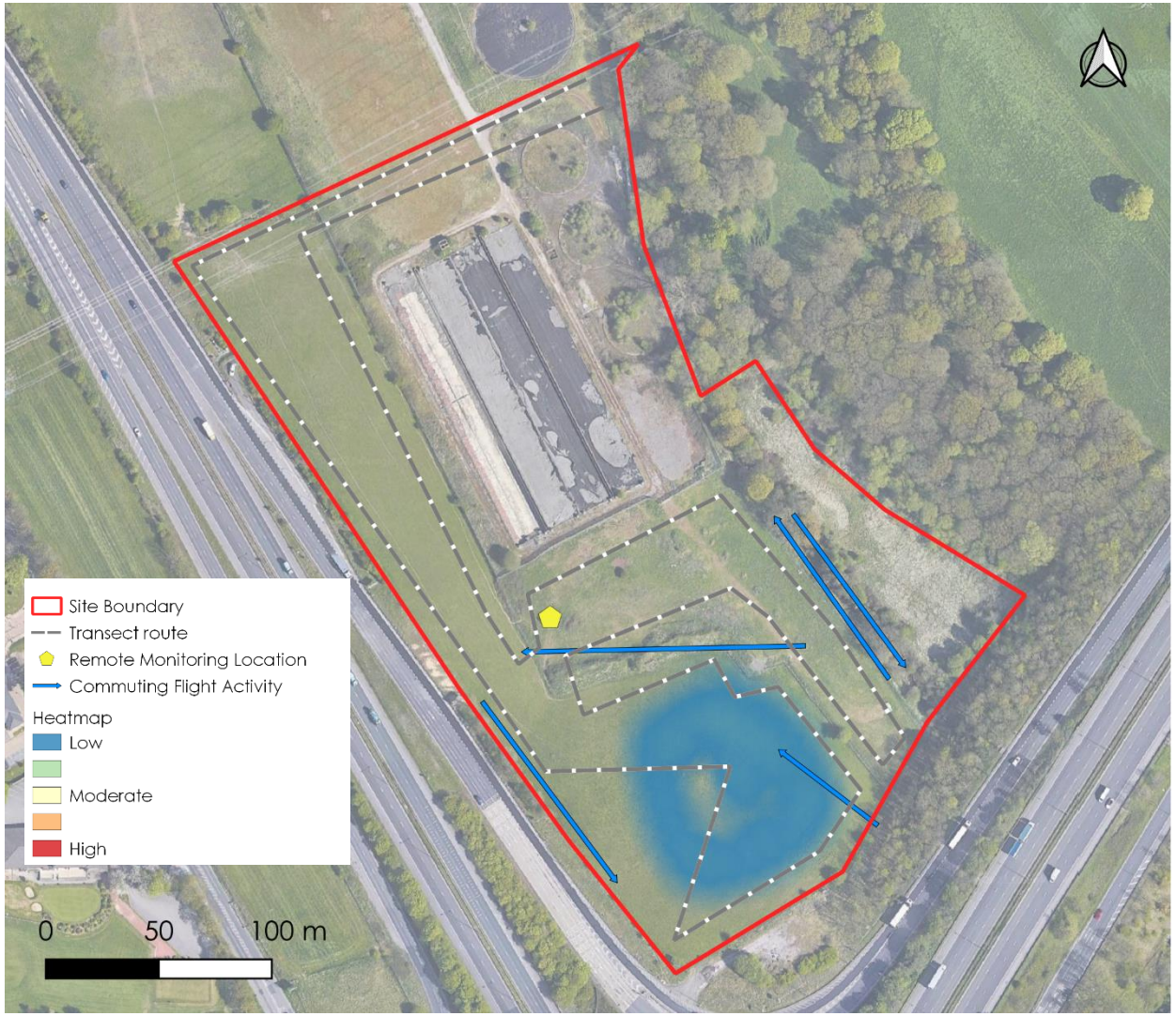
17. Relatively low levels of bat activity were recorded, with the majority of activity relating to common pipistrelle. The first bat recorded was a single common pipistrelle at 20:45, observed commuting from the M62 embankment boundary and entering the Site. Following this and over the course of the survey, occasional individual common pipistrelles were recorded commuting along Hunsworth Beck or along the M606 boundary.

18. At 20:52, foraging by two common pipistrelles was recorded over the fields to the south-east. At 21:24, foraging by 2 common pipistrelles was also recorded in the same areas, assumed to be the same individuals.

19. The only other species recorded was a noctule at 20:56, recorded commuting high over the Site east – west.

20. No activity was recorded to the west of the Site.

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



Summer Results

Remote Monitoring

21. A single remote detector (Song Meter SM4BAT FS) was deployed in the centre of the Site, as shown in Figure 2. This was left to run for 5 consecutive nights, from the 17th to the 21st August 2021.

22. In total, 669 registrations of confirmed bat calls were made during the monitoring period, with on average 134 recorded per night. This equates to relatively low activity. This average is increased by a disproportionate number of registrations being recorded on the fourth night.

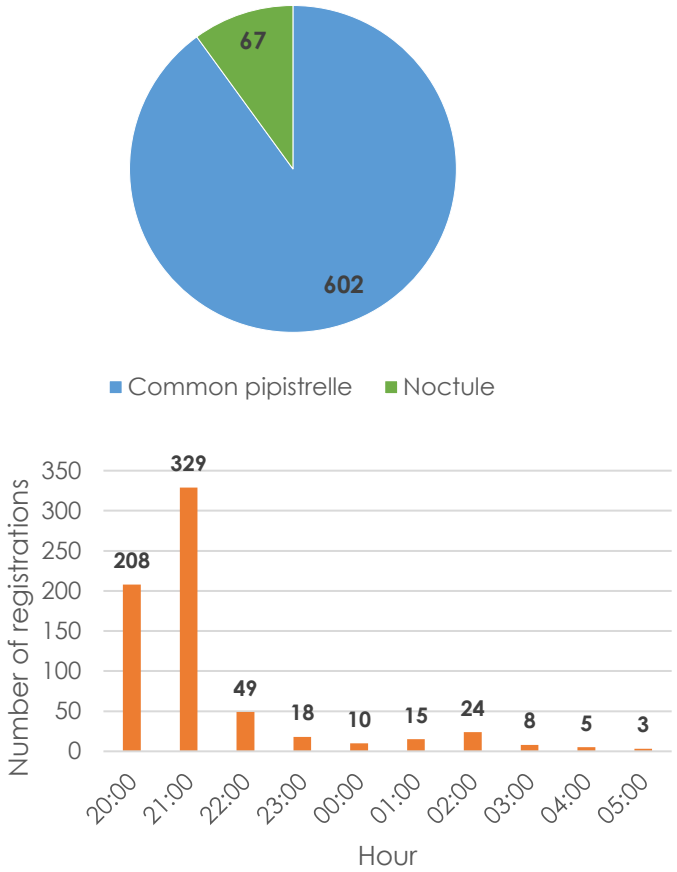
23. Two species were recorded: common pipistrelle and noctule, with 89% of registrations attributed to the former.

24. Activity peaks just after sunset, with 80% of registrations made between 8 and 10pm, indicating that bats make use of the Site as they leave local roost sites before heading to higher-value habitat in the wider landscape.

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

Species	17th	18th	19th	20th	21st
Common pipistrelle	62	76	92	270	102
Noctule	5	6	1	35	20

Figure 3 Cumulative total of registrations logged for each hour across the summer monitoring period.



Autumn Results

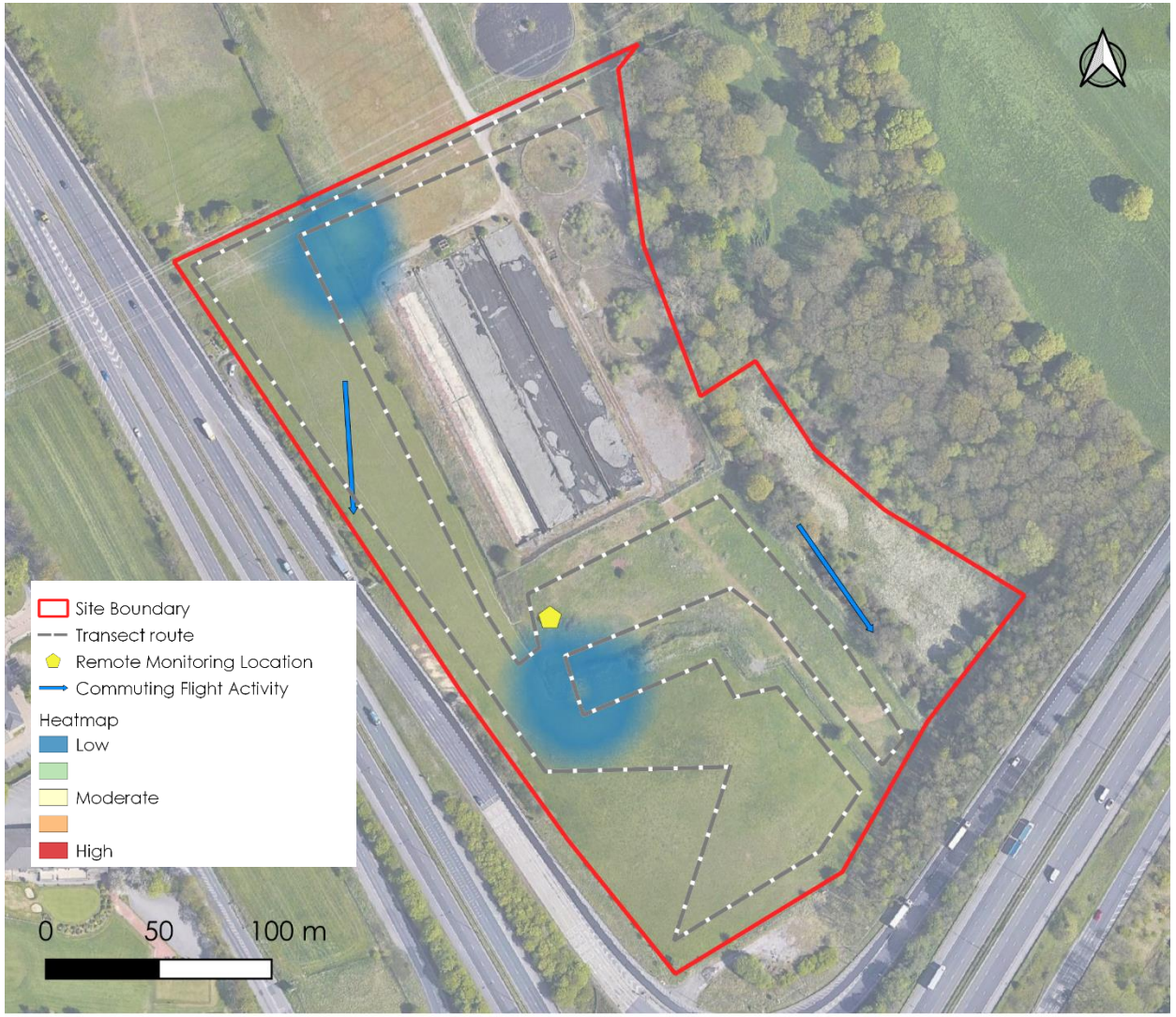
Walkover Transect

25. The survey followed a route very similar to that made in summer transect, as shown in Figure 4 opposite.

26. Very low levels of bat activity were recorded, with all activity relating to lone common pipistrelles. The first bat recorded was at 19:09, when one bat was observed foraging to the south-west of the Site. A single foraging common pipistrelle was also recorded to the north at 19:29.

27. Aside from this, commuting by lone common pipistrelles was also recorded to the north and along Hunsworth Beck. In the case of the latter, a common pipistrelle was recorded commuting down the watercourse on each transect pass.

Figure 4 Summary of bat activity observed during the autumn walked transect.



Autumn Results

Remote Monitoring

28. A single remote detector (Song Meter SM4BAT FS) was deployed in the same location as before, as shown in Figure 4. This was left to run for 5 consecutive nights, from the 6th – 10th October 2021.

29. Only 37 bat call registrations were made during the monitoring period, which equates to very low activity.

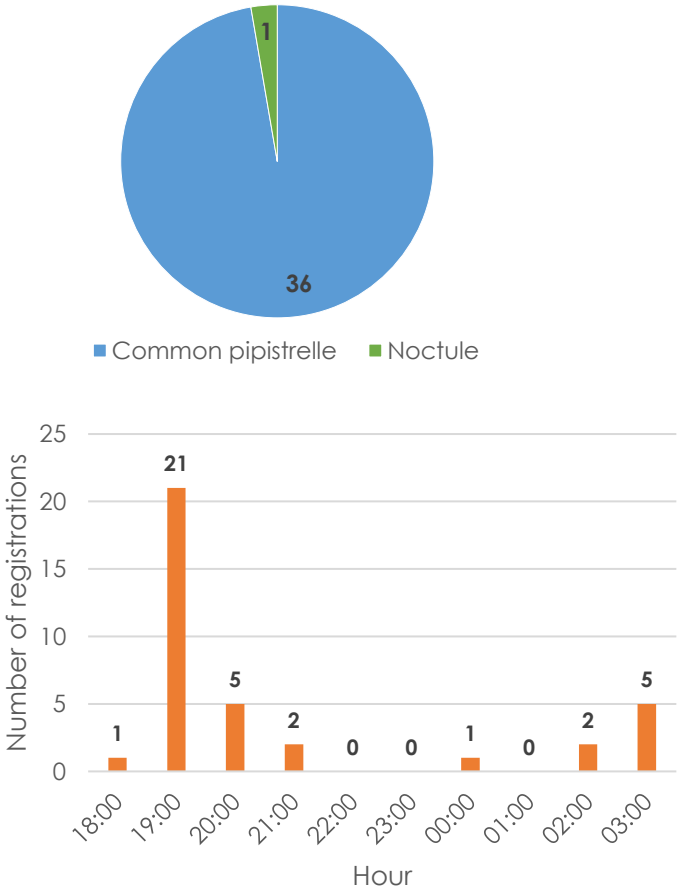
30. Again, only common pipistrelle and noctule were recorded, with common pipistrelle accounting for all but one of the registrations.

31. Similarly to summer, activity peaks just after sunset, around 7pm, with activity very low throughout the remainder of the night.

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

Species	6th	7th	8th	9th	10th
Common pipistrelle	12	9	5	8	2
Noctule	1	-	-	-	-

Figure 5 Cumulative total of registrations logged for each hour across the autumn monitoring period.



Evaluation

32. Activity survey in summer and autumn has found the Site to be of low importance to local bat populations. During the walked transects and remote monitoring, all activity related to common species of bats, namely common pipistrelle and noctule.

33. Walked transects have recorded only low-level irregular foraging and commuting by common pipistrelle bats, with occasional commuting by noctule.

34. Remote monitoring recorded similar low-level activity by the same two species, although common pipistrelle comprised the bulk of this activity. Very low to low levels of foraging were recorded across the nights, suggesting that single or very low numbers of bats forage over the Site, on an *ad hoc* basis.

35. The data collected during this survey does not point to the Site being of any significant importance to any local bat populations.

36. Evaluation of foraging and commuting habitat is made with reference to Wray *et al* (2010). This uses a scoring system to assess the Site's importance to bats against a geographic frame of reference.

Table 4 Scoring system for valuing commuting and foraging habitat

Geographic Frame of Reference	Score
International	>50
National	41-50
Regional	31-40
County	21-30
District, Local or Parish	11-20
Not Important	1-10

37. Using the above methodology, the Site is assessed as follows:

Foraging

38. Small numbers (10) of common species of bat (2). No roosts identified nearby (1). Mosaic of pasture, woodlands and wetland areas (5).

39. Total of **18 points.** The Site is of local value to bat populations.

Commuting

40. Individuals (5) of common species of bat (2). No roosts identified nearby (1) with a complex network of mature well-established hedgerows, small fields and rivers/streams (5).

41. Total of **13 points.** The Site is of local value to bats.

42. Based on the results of the Summer and Autumn surveys and the Wray *et al.* scoring system, the data collected does not point to the Site being of any significant importance to any local bat populations. However, further survey is scheduled for spring (April / May 2021) to corroborate these findings.

Conclusions & recommendations

43. The Site Layout Proposal (KPP Architect drawing number 1773-01) shows the retention of the feature of highest value (Hunsworth Beck), and as such, the proposed development is unlikely to impact significantly on the local bat populations. A green buffer is recommended between the new Unit and the watercourse; this should be planted with native shrub and tree species.

44. To further minimise the impact of development of bats, the following mitigation is recommended:

    - A sensitive lighting plan should be designed to show how light spill will be minimised/avoided on Hunsworth Beck and its green buffer.
    - New planting could also be incorporated across the wider Site to improve connectivity throughout.
    - Large areas of grassland are shown to be retained, and the value of these could be enhanced through appropriate management and the sowing of wildflower seed mixes.
    - Any landscape planting could utilise native or pollinator-friendly species.

References

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