

Harrogate Spring Bottling Plant Extension



Bat Activity Survey – Spring Update

06/06/2024

Harrogate Spring Water Ltd

ER-5017-07



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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.



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Summary Statement

Bat activity surveys, undertaken during the autumn and spring activity seasons, have found the Site to attract low levels of bat activity, attributed to common bat species.

Walked transects recorded low numbers of common and soprano pipistrelle, whiskered and Daubenton's bats foraging and commuting on-Site. Activity was mainly focussed on the western woodland edge.

Static monitoring has also recorded low levels of activity by a wider variety of species, but with the recordings dominated by common pipistrelle.

Proposals for the Site include the retention and creation of new woodland, with an increase expected in woodland edge habitat throughout the Site, which will continue to have good links to adjacent habitats and the wider landscape.

A sensitive lighting plan should be designed to show how light spill will be minimised/avoided on habitats favoured by bats.

Introduction

1. Brooks Ecological was commissioned by Harrogate Spring Water Ltd to carry out detailed Bat Activity Survey at the proposed development Site, the Harrogate Spring Bottling Plant Extension.
2. The aim of this survey is 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, 2023).
4. In response to comments provided by Harrogate Borough Council, an additional spring survey was carried out to provide further details on how bats use the Site, "given the lateness of the season" when the autumn work was undertaken.

Figure 1 Site location plan.



Method

5. Survey and assessment was directed by Rob Weston BSc MSc MCIEEM. Rob is an experienced bat surveyor and is licenced to carry out surveys under Natural England’s Survey Level 2 Class License (2015-10607-CLS-CLS) and to Register Sites under the Bats Mitigation Class License CL021 (RC-065).
6. The objective of the survey was to collect up-to-date 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, 2023):
 - 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

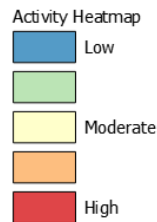
7. Walked transects were undertaken in September and May, during suitable survey conditions. Survey conditions are summarised below:

Table 1 Survey Conditions.

Survey	Date	Sunset	Weather	Invertebrate Activity
Autumn	26/09/2023	18:56	15°C, Beaufort 1-2, dry, oktas 5/8, humidity 75-80%.	Moderate
Spring	16/05/2024	21:06	13°C, Beaufort 2, dry, oktas 8/8, humidity 85-90%.	Low

Transects

8. 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.
9. 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.
10. 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 2-4 individuals, whilst red tones indicate higher and consistent activity levels of 5 or more bats.



Remote Monitoring

11. 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.
12. 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* species). Identification is generally correct when using this software; however, results are double checked to ensure accurate data analysis.
13. Every effort is made to split up myotid calls down to species level. This is done by analysing calls on Analoop 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

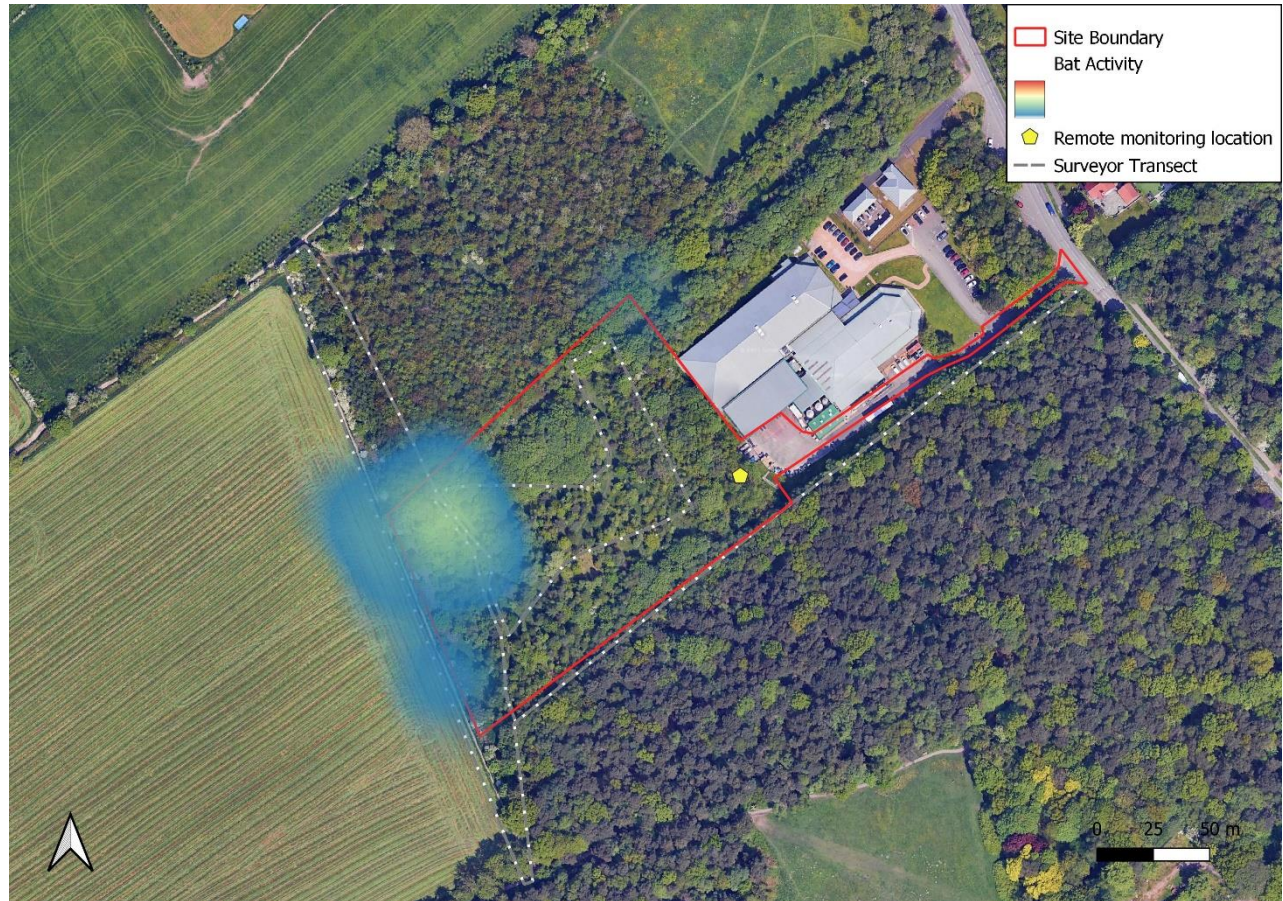
14. Static monitoring can only reliably provide information on what species of bat are regularly making use of a site. More detailed information on bat activity, such as frequency of bats, nature of activity (foraging, commuting, flight path), etc., can only be gleaned through walked transects.
15. The 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.
16. 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.

Autumn Results

Walkover Transect

17. The transect commenced from the northeastern edge of the Site, along Harlow Carr Road. The route was walked in a modified figure-8 style, to cover all sections and areas of the Site. The route was walked five times in total.
18. The first bat contact was a common pipistrelle, heard foraging at 19:32 over the woodland edge along the west of the Site.
19. This was followed by an indeterminate *Myotis* species in the same area at 19:33, commuting over the Site.
20. At 19:41, a single whiskered bat was heard briefly along the western woodland edge.
21. This was followed by commuting common pipistrelles moving along the same woodland edge at 19:43, 19:51, and 19:55.
22. The final bat recorded during the transect survey was a single Daubenton's bat, heard over the northern tip of the Site at 20:04.

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



Autumn Results

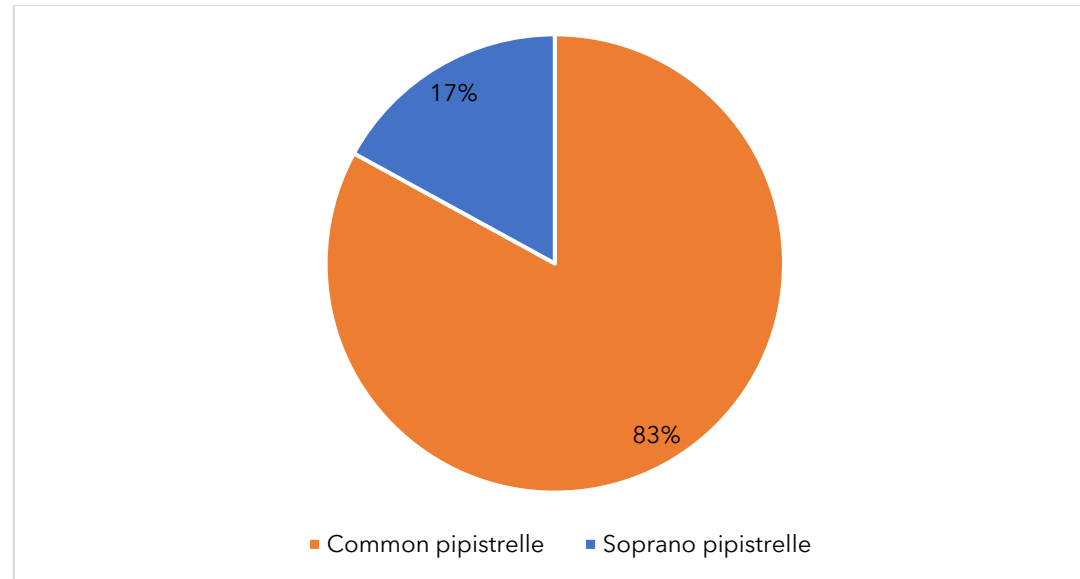
Remote Monitoring

23. A single remote detector (Song Meter SM4BAT FS) was deployed along the woodland edge, close to the existing bottling plant (as shown on Figure 2 above). This was left to run for five consecutive nights, from 26th to 30th September 2023.
24. A summary of the data collected is presented in Table 2 opposite.
25. Two species were recorded on-Site during the monitoring period, with the majority of this activity attributed to common pipistrelle (83% of all registrations); see Figure 3.
26. With averages of eight and two registrations per night for common and soprano pipistrelle respectively, bat activity can be considered to be very low and can be accounted for by very low level/irregular commuting by solitary individuals.
27. The data collected does not indicate that the Site is of high value to any local bat populations.

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

Species	26 th	27 th	28 th	29 th	30 th	Average
Common pipistrelle	17	8	9	4	1	8
Soprano pipistrelle	0	6	1	0	1	2

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



Spring Results

Walkover Transect

28. The transect commenced from the northeastern edge of the Site, along Harlow Carr Road. The route was walked in a modified figure-8 style, to cover all sections and areas of the Site. The route was walked five times in total.
29. The first bat contact was a common pipistrelle, heard foraging at 21:24 over the woodland edge to the south of the existing bottling plant.
30. This was followed by two common pipistrelle foraging in a clearing close to the western woodland edge.
31. More activity was noted along the length of the western woodland edge, with at least two foraging common pipistrelles and a single soprano pipistrelle also foraging here.
32. A Brandt's bat was recorded at 22:02 in more open areas of woodland off-site to the north.
33. Activity around the Site was significantly reduced from around 22:00, with only a single common pipistrelle recorded foraging along the western woodland edge after this time.

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



Spring Results - West Detector

Remote Monitoring

- 34. Two remote detectors (Song Meter SM4BAT FS) were deployed on-site, one in the same location as during September 2023 along the woodland edge, close to the existing bottling plant, and the other along the western Site boundary and woodland edge (as shown on Figure 4 above). They were left to run for five consecutive nights, from 10th to 14th May 2024.
- 35. A summary of the data collected is presented in Table 3 opposite.
- 36. Seven species were recorded on-Site during the monitoring period, with the majority of this activity attributed to common pipistrelle (82.68% of all registrations); see Figure 5.
- 37. Noctule was the second most frequent species, with 9.14% of activity attributed to this species - whose activity is likely to be focused on the grassland and more open habitats to the north and west, with soprano pipistrelle third at 6.81%.
- 38. The remaining four species represent only 1.36% of activity combined and area therefore considered to be only very occasional users of the Site, probably just commuting through the area.
- 39. With a maximum average of 85 calls per night for common pipistrelle, bat activity is considered to be low and can be accounted for by low level/irregular foraging/commuting by a small number of individuals.
- 40. The activity per hour throughout the night shows that activity is fairly similar from sunset through to the early morning, with a peak immediately before dawn, suggesting that common

pipistrelle bats may be returning to a roost in nearby housing/trees.

41. The data collected does not indicate that the Site is of high value to any local bat populations.

Table 3 Total number of registrations logged (west detector) for each bat species, per night across the spring period.

Species	10 th	11 th	12 th	13 th	14 th	Average
Common pipistrelle	74	87	11	125	128	85
Soprano pipistrelle	8	7	0	4	16	7
Myotis species	0	0	0	2	2	0.8
<i>Brandt's</i>	0	0	0	2	0	0.4
<i>Daubenton's</i>	0	0	0	0	1	0.2
<i>Whiskered</i>	0	0	0	0	1	0.2
Noctule	35	4	0	1	7	9.4
Brown long-eared	1	0	0	0	2	0.6

Figure 5 Breakdown of species composition of registrations.

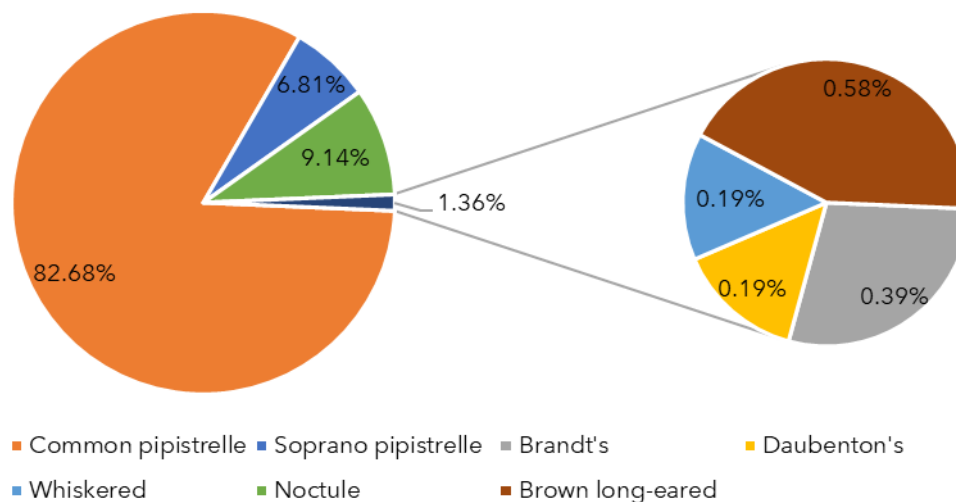
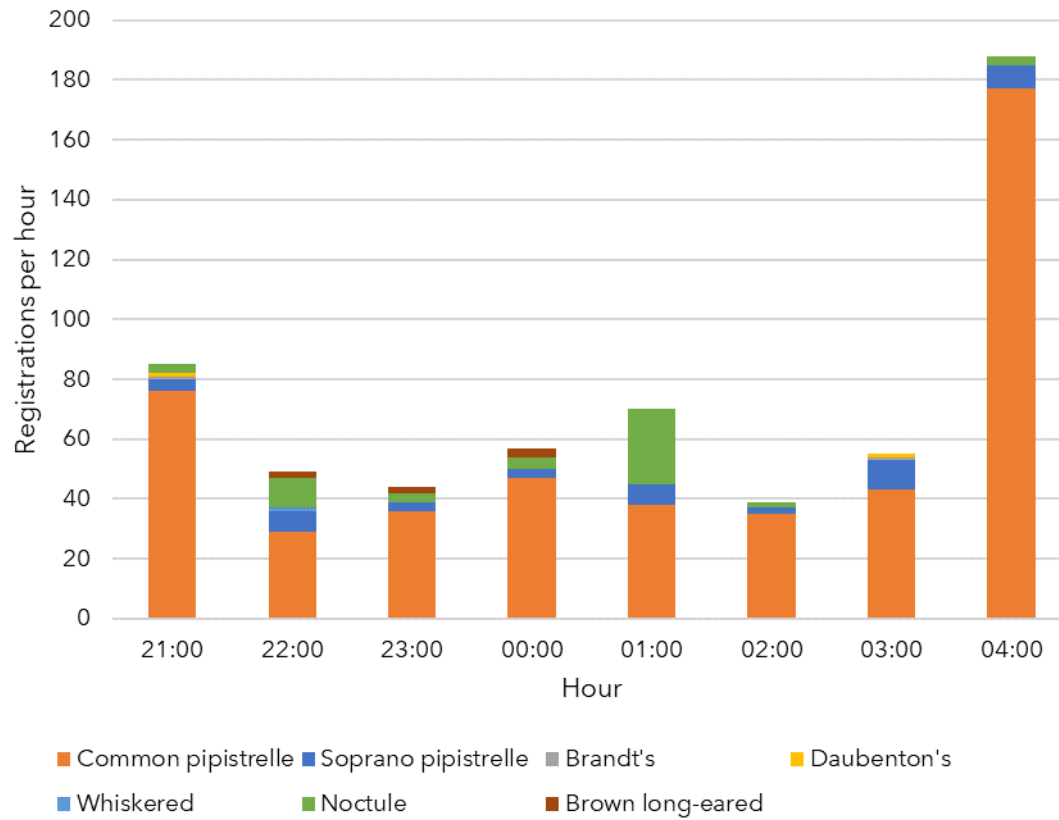


Figure 6 Cumulative total of registrations logged (west detector) for each hour across the spring monitoring period.



Spring Results - East Detector

Remote Monitoring

- 42. A summary of the data collected by the eastern static detector is presented in Table 4 opposite.
- 43. The same seven species were recorded on-Site during the monitoring period, with the majority of this activity again attributed to common pipistrelle (79.48% of all registrations); see Figure 7.
- 44. As on the west of the Site, noctule was the second most frequent species, with 11.28% of activity attributed to this species, with soprano pipistrelle third at 5.55%.
- 45. The remaining four species represent only 3.70% of activity combined and are therefore considered to be only very occasional users of the Site.
- 46. With a maximum average of 86 calls per night for common pipistrelle, bat activity is considered to be low and can be accounted for by low level/irregular foraging/commuting by a small number of individuals.
- 47. The activity per hour throughout the night shows that activity is again fairly similar from sunset through to the early morning. Activity peaks between 01:00 and 02:00 rather than the final hour before dawn, although the total number of registrations is broadly similar.
- 48. The data collected does not indicate that the Site is of high value to any local bat populations.

Table 4 Total number of registrations logged (east detector) for each bat species, per night across the spring period.

Species	10 th	11 th	12 th	13 th	14 th	Average
Common pipistrelle	108	79	18	119	106	86
Soprano pipistrelle	5	7	1	13	4	6
Myotid species	5	3	0	5	1	2.8
<i>Brandt's</i>	0	1	0	3	1	1
<i>Daubenton's</i>	4	2	0	1	0	1.4
<i>Whiskered</i>	1	0	0	1	0	0.4
Noctule	36	4	7	14	0	12.2
Brown long-eared	2	0	1	1	2	1.2

Figure 7 Breakdown of species composition of registrations.

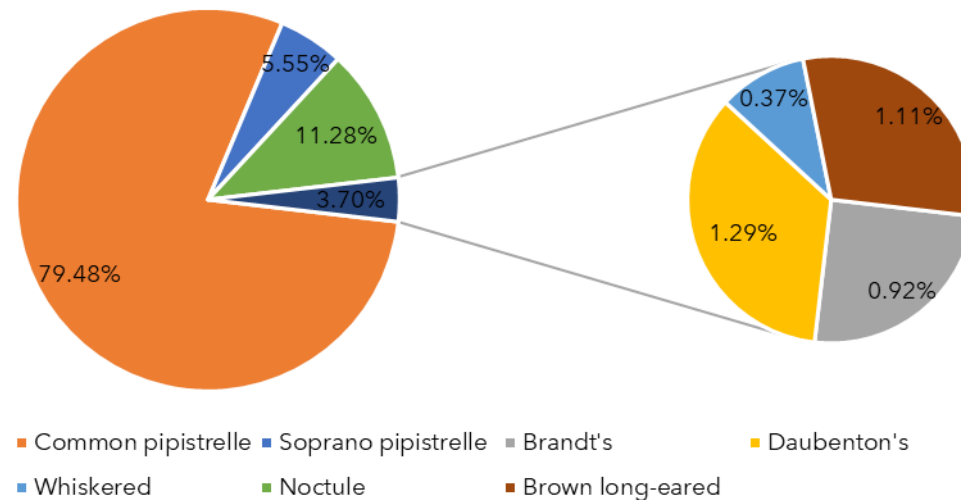
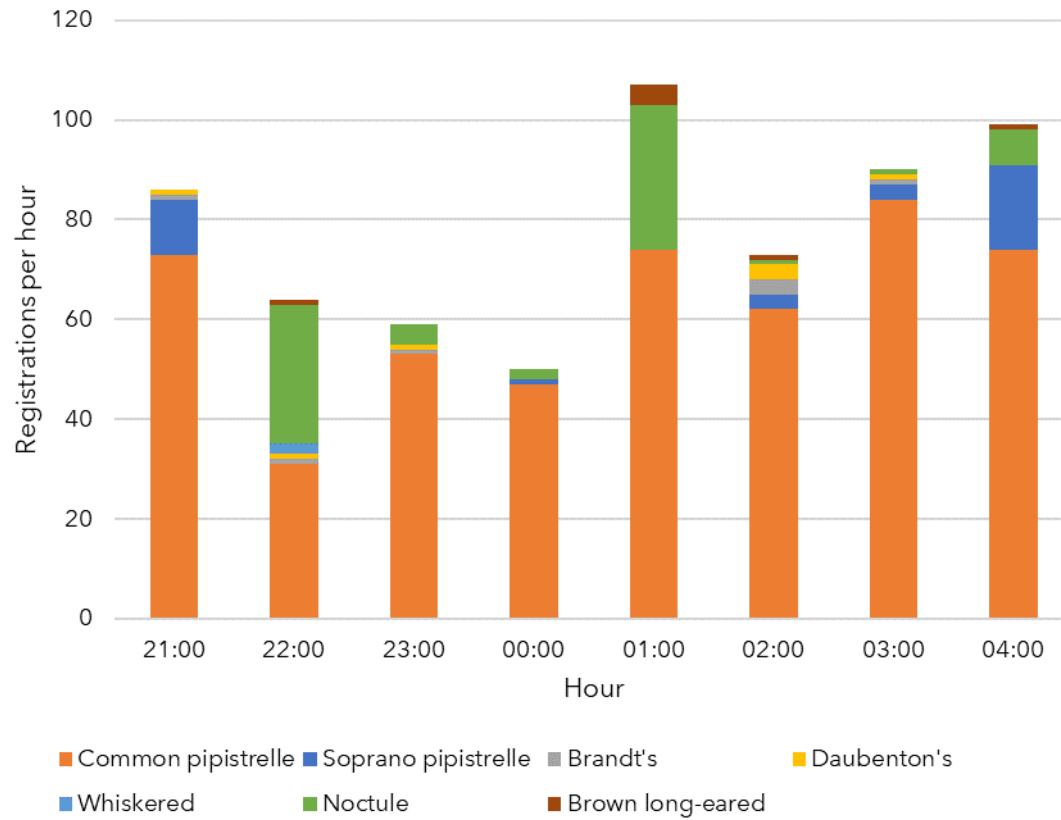


Figure 8 Cumulative total of registrations logged (east detector) for each hour across the spring monitoring period.



Conclusions

49. Bat activity surveys, carried out during the autumn and spring bat activity periods and during optimal weather conditions, have found that the bat activity on-Site is low.
50. The walked transects found very little bat activity within the main body of the woodland on-Site, with the majority of bat activity relating to the edges of the woodland, particularly along the western edge where the woodland borders open grassland.
51. Remote monitoring for the Site confirmed low levels of activity. Common pipistrelle was by far the most recorded species during both autumn and spring and whilst six other species were also recorded, they were all in much lower numbers.
52. The number of registrations for all species recorded was consistently low, suggesting that bats are commuting through, or foraging briefly within or near to the Site, and do not rely on it as a foraging resource.
53. The data collected during this survey effort does not point to the Site being of any significant importance to local bat populations.
54. Proposals will result in the loss of some woodland, but woodland will still be present post-development within the Site red line boundary. This woodland will maintain the existing links between other areas of woodland to the north and south of the Site, and subsequently to the wider landscape.
55. The western woodland edge will be shifted further west, with a new area of woodland planted up as part of proposals. The foraging and commuting opportunities for bats in this area will be retained, with minor enhancements possible with the creation of paths through the woodland, and a grassland ride over drainage pipes, as these features will add structural diversity and provide additional foraging opportunities.
56. The proposals for the Site include the creation of new habitat that would be expected to be used by bats. The total area of woodland edge habitat will be increased, with links to the wider landscape maintained.
57. More trees will be planted over areas of grassland. The trees and the grassland will be planted/sown with native species that will attract invertebrates for bats to feed on.
58. The inclusion of a sustainable urban drainage system, also planted with a native species mix, will also provide well-connected foraging habitat for bats.

Recommendations

59. Based on the information collected during the autumn and spring surveys, the Site does not appear to be of any significant importance to any local bat populations.
60. To minimise any impact of development on this group further, the following mitigation is recommended:
 - A sensitive lighting plan should be designed to show how light spill will be minimised/avoided on habitats favoured by bats.
 - Integral bat boxes should be installed on the new building proposed, overlooking the most valuable habitat along the western boundary.

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