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LAND SOUTH OF DONCASTER ROAD, DARFIELD.

BAT TRANSECT SURVEY REPORT.

Ref No: - **240123/BAT**

Date: - **4th December 2024.**

1. Introduction.

1.1. As the site was assessed as having potential to support roosting bats and with the scale of the development having the potential to cause the loss of any habitats which could support them, transect surveys were recommended and subsequently carried out.

1.2. Six surveys were carried out throughout the months of May 2024 to October 2024 to help obtain a picture of how bats were using the site. This comprises a mixture of automated static detector surveys (carried out monthly) and manual walked transect surveys (carried out seasonally). The results of these surveys are shown below.

1.3. All surveys were carried out in accordance with the Bat Conservation Trust Good Practice Guidelines 4th Edition (2023).

1.4. For information on all other species, please refer to the Preliminary Ecological Appraisal (PEA) reference: 240123/PEA/1.

2. Manual Transect Surveys.

2.1. Manual activity surveys were undertaken to supplement the information collected from the automated activity surveys. These were undertaken in the form of Night-time Bat Walkovers (NBWs) in each season.

2.2. Each of the surveys commenced with a 30-minute pause in one place to observe activity, followed by a steady walk around the site with occasional pauses to observe activity, in line with the Bat Conservation Trust Good Practice Guidelines 4th Edition. This was done at the shown start point, with one surveyor looking west and the other south, to provide a good view commuting routes to either the northern or southern sections of the site.

2.3. Each of the NBWs commenced directly at sunset, given the knowledge that the site is most likely to be used by pipistrelles which regularly emerge at sunset. The Bat Conservation Trust Good Practice Guidelines 4th Edition recommend considering delaying the start time, but this was not considered suitable on this site.

2.4. The route followed during the NBW has is shown below. Each NBW has been summarised with notes from the surveyor and a map showing any notable foraging activity.

2.4. Spring NBW - 28th May 2024.

2.4.1. The initial NBW was undertaken on 28th May 2024. Weather conditions on the night were fine and dry, although rain had been persistent earlier in the day, with a temperature of 13°C at sunset, which was at 21:21. There was a slight breeze, registering 2 on the Beaufort Wind Scale (BWS).

2.4.2. Within the first thirty minutes of the survey, prior to commencement of walking the designated route, activity was found to be very limited. One surveyor (S1) remained stationary whilst the other surveyor (S2) searched for areas of higher activity. Neither surveyor found much activity, with only S2 recording two common pipistrelle calls (1) within the woodland at the west of the site at 21:49.

2.4.3. Due to lack of activity, only thirty minutes were spent at the start point before the route walk commenced. The night remained very quiet with only the below activity observed.

- One common pipistrelle foraging within the woodland to the east of the survey area (2).
- One noctule was observed flying southwest to northeast over the centre of the site (3).
- Two common pipistrelle passed along the southeast of the site in quick succession (4).
- One soprano pipistrelle passed north to south along the western tree line (5).
- Two common pipistrelles were periodically heard foraging within the woodland to the west of the site, hard to see due to darkness beneath canopy (1).

2.4.4. The species recorded during the survey along with notable foraging or commuting routes have been recorded below.

Species	Number of calls recorded
Common pipistrelle *Pipistrellus pipistrellus*	14
Soprano pipistrelle *Pipistrellus pygmaeus*	8
Noctule *Nyctalus noctula*	3

2.5. Summer NBW - 3rd July 2024.

2.5.1. The second NBW was undertaken on 3rd July 2024. Weather conditions on the night were fine and dry, with a temperature of 15ºC at sunset, which was at 21:37. There was a moderate breeze, registering 3 on the BWS.

2.5.2. No bat activity was recorded within the first thirty minutes of the survey, prior to the commencement of walking the designated route. One surveyor (S1) remained stationary whilst the other surveyor (S2) searched for areas of higher activity but none was found.

2.5.3. Thirty minutes were spent at the start point before the route walk commenced. Activity increased as the night went on, with the below activity observed.

- One unidentified bat was observed flying east to west along the eastern hedgerow (1)

- One noctule and one *Myotis* sp. were seen flying north to south along the eastern hedgerow and woodland (2)
- One common pipistrelle was observed flying west to south along the western woodland (3).
- Multiple common pipistrelles were observed flying north to south along the western hedgerow (4).
- Multiple common pipistrelles were observed flying north to south along a hedgerow (5).
- Multiple common pipistrelles were observed flying north to south along the western hedgerow towards the woodland. (6) Constant foraging was recorded here.

2.5.4. The species recorded during the survey along with notable foraging or commuting routes have been recorded below.

Species	Number of calls recorded
Common pipistrelle *Pipistrellus pipistrellus*	90
Noctule *Nyctalus noctula*	11
Myotis sp.	17

2.6. Autumn NBW - 23rd October 2024.

2.6.1. The third and final NBW was undertaken on 23rd October 2024. Weather conditions on the night were clear and dry, with a temperature of 14°C at sunset, which was at 17:50. There was a very light breeze, registering just 1 on the BWS.

2.6.2. Again, no bat activity was recorded within the first thirty minutes of the survey, prior to the commencement of walking the designated route. One surveyor (S1) remained stationary whilst the other surveyor (S2) searched for areas of higher activity but none was found.

2.6.3. Thirty minutes were spent at the start point before the route walk commenced. Activity increased as the night went on, with the below activity observed.

- One soprano pipistrelle was observed foraging around the northeastern hedgerow (1).

- One common pipistrelle was observed flying east to west along the eastern hedgerow (2).
- One common pipistrelle was heard foraging within the eastern hedgerow (3).
- One unidentified bat was briefly heard and seen commuting along the eastern hedgerow (4).
- Multiple common pipistrelles, soprano pipistrelles and *Myotis* sp. were observed foraging within the western woodland habitat (5).

2.6.4. The species recorded during the survey along with notable foraging or commuting routes have been recorded below.

Species	Number of calls recorded
Soprano pipistrelle *Pipistrellus pygmaeus*	38
Common pipistrelle *Pipistrellus pipistrellus*	6
Myotis sp.	11

3. Automated Activity Surveys.

3.1. Automated activity surveys were carried out to help form the main understanding of how bats are using the site, to confirm whether there are any areas of particular importance which need safeguarding during the development.

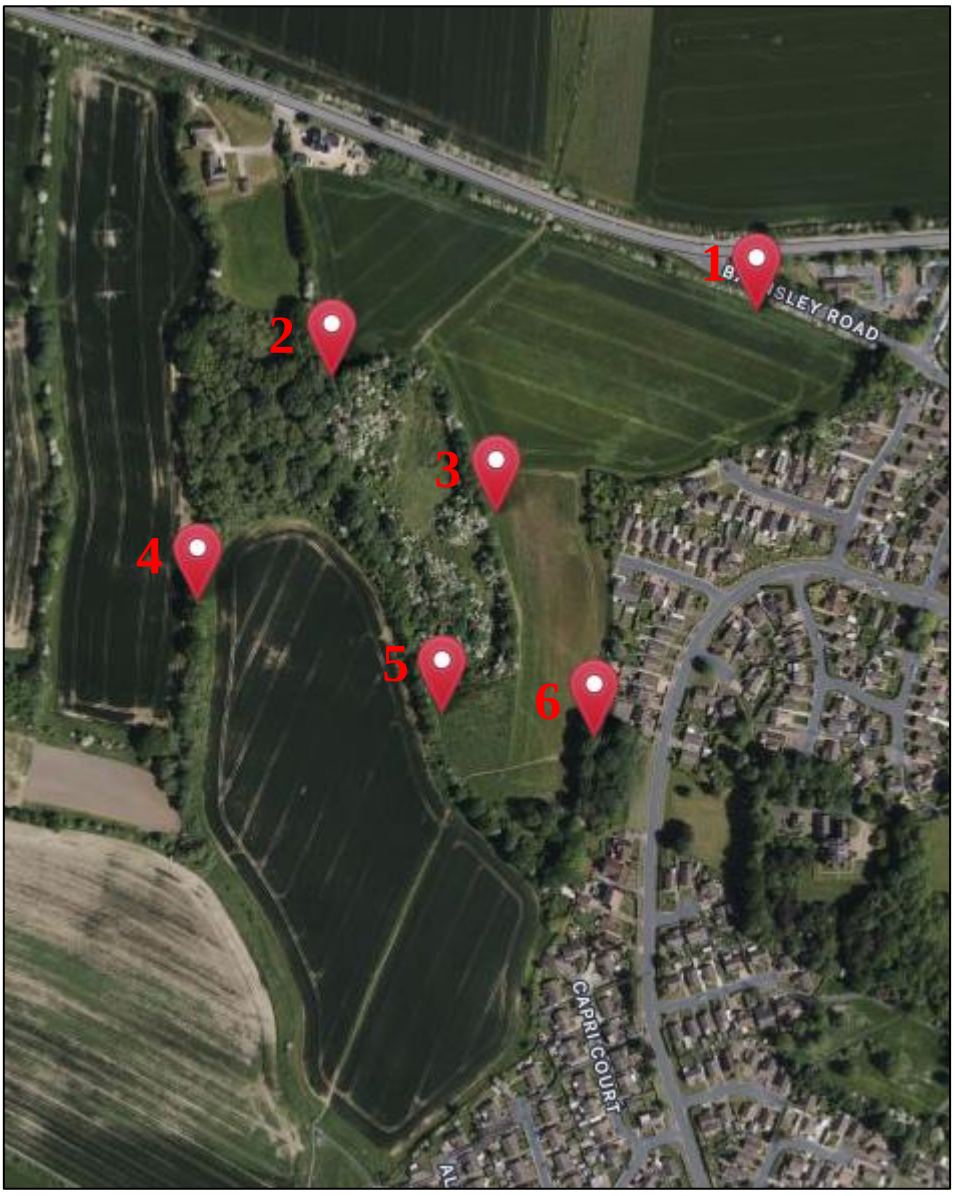
3.2. These surveys were carried out monthly between May and October 2024, with each deployment consisting of six Anabat recorders positioned in locations deemed most likely to help determine the pattern of activity across the site.

3.3. All monthly surveys lasted a minimum of five days, although these were often left for much longer when possible to gain additional information or on occasion. This means that some surveys span from one month into the next. The weather for these time periods are shown beneath the survey data, split into months.

3.4. The data gathered is extensive and it is not possible to include all extrapolated information into this report. Anything deemed relevant to the development is included.

3.5. Every effort has been made to assign calls to species level, however, many calls recorded were faint or of poor quality. Therefore, on occasion, bats have been marked to their family level only where reasonable degrees of confidence could not be achieved.

3.6. The location of these Anabat detectors, along with their marked number is shown below. Each Anabat detector was kept in the same location throughout the surveys to allow for consistency.



3.5. Static Anabat Data - 28th May to 2nd June 2024.

	May 2024						
Species	**AB1**	**AB2**	**AB3**	**AB4**	**AB5**	**AB6**	**Total**
Common pipistrelle *Pipistrellus pipistrellus*	22	527	202	305	49	37	869
Soprano pipistrelle *Pipistrellus pygmaeus*	1	186	55	43	30	4	233
Whiskered/Brandt's *Myotis mystacinus/ brandtii*	-	16	4	15	1	-	31
Brown long-eared *Plecotus auritus*	3	3	2	3	-	-	6
Total calls recorded	**26**	**734**	**263**	**366**	**80**	**41**	**1141**
Average Calls Per Night	**4**	**122**	**44**	**61**	**13**	**7**	**190**

*Total calls calculated by total calls divided by number of nights.

3.6. Static Anabat Data – 25th June to 2nd July.

	June 2024						
Species	**AB1**	**AB2**	**AB3**	**AB4**	**AB5**	**AB6**	**Total**
Common pipistrelle *Pipistrellus pipistrellus*	78	670	301	630	85	17	1781
Soprano pipistrelle *Pipistrellus pygmaeus*	3	49	83	922	2	10	1069
Noctule *Nyctalus noctula*	18	24	-	20	5	-	67
Whiskered/Brandt's Myotis mystacinus/ *brandtii*	24	12	20	29	5	1	91

Natterer's *Myotis nattereri*	-	-	-	1	-	-	1
Myotis *Myotis* sp.	-	-	-	2	-	-	2
Brown long-eared *Plecotus auritus*	1	1	12	7	-	-	21
Total calls recorded	**124**	**756**	**404**	**1611**	**97**	**28**	**3020**
Average Calls Per Night	**18**	**108**	**58**	**230**	**14**	**4**	**431**

3.7. Static Anabat Data – 4th July to 10th July.

	July 2024						
Species	**AB1**	**AB2**	**AB3**	**AB4**	**AB5**	**AB6**	**Total**
Common pipistrelle *Pipistrellus pipistrellus*	103	171	90	223	165	44	796
Soprano pipistrelle *Pipistrellus pygmaeus*	15	142	22	239	3	31	452
Noctule *Nyctalus noctula*	1	12	12	31	2	2	60
Myotis *Myotis* sp.	-	2	1	4	5	-	12
Whiskered/Brandt's *Myotis mystacinus/ brandtii*	3	5	1	10	-	2	21
Natterer's *Myotis nattereri*	3	-	1	2	1	-	7
Brown long-eared *Plecotus auritus*	1	1	12	7	-	2	23
Total calls recorded	**126**	**333**	**139**	**516**	**176**	**81**	**1371**

Average Calls Per Night	**21**	**56**	**23**	**86**	**29**	**14**	**229**

3.8. Static Anabat Data – 26th July to 6th August.

	August 2024						
Species	**AB1**	**AB2**	**AB3**	**AB4**	**AB5**	**AB6**	**Total**
Common pipistrelle *Pipistrellus pipistrellus*	95	235	223	696	442	105	1796
Soprano pipistrelle *Pipistrellus pygmaeus*	24	1203	473	82	102	56	1940
Noctule *Nyctalus noctula*	39	6	1	43	36	21	143
Whiskered/Brandt's *Myotis mystacinus/ brandtii*	5	47	56	35	106	34	283
Daubenton's *Myotis daubentonii*	-	1	-	-	-	-	1
Myotis *Myotis* sp.	4	11	5	12	13		45
Brown long-eared *Plecotus auritus*	2	12	-	2	-	2	18
Total calls recorded	**165**	**1492**	**758**	**870**	**699**	**218**	**4226**
Average Calls Per Night	**15**	**137**	**69**	**79**	**64**	**20**	**384**

3.9. Static Anabat Data – 17th September to 22nd September.

	September 2024						
Species	**AB1**	**AB2**	**AB3**	**AB4**	**AB5**	**AB6**	**Total**

Common pipistrelle *Pipistrellus pipistrellus*	27	119	190	27	156	12	531
Soprano pipistrelle *Pipistrellus pygmaeus*	19	2150	16	467	412	106	3170
Noctule *Nyctalus noctula*	17	3	82	1	57	5	165
Myotis *Myotis* sp.	1	68	56	21	5	70	221
Whiskered/Brandt's *Myotis mystacinus/ Myotis brandtii*	5	-	1	17	12	4	39
Daubenton's *Myotis daubentonii*	-	1	28	-	-	-	29
Natterer's *Myotis nattereri*	3	-	2	-	1	-	6
Total calls recorded	**69**	**2341**	**375**	**533**	**643**	**197**	**4164**
Average Calls Per Night	**14**	**468**	**75**	**107**	**129**	**39**	**832**

3.10. Static Anabat Data – 18th to 22nd October.

	October 2024						
Species	**AB1**	**AB2**	**AB3**	**AB4**	**AB5**	**AB6**	**Total**
Common pipistrelle *Pipistrellus pipistrellus*	3	235	27	670	73	39	1047
Soprano pipistrelle *Pipistrellus pygmaeus*	5	52	96	533	8	23	717
Noctule *Nyctalus noctula*	-	-	-	-	-	1	1
Myotis *Myotis* sp.	-	16	3	186	-	44	249

Whiskered/Brandt's *Myotis mystacinus/ Myotis brandtii*	-	26	-	2377	26	10	2439
Total calls recorded	**8**	**329**	**126**	**3766**	**107**	**117**	**4453**
Average Calls Per Night	**2**	**66**	**25**	**753**	**21**	**23**	**891**

3.11. Weather Data

The weather conditions for the duration each month of deployment is shown in the table below.

	Weather conditions		
Month	**Average Max Temperature**	**Average Min Temperature**	**Days with rain**
May	15℃	11.5℃	1
June	19℃	17℃	1
July*	16℃	10.5℃	4
Aug	23℃	14.5℃	0
Sept	16℃	10.5℃	2
Oct	13℃	8℃	1

*Additional July dates added to August survey results to make up for the unseasonally cold and wet weather.

4. Interpretation of results.

4.1. The following statistics have been extrapolated using the above data.

4.1.1. *Use of the site by Anabat Location.*

4.1.1.1. This shows that by a significant margin, locations 2 and 4 are the most used, with almost three quarters of recordings on the site made at these two locations. This would be

expected given the huge line of mature of oaks and willows which span the western boundary of phase 2, which then leads into the woodland.

4.1.1.2. Location 1 on the northern boundary adjacent to the main road, unsurprisingly is the least used, likely due to the traffic, closely followed by location 6 which again is unsurprisingly due to its proximity to the neighbouring estate, although it is still less used than expected.

4.1.1.3. In the middle are location 5, which was positioned along the central phase boundary, and location 5, overlooking the grassland and scrub of the old tip. It does not appear that bats use these locations as much as would have been expected prior to the start of the surveys, although they do still make up a combined 20% of the total calls.

	AB1	**AB2**	**AB3**	**AB4**	**AB5**	**AB6**
Total calls	518	5985	2065	7662	1802	682
% of total calls	2.77	31.98	11.03	40.94	9.63	3.64
Usage rank	**6**	**2**	**3**	**1**	**4**	**5**

4.1.2. *Use of the site by species.*

4.1.2.1. This shows that almost 80% of the bat species using the site are either common or soprano pipistrelle as would be expected given the location of the site.

4.1.2.2. Whiskered/Brandt's make up a surprisingly large percentage, but this predominantly comes from a huge influx of calls at location 4 in October, with almost 2,500 calls from this species in October alone. It is unclear what caused such a significant spike of this species during the latter end of the year, the route could be part of an important commuting corridor for the species moving between their summer and winter roost location. Excluding October, whiskered/Brandt's would make up less than 3%, although likely slightly higher as given the trends, it is likely that the vast majority of calls analysed as *Myotis* sp. only are Whiskered/Brandt's.

4.1.2.3. The remainder of calls are made up by infrequent passes from other species. Noctule calls are frequently common, but less so are those of Natterer's, Daubenton's (recorded largely only in September) and brown long-eared bat. However, it should be noted that the quiet calls of brown long-eared bat are difficult to detect and it is likely that there will have been more calls than those recorded.

4.1.2.4. No unexpected species were recorded during the course of the year.

Species	Total calls	% of total calls
Common pipistrelle *Pipistrellus pipistrellus*	6820	37.1
Soprano pipistrelle *Pipistrellus pygmaeus*	7581	41.24
Noctule *Nyctalus noctula*	436	2.37
Whiskered/Brandt's *Myotis mystacinus/ brandtii*	2904	15.8
Natterer's *Myotis nattereri*	14	0.08
Daubenton's *Myotis daubentonii*	30	0.16
Myotis *Myotis* sp.	529	2.88
Brown long-eared *Plecotus auritus*	68	0.37

4.1.3. *Use of the site by month.*

4.1.3.1. The usage per month is not as easy to calculate as total calls are distorted based on number of nights. Instead, the average calls per night over all months has been calculated (493) and then each month compared to that figure to get an understanding of whether usage is above or below the average for the site.

4.1.3.2. Using the figures below, it is clear that again, surprisingly, the most significant months of usage for the site are September and October. September data showed high numbers of both

pipistrelle species, whereas October followed that trend but added huge numbers of whiskered/Brandt's.

4.1.3.3. It should be noted again that the month of July was unseasonally wet and cool and therefore, the reduced activity that month may not present a true reflection. Additional July dates are included within August data.

Month	Average calls per night	+/- % of average calls
May	190	-61.38
June	431	-12.4
July	229*	-53.46
Aug	384	-21.95
Sept	832	69.11
Oct	891	81.1

4.1.4. *Additional data.*

4.1.4.1. Additional data can be extracted using the above tables such as usage per location per species, but that has not been included within this report as it is difficult to display. Should additional tables showing such data be required then please feel free to request them from Whitcher Wildlife Ltd.

4.1.4.2. Activity patters were very difficult to ascertain. Apart from on occasional nights, it is hard to form any discernible pattern of activity i.e., significant usage around sunrise / sunset to indicate nearby roosts / distance to roosts and it is generally concluded that bats use the site for both foraging and commuting to differing extents.

5. Summary.

5.1. Overall, bat activity is fairly high but heavily weighted along locations 2 and 4, which are the western boundary and most mature woodland / tree lines within the survey area, which is largely what would be expected. The boundary appears to be of importance for pipistrelle species, but particularly for whiskered/Brandt's bats during the autumn, potentially as they move to their winter roosting locations.

5.2. Other locations, especially 3 and 5, were still used to a reasonable level albeit less extensively than 2 and 4. It is therefore considered a priority to ensure the western boundary of the development, including the woodland and mature tree line, is protected and strengthened where possible, during both construction and for the long term to ensure that bat species can continue to utilise the site to a similar degree.

5.3. Additional land is being considered for purchase to facilitate with offsetting biodiversity. If this land could be located to the west of the current site, there is fantastic opportunity for enhancing the surrounding area for bats. The creation of additional grassland, woodland, scrub and watercourses could have a positive impact on bats at a site level and ensure any losses to other habitats are mitigated against.

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