
**THREE OAKS RENEWABLE
ENERGY PARK
EXTENSION**

**Environmental
Statement Appendix 7.6: Bat
Surveys 2024**

MAY 2026



Appendix 7.6: Three Oaks Renewable Energy Park Extension Baseline Bat Surveys 2024



Report to Ridge Clean Energy

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APPENDIX 7.6: THREE OAKS RENEWABLE ENERGY PARK EXTENSION BASELINE BAT SURVEYS 2024

Introduction

1. This report presents the bat survey work carried out for the proposed Three Oaks Renewable Energy Park Extension (the Proposed Development). The surveys were undertaken by Tom Lowe and Steve Percival, both highly experienced ecological surveyors, each with over 20 years of experience in renewable energy ecological surveying (including bats), exceeding CIEEM competency requirements.
2. This work revisits and updates the surveys conducted for the Three Oaks Renewable Energy Park development in summer 2020 (see **Appendix 7.5: Bat Surveys 2020**).

Study Area

3. The site is located approximately 1 km north of Thornholme village and 5 km south-west of Bridlington, East Yorkshire. The survey area includes all areas within the potential zone of ecological influence of the Proposed Development and a buffer to provide context on the area's bat populations/habitats. The survey area covered a total area of 7.5 km² (see Figure 1). It is predominantly open arable farmland and lies within the 'Yorkshire Wolds' Natural England National Character Area.

Bat Survey Methods

4. The bat survey programme referred to the Natural England *et al.* (2021) guidance on 'Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation' and Collins (2016). The surveys comprised the following:
 - Roost potential survey – assess all potential roost sites within the proposed development site and its surrounds, updating the previous survey carried out in 2020;
 - Ground-level activity surveys – one transect-based survey each month from April to September 2024. Surveys were carried out on 16 April, 15 May, 3 June, 16 July, 26 August and 24 September 2024. Access was restricted to those safe at night – the walked transect routes are shown in Figure 1;
 - Automated surveys at ground level – static detectors deployed at six locations across the survey area to represent available habitats. Each location was sampled for a target minimum of 30 nights across spring (April/May), summer (June/July) and autumn (August/September). A total of 295 bat nights of coverage were obtained. The locations of the recorders are shown in Figure 1.
5. Surveys at height were considered unnecessary at this site, given the generally low-quality bat habitats present (predominantly arable farmland) and the previous survey results from 2020.

Bat Survey Results

Bat roost assessment

6. The extended Phase 1 survey carried out on 31 July 2024 included an assessment of bat roost suitability (updating that carried out in 2020). The results are summarised in Table 1, and the locations are shown in Figure 1. All potential bat roost sites were located around the fringes of the survey area, with none in the proposed development site itself (which was predominantly open arable farmland).

Table 1. Bat roost potential survey results (locations are shown in Figure 1).

Location number	Potential	Notes
1	Low	Small ash tree
2	Medium	Scattered ash trees
3	High	Larger trees within hedgerow
4	High	Many suitable trees (ash/oak) within hedgerow
5	Low	Small ash tree on southern side of road
6	High	Line of ash/oak trees along field boundary
7	High	Narrow belt of trees around building
8	High	Narrow belt of trees around building
9	High	Farm and residential buildings
10	Low	Smaller trees (ash) along southern side of road
11	High	Sycamore, ash and beech mature woodland
12	High	Residential buildings
13	High	Larger trees (mainly ash) within hedgerow
14	High	Wooded copse
15	Medium	Scattered trees around scrub
16	Medium	Trees (mainly ash) within hedgerow
17	Low	Sycamore tree

7. Regarding bat commuting and foraging habitats, the main areas likely used include hedgerows, field margins, and the edges of the small number of woodland plantations on the survey area's fringes.

Bat walking transects

8. The results of the bat walking transect surveys are summarised in Table 2, which gives the number of passes recorded of each species on each monthly survey between April and September 2024. Six species were recorded in total, with the common pipistrelle most frequently encountered.
9. Table 3 gives the results from the previous 2020 surveys for comparison. The results across the two years were generally similar, with the common pipistrelle the most frequently recorded bat species, though more species were found in 2020 (nine).

Table 2. Number of bat passes recorded during the walkover transect surveys, April to September 2024.

Species	Scientific name	April	May	June	July	August	Sept
Daubenton's bat	<i>Myotis daubentonii</i>	0	1	1	0	0	1
Whiskered bat	<i>Myotis mystacinus</i>	0	0	0	0	0	4
Natterer's bat	<i>Myotis nattereri</i>	0	0	0	0	0	1
Unidentified Myotis bat	<i>Myotis sp</i>	0	0	1	0	0	0
Nathusius' pipistrelle	<i>Pipistrellus nathusii</i>	0	0	0	0	0	1
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	0	16	6	41	9	0
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	0	0	0	1	5	0

Table 3. Number of bat passes recorded during the walkover transect surveys, April to September 2020.

Species	Scientific name	April	May	June	July	August	Sept
Brandt's bat	<i>Myotis brandtii</i>	1	0	0	0	2	2
Daubenton's bat	<i>Myotis daubentonii</i>	0	2	1	0	3	1
Whiskered bat	<i>Myotis mystacinus</i>	1	0	0	4	4	3
Natterer's bat	<i>Myotis nattereri</i>	2	0	0	1	0	2
Unidentified Myotis bat	<i>Myotis sp</i>	2	0	0	2	0	0
Noctule	<i>Nyctalus noctula</i>	0	0	2	1	0	1
Nathusius' pipistrelle	<i>Pipistrellus nathusii</i>	0	1	0	0	0	0
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	0	15	19	34	5	1
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	0	18	0	0	0	0
Brown long-eared bat	<i>Plecotus auritus</i>	0	0	0	2	0	0

10. The distributions of bat records during these walkover surveys are plotted in Figure 2 (Common Pipistrelle) and other bat species (Figure 3). The number of locations is lower than the number of passes in Table 2 due to multiple passes being recorded at a single location. As in the previous 2020 surveys, most records were associated with hedgerow habitats, though lower numbers were recorded on the northern edge of the survey area in 2024 (where the hedgerows were most well-developed and diverse).

Bat static recorders

11. Table 4 summarises the results of the bat static surveys. Bat pass rates are presented as medians, following Lintott *et al.* (2018). Common pipistrelle *Pipistrellus pipistrellus* was the most frequently recorded species, with peak numbers in summer and autumn at location 5. Soprano pipistrelle *Pipistrellus pygmaeus* and Daubenton's bat *Myotis daubentonii*, were recorded regularly, particularly during the autumn surveys. Unidentified *Myotis* bats were also frequently recorded. Six additional species were also recorded but in lower numbers: Nathusius' pipistrelle *Pipistrellus nathusii*, whiskered bat *Myotis mystacinus*, Brandt's bat *Myotis brandtii*, Natterer's bat *Myotis nattereri*, brown long-eared *Plecotus auratus* and noctule *Nyctalus noctula*. Their median hourly pass rates were zero for all locations and seasons (hourly pass rates had a highly skewed distribution with a large number of zero values and a smaller number of occurrences when bats were recorded).

12. Table 5 summarises the results from the previous 2020 surveys for comparison. The results across the two years were generally similar, with the common pipistrelle the most frequently recorded bat species., and the same nine species were recorded each year.

Table 4. Bat static recorder surveys, April to September 2024, showing the median number of bat passes per hour per night at each location (n=295 bat-nights).

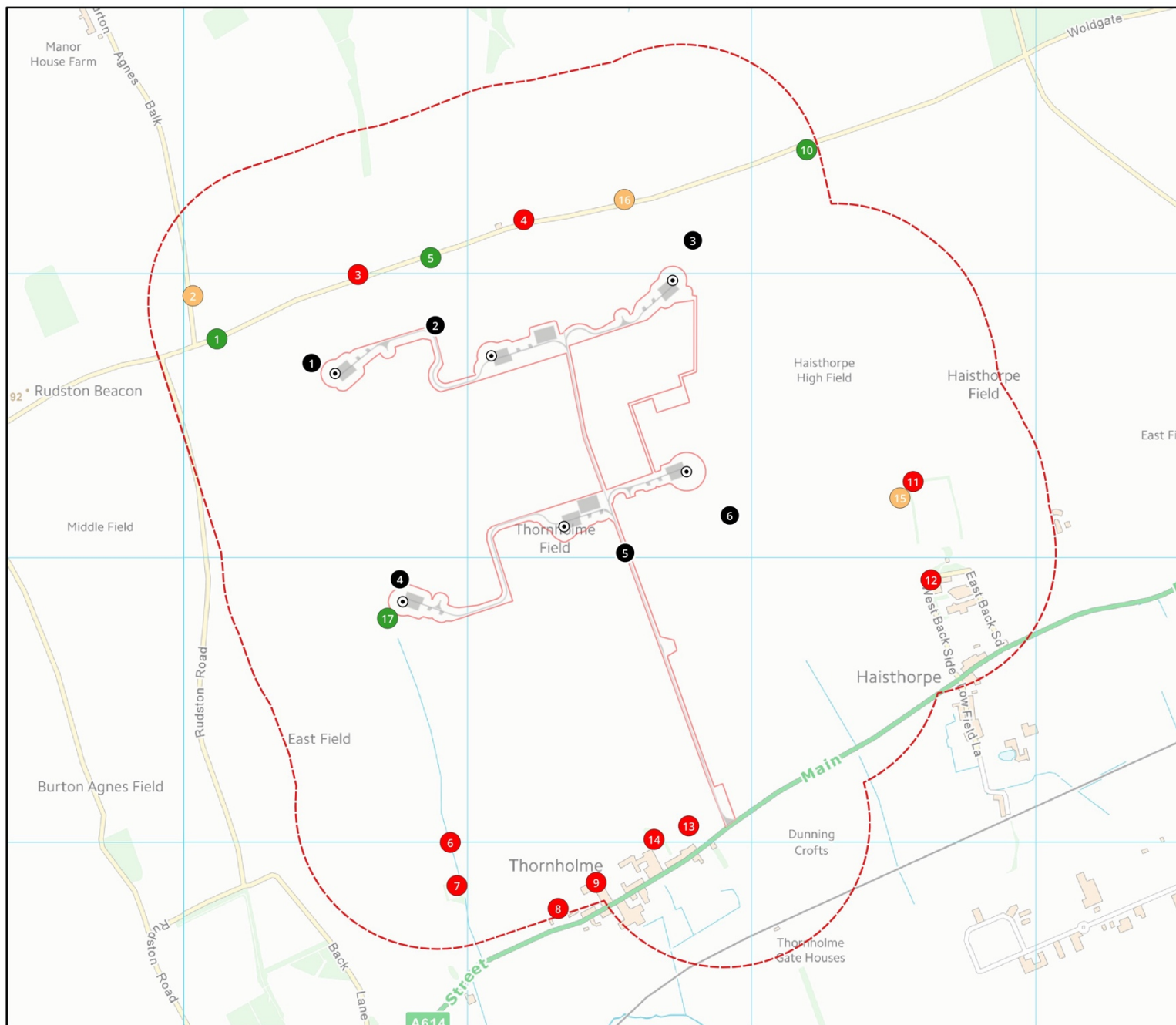
Species	Location	Spring (Apr/May)	Summer (Jun/July)	Autumn (Aug/Sep)	Total number of passes recorded
Common pipistrelle	1	0.06	1.13	1.72	1945
	2	0.37	2.19	0.62	1263
	3	0.14	1.90	7.67	3078
	4	1.56	3.04	0	1335
	5	0	10.07	10.66	6121
	6	0.12	1.07	0.30	555
Soprano pipistrelle	1	0	0	0.18	230
	2	0	0.13	0.09	91
	3	0	0	0.59	256
	4	0	0.14	0	70
	5	0	0	0.11	172
	6	0	0	0	15
Brown long-eared bat	1	-	0	0	4
	2	-	0	0	2
	3	-	-	0	2
	4	-	0	0	8
	5	0	-	-	1
	6	-	-	-	0
Daubenton's bat	1	0	0	0.23	81
	2	0	0.13	0.10	84
	3	0	0	0.11	53
	4	0.23	0	0	101
	5	0	0	0	18
	6	0	0	0.10	62
<i>Myotis</i> sp.	1	0	0	0.11	78
	2	0.12	0	0.10	99
	3	0.00	0	0	16
	4	0.59	0.25	0	160
	5	0	0	0.12	66
	6	0	0	0	12

Table 5. Bat static recorder surveys, April to September 2020, showing the median number of bat passes per hour per night at each location (n=317 bat-nights).

Species	Location	Spring (Apr/May)	Summer (Jun/July)	Autumn (Aug/Sep)	Total number of passes recorded
Common pipistrelle	1	0.38	0.55	0.54	805
	2	0.25	4.35	0.55	1947
	3	0.38	3.73	1.03	2119
	4	0.96	3.68	0.30	2063
	5	0.27	0.07	0.43	207
	6	0.26	0	0	194

Species	Location	Spring (Apr/May)	Summer (Jun/July)	Autumn (Aug/Sep)	Total number of passes recorded
Soprano pipistrelle	1	0	0	0	370
	2	0	0	0	46
	3	0	0	0	113
	4	0	0	0	44
	5	0	0	0.09	16
	6	0	0	0	9
Brown long- eared bat	1	0	0	0	47
	2	0	0	0	223
	3	0	0	0	207
	4	0	0	0.04	3
	5	0	0	0	4
	6	0	0	0	3
Daubenton's bat	1	0	0	0.18	57
	2	0	0	0.09	30
	3	0	0	0	18
	4	0	0	0.04	15
	5	0	0	0.17	31
	6	0	0	0.13	51
<i>Myotis</i> sp.	1	0	0	0.38	90
	2	0	0	0.64	160
	3	0	0	0.19	116
	4	0.13	0	0.30	88
	5	0.14	0	0.72	77
	6	0.13	0	0.29	92

13. Figures 4-6 show the mean pass rates of the three most frequently recorded bat species in 2024. Mean rates are presented in these Figures, because the median values for most species when split by season were zero (given the overall low level of bat activity).
- Daubenton's bat (Figure 4) – widely and evenly distributed across the survey and seasons.
 - Common pipistrelle (Figure 5) – the most abundant species, found widely but more numerous in the central part of the survey area (recorder 5) and in the north-east (recorder 3).
 - Soprano pipistrelle (Figure 6) – widely recorded but most abundant in the north-east (recorder 3) in autumn and lowest numbers in the south-east (recorder 6).



Legend

- Red Line Boundary
- Proposed Turbine Locations
- Three Oaks 2 Infrastructure Footprint
- Ecology Survey Area
- Static Recorder Locations

Bat Roost Potential:

- High
- Medium
- Low

N

0 0.25 0.5 km

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Produced by: SP	Ref:
Checked by: TP	Date: 15/3/26

Figure 1. Survey Area, Transect Route and Static Detector Locations

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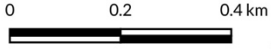




Legend

- Red Line Boundary
- Proposed Turbine Locations
- Three Oaks 2 Infrastructure Footprint
- Walked Transect Route
- Walked Transect Records



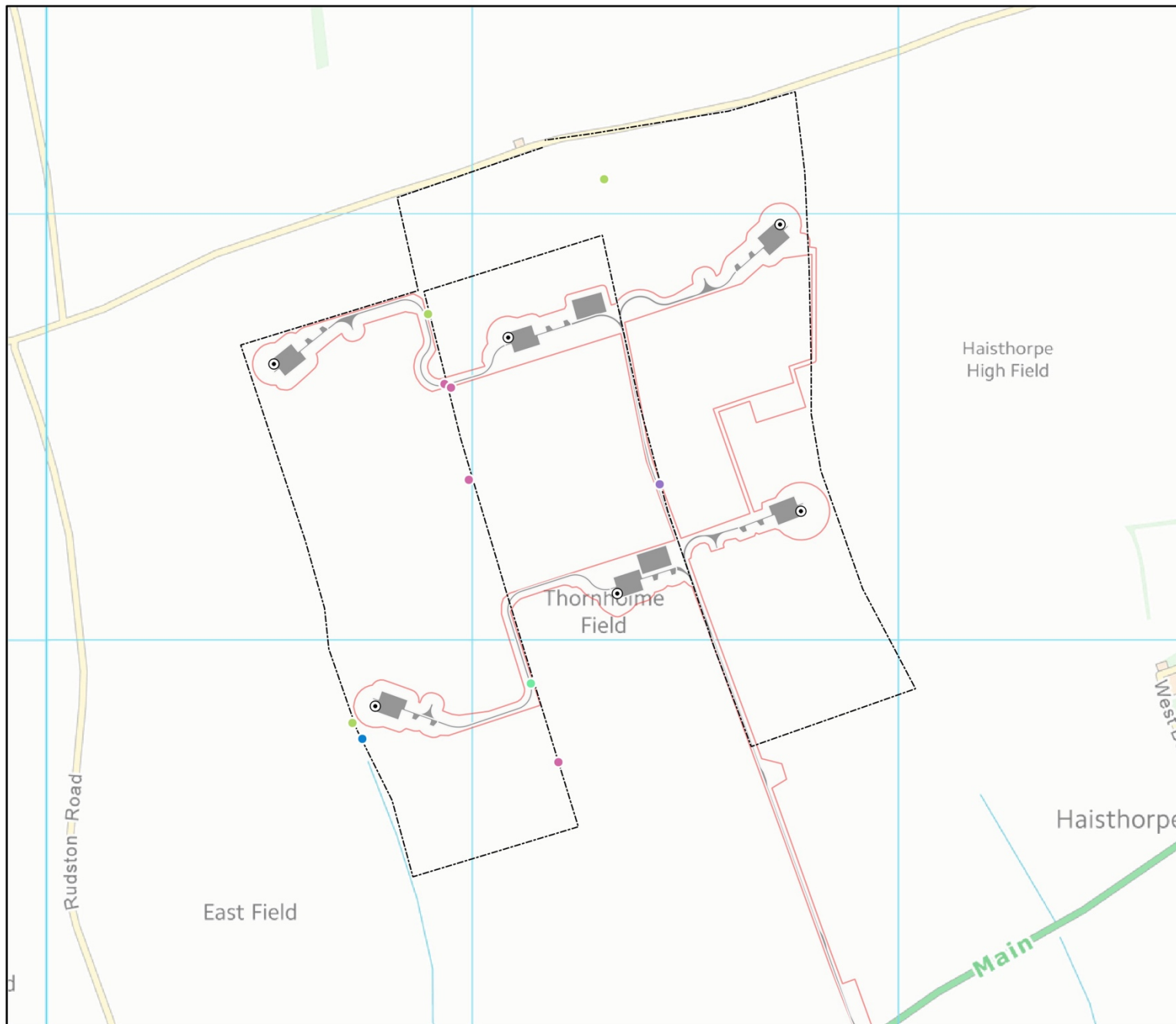


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Figure 2. Common Pipistrelle Walked Transect Records

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Appendix 7-6. Bat Surveys 2024





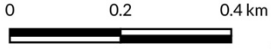
Legend

- Red Line Boundary
- Proposed Turbine Locations
- Three Oaks 2 Infrastructure Footprint
- Walked Transect Route

Walked Transect Records:

- Daubenton's Bat
- Whiskered Bat
- Natterer's Bat
- Nathusius' Pipistrelle
- Soprano Pipistrelle



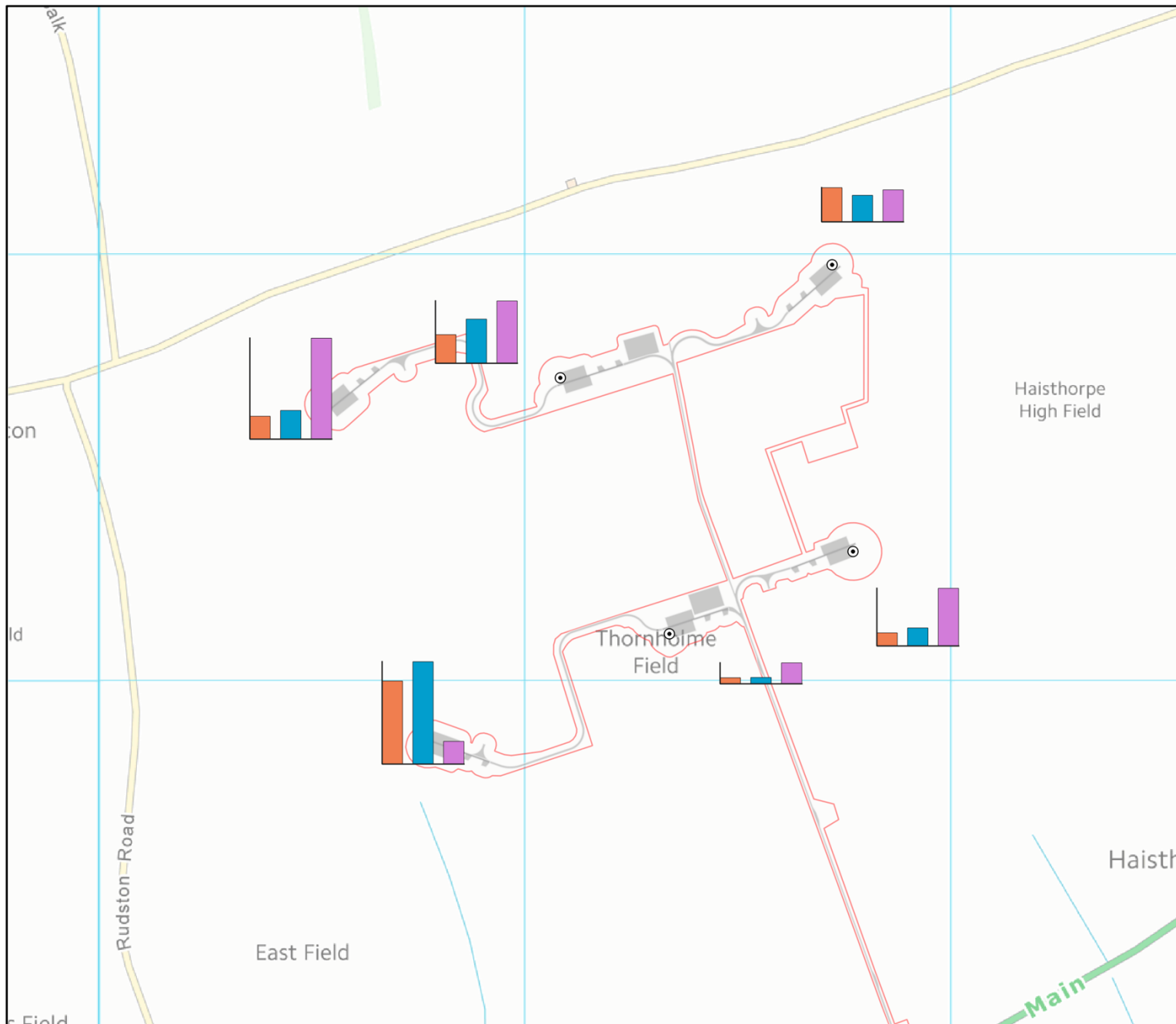


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**Figure 3. Other Species Walked
Transect Records**

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Extension
Appendix 7-6. Bat Surveys 2024**



Legend

- Proposed Turbine Locations
- Three Oaks 2 Infrastructure Footprint
- Red Line Boundary

Bat Mean Pass Rates Per Hour:

- Spring
- Summer
- Autumn

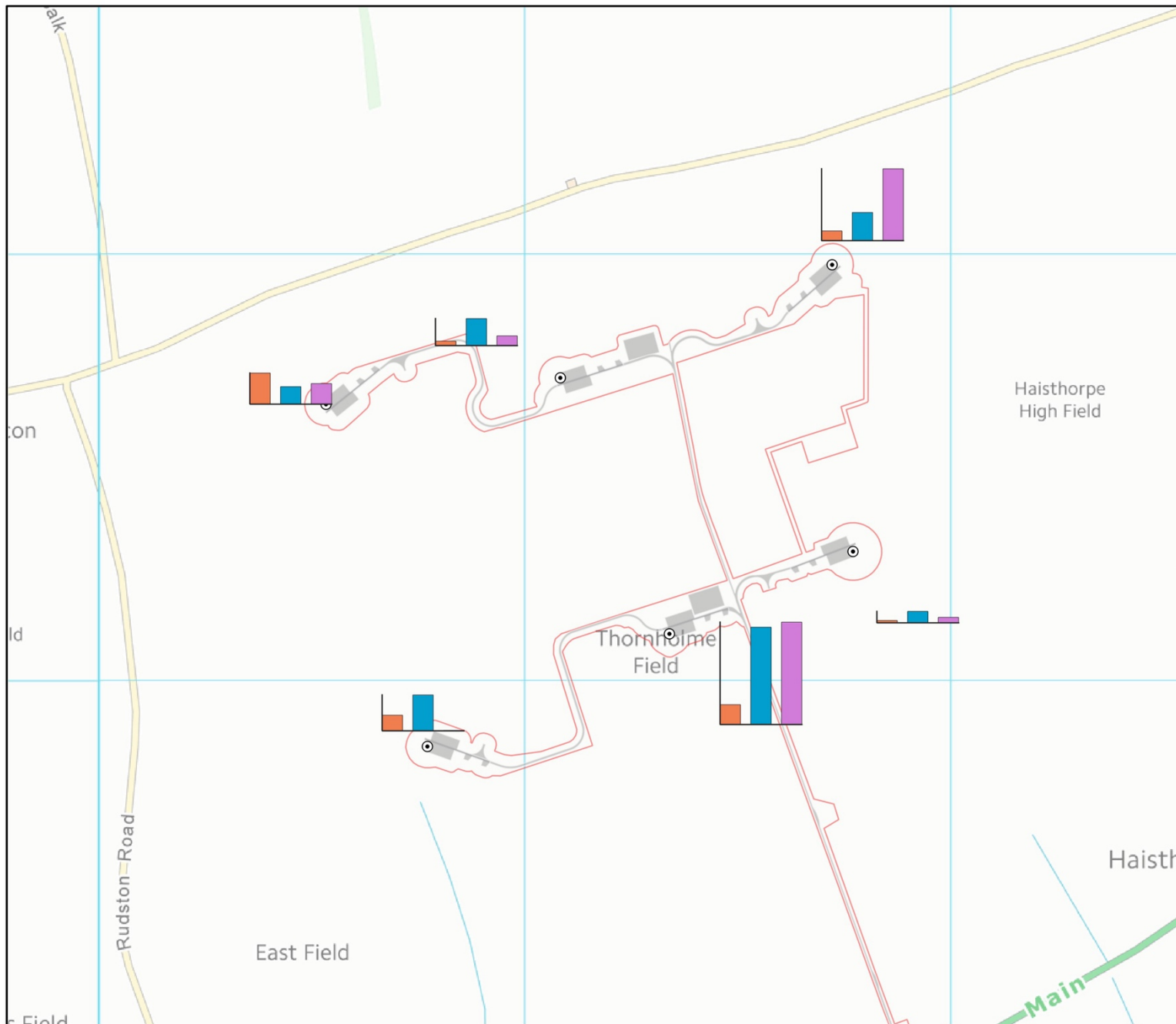
0 0.2 0.4 km

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Figure 4. Daubenton's Bat Static Recorder Seasonal Mean Pass Rates

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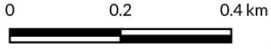
Legend

- ⊙ Proposed Turbine Locations
- Three Oaks 2 Infrastructure Footprint
- Red Line Boundary

Bat Mean Pass Rates Per Hour:

- Spring
- Summer
- Autumn



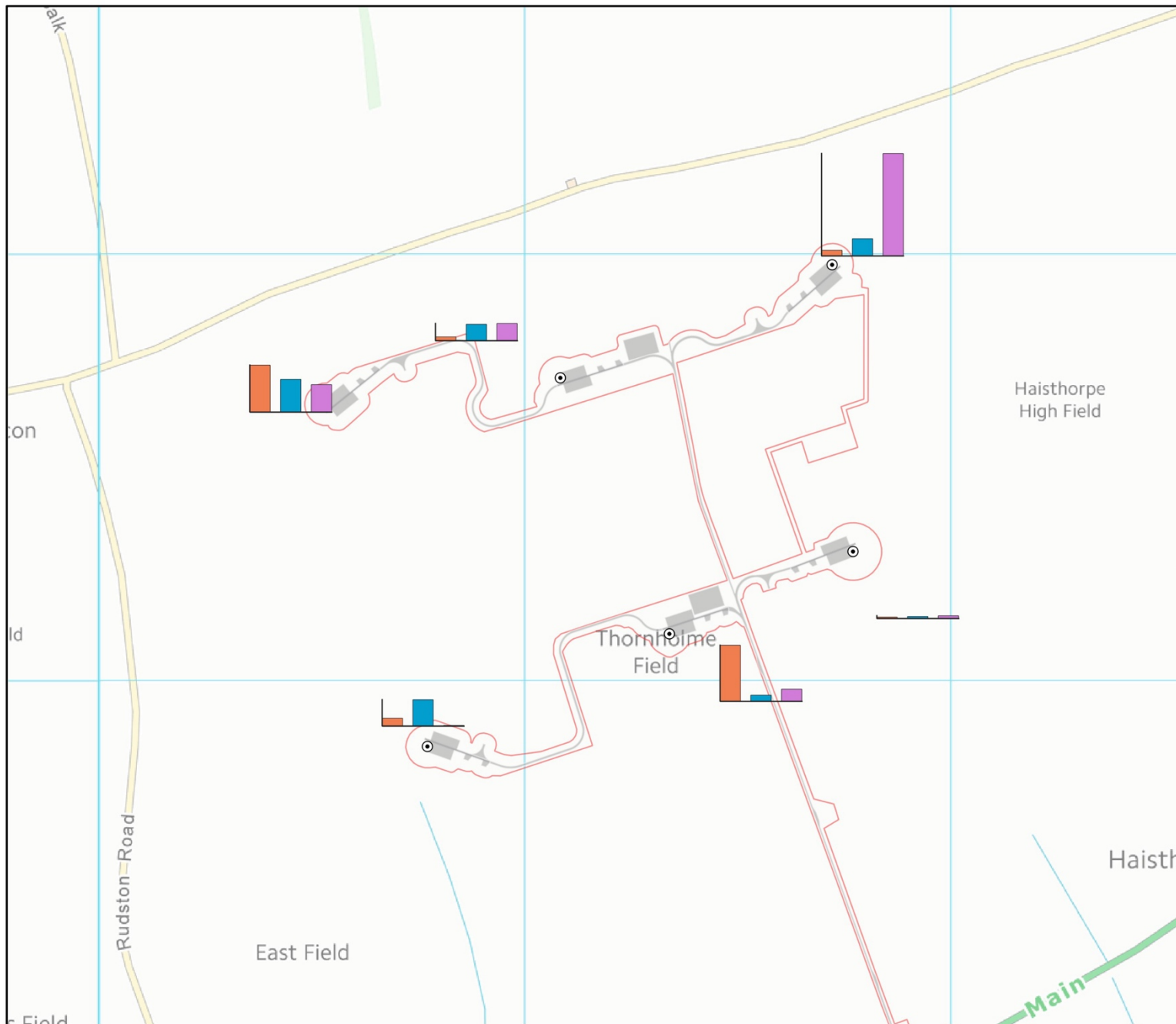


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Checked by: TP	Date: 15/3/26

Figure 5. Common Pipistrelle Static Recorder Seasonal Mean Pass Rates

**Three Oaks Renewable Energy Park Extension
Appendix 7-6. Bat Surveys 2024**





Legend

- ⊙ Proposed Turbine Locations
- Three Oaks 2 Infrastructure Footprint
- Red Line Boundary

Bat Mean Pass Rates Per Hour:

- Spring
- Summer
- Autumn

N

0 0.2 0.4 km

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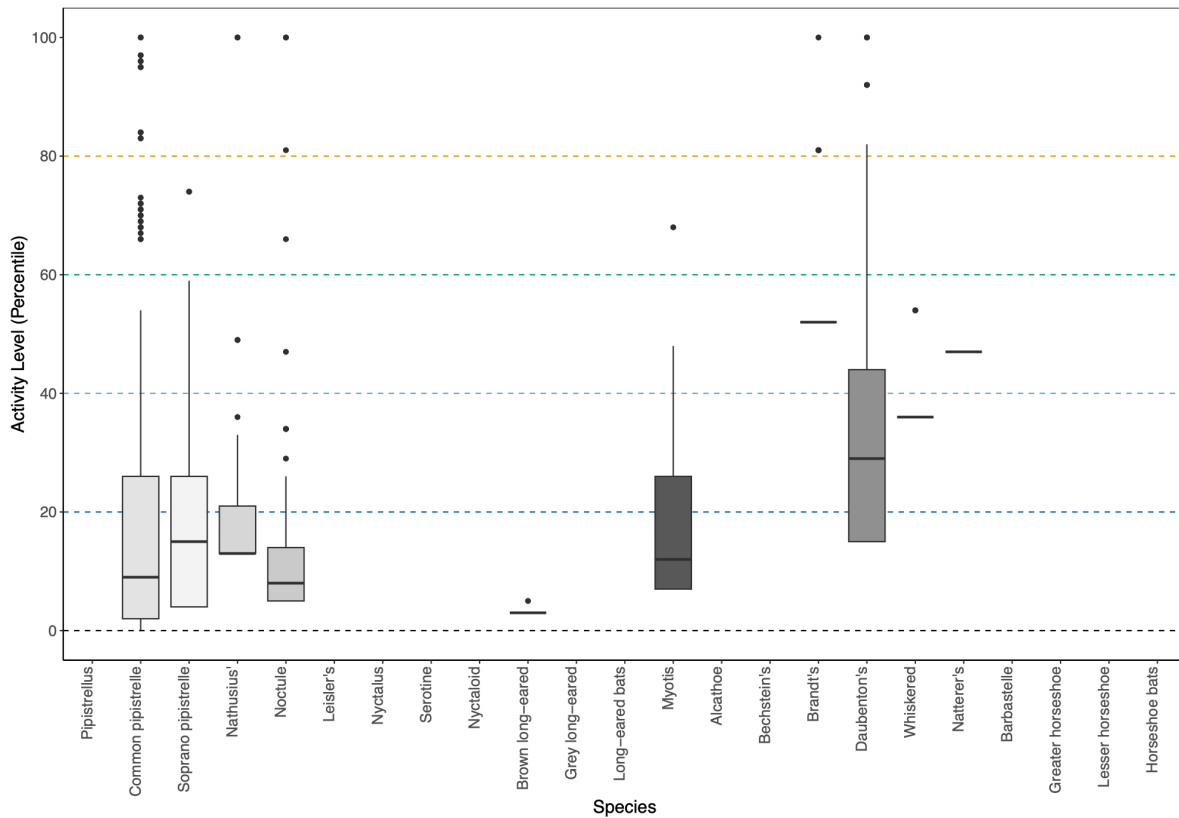
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Figure 6. Soprano Pipistrelle Static Recorder Seasonal Mean Pass Rates

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Appendix 7-6. Bat Surveys 2024**

14. The static bat recorder data also provided information on the likelihood of any important bat roost located within or in proximity to the site. If bats were roosting on or near to the site, there would likely be records of bat contacts at, or soon after, the typical emergence times. Noctules can emerge before sunset whereas common pipistrelles and soprano pipistrelles tend to emerge within the first 10-30 minutes after sunset. *Myotis* bats will typically emerge later than pipistrelles, with Daubenton's bats emerging up to an hour after sunset. ECOBAT (Lintott *et al.* 2018) was used to analyse the times of bat records comparing them to published emergence times for each species (Russ 2012). Occurrence of bat passes recorded during roost emergence time was as follows:
 - Location 1 – occasional *Myotis* sp., Daubenton's, common and Nathusius' pipistrelles.
 - Location 2 – occasional *Myotis* sp., Daubenton's, and common pipistrelle.
 - Location 3 – occasional Daubenton's, brown long-eared bat, soprano and common pipistrelle.
 - Location 4 – low numbers of *Myotis* sp. and Daubenton's.
 - Location 5 – occasional *Myotis* sp. and common pipistrelle.
 - Location 6 – low numbers of Daubenton's, noctules and common pipistrelles.
15. Overall, the number of bat passes recorded during roost emergence time was low, indicating that there were not likely any important roosts located within/in proximity to the survey area, as was found in previous surveys in 2020. There were more records of common pipistrelle around roost emergence time at Location 1 in 2020. This location is the most easterly of the six, and the bats recorded here at emergence time are most likely from roosts in the woodland and buildings to the east of the Proposed Development (Haisthorpe – points 11 and 12 on Figure 1).
16. Recent Natural England *et al.* (2021) guidance recommends the use of ECOBAT (Lintott *et al.* 2018) to standardise the determination of the relative importance of the site for its bat populations. This software tool uses percentiles to assign a bat activity comparing data from other sites collected within the same season (within 30 days of the surveys) and 100 km of the site:
 - **High:** above 80% percentile
 - **Moderate/high:** 60-80%
 - **Moderate:** 40-60%
 - **Low/moderate:** 20-40%
 - **Low:** 0-20%
 - **Nil:** no records.
17. The results of the overall whole site ECOBAT analysis are summarised in Figure 9. This presents the median activity level percentile (solid horizontal line), the interquartile range (box plot) and the spread of any outliers. Overall activity was classed as follows:
 - **High:** no species
 - **Moderate/high:** no species
 - **Moderate:** Brandt's, Natterer's bats (though for both species, the ECOBAT reference baseline was small and therefore not reliable).
 - **Low/moderate:** Daubenton's and whiskered bats
 - **Low:** Common, soprano and Nathusius' pipistrelles, noctule, brown long-eared bat, and *Myotis* sp.

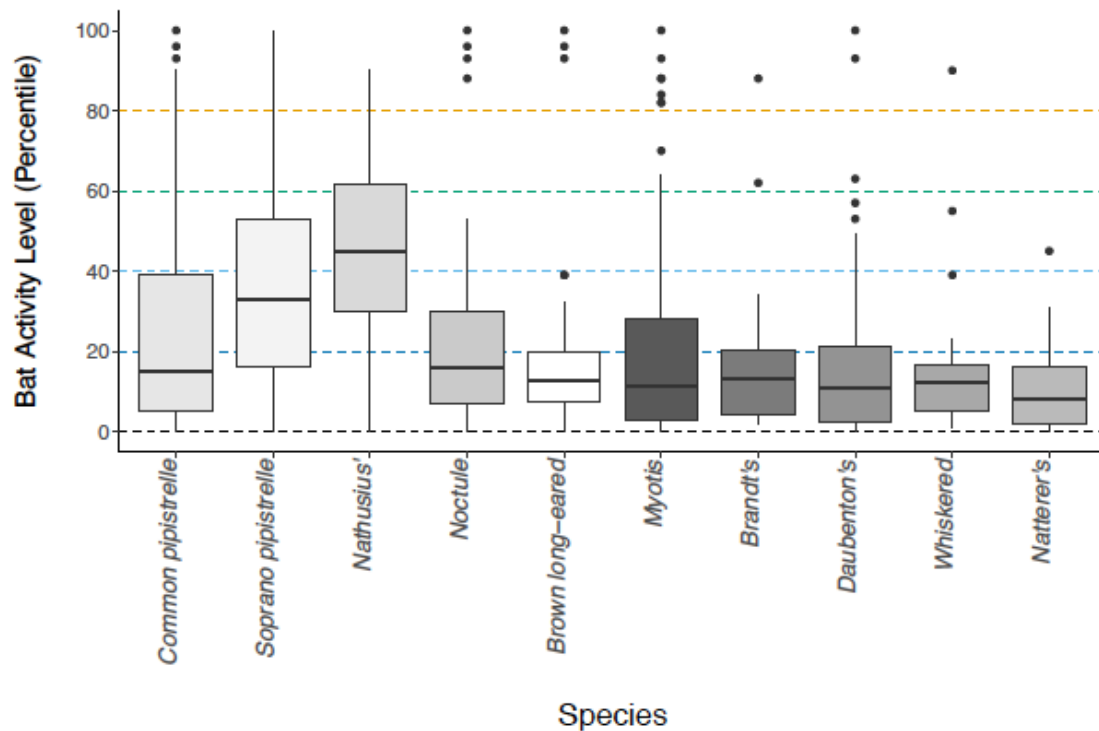
Figure 9. ECOBAT site activity analysis: bat activity level (percentile) recorded across each night of the bat survey for the whole site, 2024.



18. Figure 10 summarises the results of the whole site ECOBAT analysis for the previous surveys in 2020. Overall activity was classed as follows:

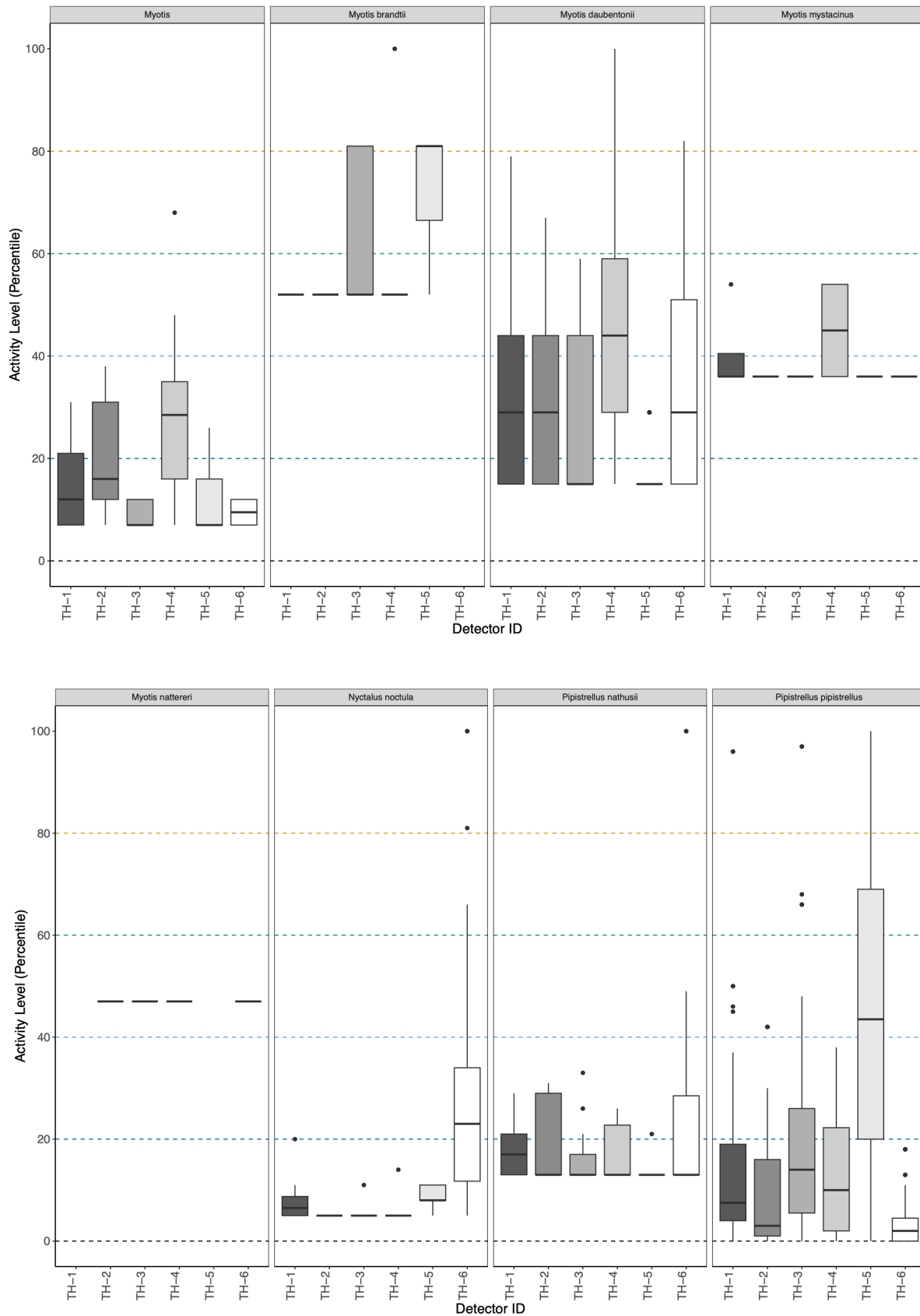
- **High:** no species
- **Moderate/high:** no species
- **Moderate:** Nathusius' pipistrelle
- **Low/moderate:** Soprano pipistrelle
- **Low:** Common pipistrelle, Noctule, Brown long-eared bat, *Myotis* sp., Brandt's, Daubenton's Whiskered and Natterer's bats.

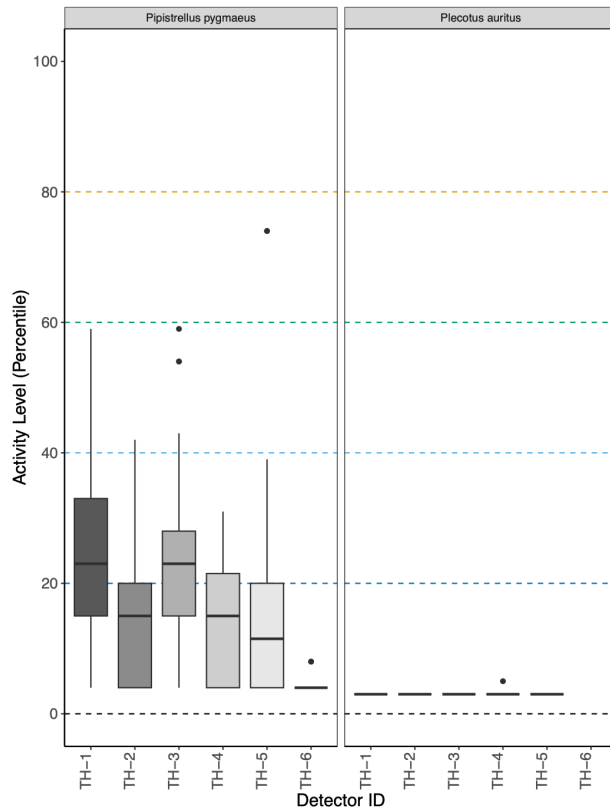
Figure 10. ECOBAT site activity analysis: bat activity level (percentile) recorded across each night of the bat survey for the whole site, 2020.



19. Figure 11 shows the activity levels of these species over the whole survey period at each of the six survey locations. As for the whole site analysis presented above, these are plotted as percentiles of activity levels recorded each night, and show the relative abundance of each species at each location in comparison with the ECOBAT reference data set. Overall, it shows further the generally low levels of bat activity across the site, though higher levels of some species were recorded at some locations:
- Brandt's bat – moderate activity at locations 1-4 and high activity at location 5 (though the ECOBAT reference baseline was small and therefore not reliable).
 - Daubenton's bat – moderate activity at location 4.
 - Whiskered bat – moderate activity at location 4.
 - Natterer's bat – moderate activity at locations 2, 3, 4 and 6 (though the ECOBAT reference baseline was small and therefore not reliable).
 - Common pipistrelle – moderate activity at location 5.

Figure 11. ECOBAT activity analysis by recorder location: bat activity level (percentile) recorded across each night of the bat survey for each of the six survey locations, 2024 (see Figure 1).

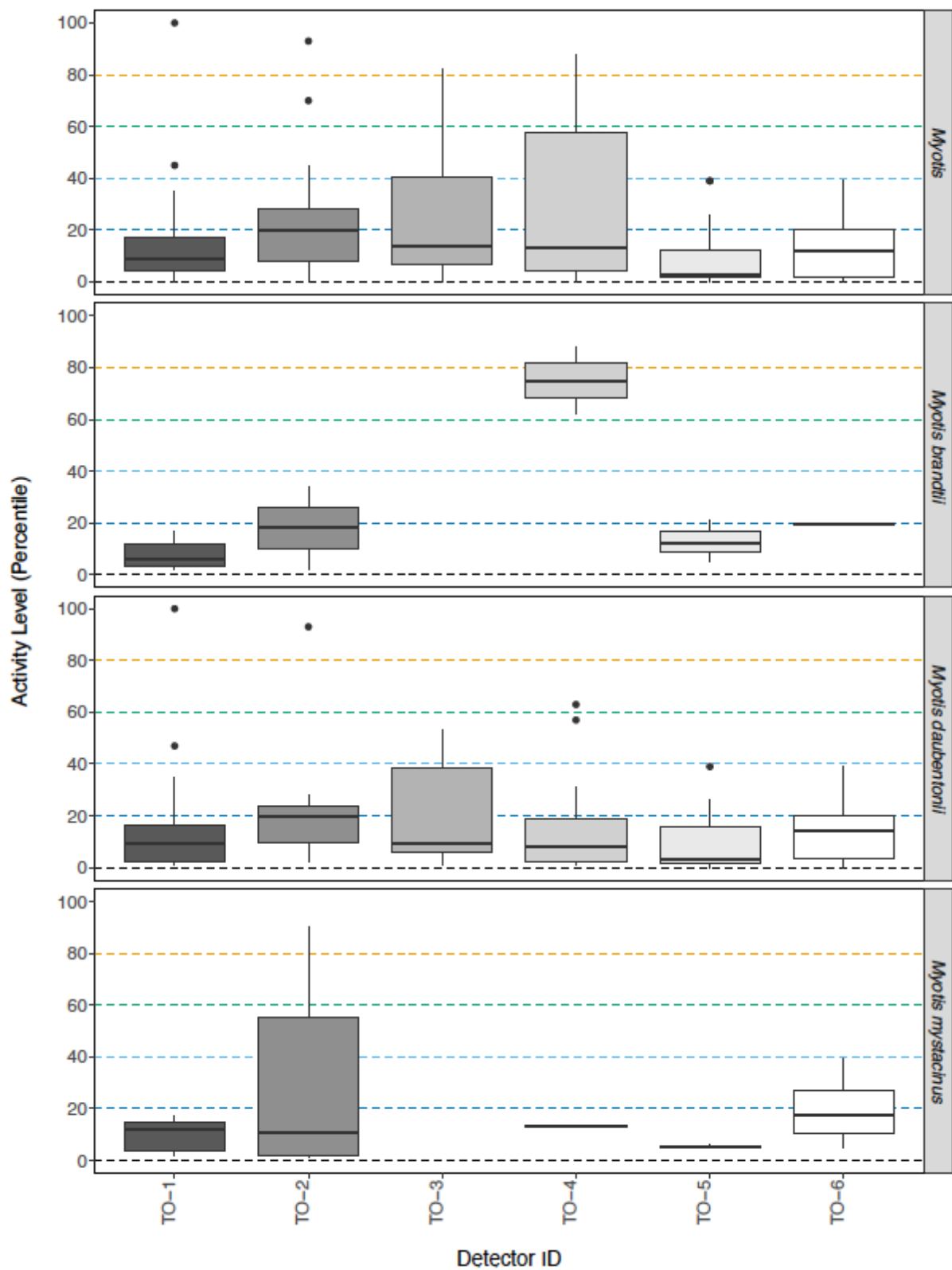


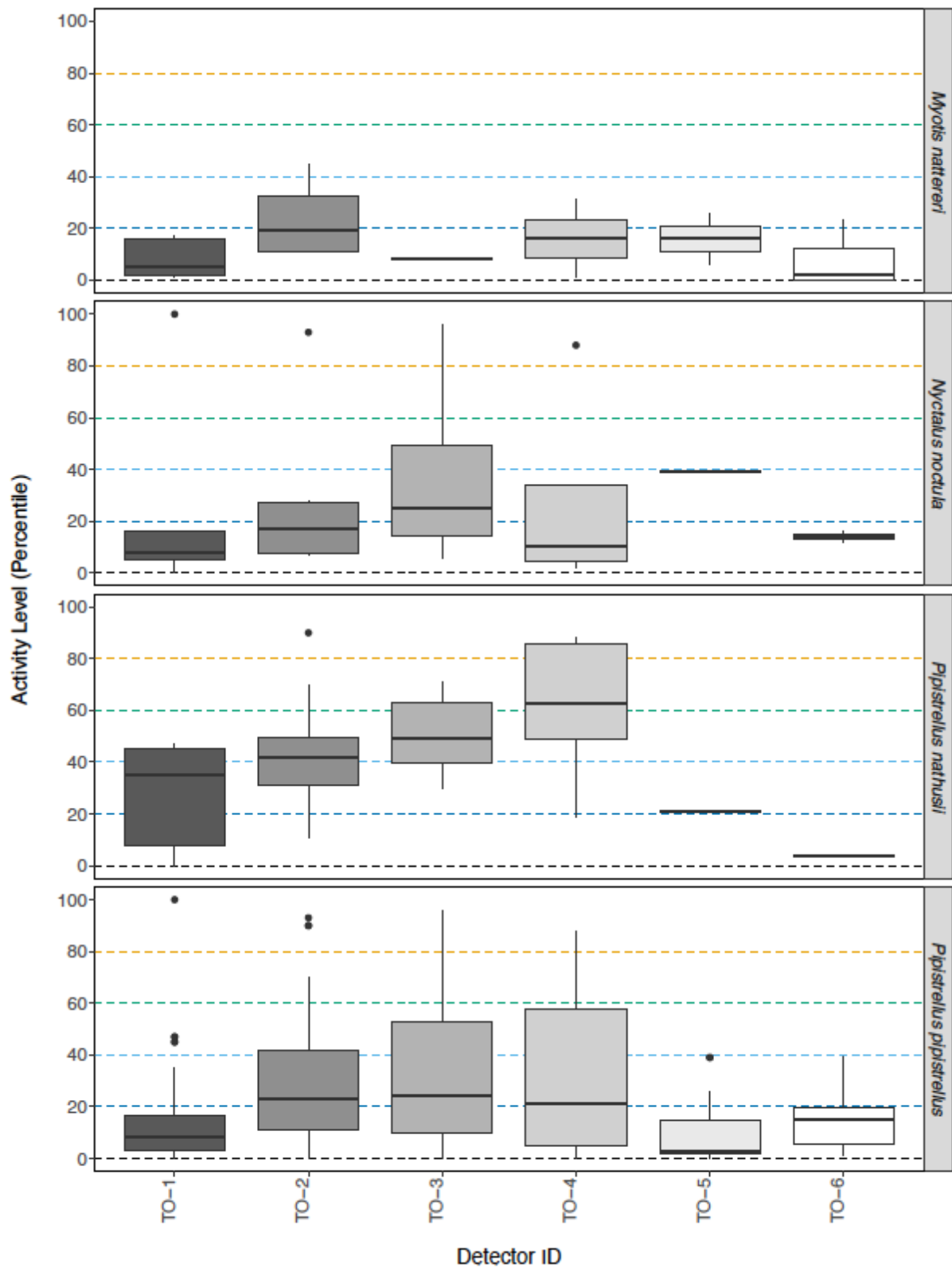


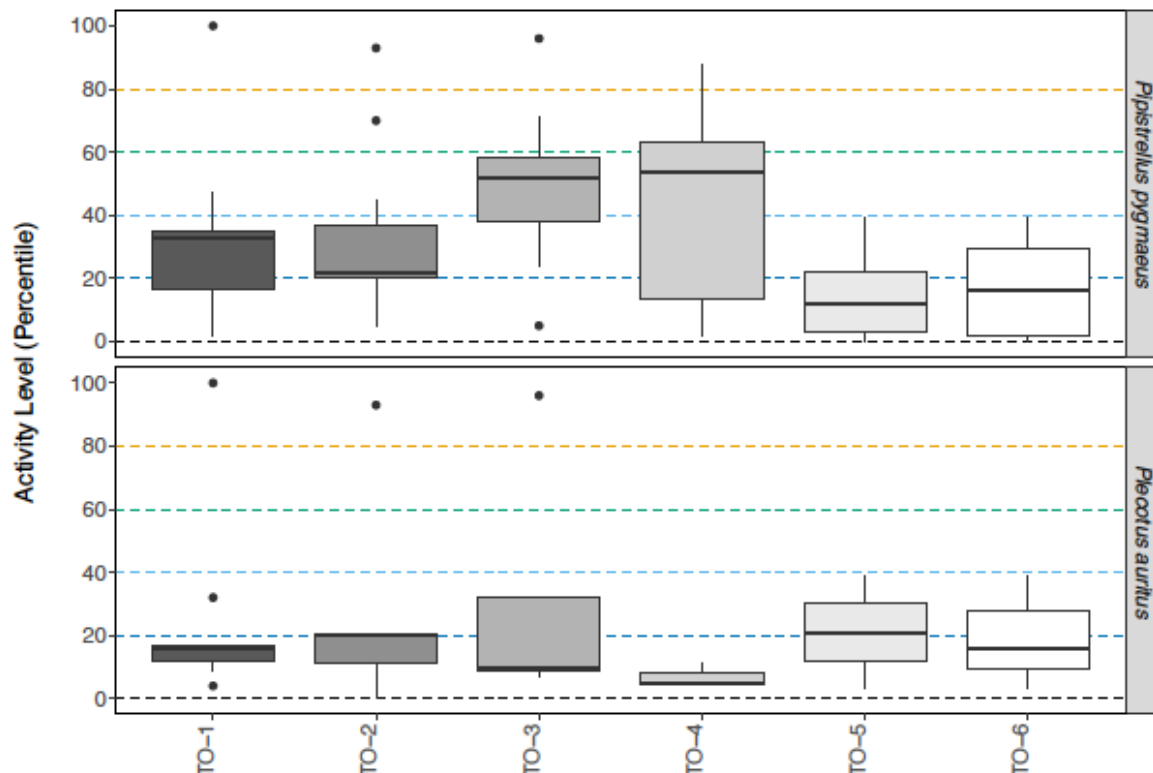
20. Figure 12 shows the species activity levels from the 2020 surveys at each of the six survey locations, plotted as percentiles of activity levels recorded each night, and show the relative abundance of each species at each location in comparison with the ECOBAT reference data set. Overall, it provides further evidence of the low levels of bat activity across the site, though higher levels of some species were recorded at some locations:

- Brandt's bat – moderate/high activity at location 4.
- Nathusius' pipistrelle – moderate activity at locations 2 and 3, moderate/high levels at location 4.
- Soprano pipistrelle – moderate activity at locations 3 and 4.

Figure 12. ECOBAT activity analysis by recorder location: bat activity level (percentile) recorded across each night of the bat survey for each of the six survey locations, 2020.







Conclusions

21. The baseline bat surveys show that the survey area generally has low levels of bat activity. Nine species of bat were recorded in total during the surveys. Common pipistrelle was the most frequently recorded species, with soprano pipistrelle and Daubenton's bat also frequently encountered, particularly during the autumn surveys. Other less abundant species comprised: Nathusius' pipistrelle, whiskered bat, Brandt's bat, Natterer's bat, brown long-eared and noctule.
22. Comparison of bat activity levels recorded at the site with the ECOBAT (Lintott *et al.* 2018) reference database confirmed the generally low activity levels at the site. In 2024, four species exceeded a low level of activity at the site overall: Brandt's and natterer's bat (moderate), and Daubenton's and whiskered (low/moderate), though only one (Daubenton's) had reliable ECOBAT reference data. In 2020, only two species, Nathusius' pipistrelle and soprano pipistrelle, exceeded a low level of activity across the site overall (moderate/high and moderate levels recorded, respectively).
23. The bat numbers recorded within the proposed development were generally low, reflecting the low-quality bat habitat across the survey area. The proposed Renewable Energy Park Extension would not affect any bat roosting habitat, and hedgerow loss would be small (with any losses compensated by new planting). In addition, benefits to bats will be delivered through the Landscape and Biodiversity Mitigation and Enhancement Plan.

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