SIX OAKS RENEWABLE ENERGY PARK: BASELINE BAT SURVEYS 2020

Report to Ridge Clean Energy

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Top left - Common pipistrelle. © Barracuda1983 CC-SA-3.0

Top right – Noctule. © Mnolf GFDL & CC-SA-2.0

SIX OAKS RENEWABLE ENERGY PARK: BAT SURVEYS 2020

INTRODUCTION

1. This report presents the results of bat survey work at the proposed Six Oaks Renewable Energy Park, Cambridgeshire. The surveys were undertaken by Mike Hoit and Keith Langdon, both highly experienced ecological surveyors with over 20 years ecological surveying for renewable energy projects each (including bats, exceeding CIEEM competency requirements).

STUDY AREA

2. The site is located approximately 9km east of Cambridge, in Cambridgeshire. The survey area was chosen to include all areas within the potential zone of ecological influence of the renewable energy park and a buffer around that to be contextual information on the area's bat populations. The survey area covered a total area of 6.9km^2. It is predominantly open arable farmland and lies mainly within the '*East Anglian Chalk'* NE Natural Area.

BAT SURVEY METHODS

Bat Survey Methods

3. The bat survey programme was designed with reference to the recent SNH/Natural England *et al.* (2019) guidance on 'Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation'. The surveys comprised the following:

   - Roost potential survey - to assess all potential roosts sites within the proposed development site and its surrounds.
   - Ground-level activity surveys – six transect-based surveys at approximately monthly intervals from May-September. Surveys were carried out on 1 May, 26 May, 25 June, 22 July, 18 August and 22 September 2020. Access was restricted to the parts of the site that could be accessed safely at night - the transect routes walked are shown in Figure 1.
   - Automated surveys at ground level - static detectors were deployed at eight locations across the survey area representative of the habitats available. Each location was sampled for a target 30 nights covering spring (April/May), summer (June/July) and autumn (August/September). A total of 310 bat-nights' coverage was obtained. The locations of the recorders are shown in Figure 1.

4. Surveys at height were considered unnecessary at this site, given the generally low-quality bat habitats present (predominantly arable farmland).

Bat Survey Results

Bat roost assessment

5. The extended Phase 1 survey carried out on 1 September 2020 included an assessment of bat roost suitability. The results are summarised in Table 1, and the locations are shown in Figure 1. The large majority of the potential bat roost sites were located around the fringes of the survey area, with one within 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	High	Broad-leaved woodland
2	Medium	Line of trees
3	Medium	Line of trees
4	High	Buildings
5	High	Farm buildings
6	High	Farm buildings
7	High	Scattered trees
8	Medium	Scattered trees
9	Medium	Scattered trees amongst roadside scrub
10	Medium	Scattered trees
11	High	Broad-leaved woodland
12	Medium	Trees within roadside scrub
13	High	Broad-leaved woodland
14	Medium	Line of trees
15	High	Farm buildings
16	High	Buildings
17	Medium	Trees in roadside scrub
18	High	Buildings
19	Medium	Scattered trees
20	Medium	Roadside trees
21	High	Trees along road and field boundaries
22	Medium	Isolated tree
23	Medium	Isolated tree
24	High	Farm buildings
25	High	Broad-leaved woodland
26	High	Broad-leaved woodland
27	High	Broad-leaved woodland

Location number	Potential	Notes
28	High	Broad-leaved woodland
29	High	Buildings
30	High	Buildings

6. With regard to commuting/foraging habitat for bats, the main areas that would be likely to be used include the hedgerows and field margins, and the edges of the small number of woodland plantations on the fringes of the survey area.

Bat walking transects

7. 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 of the six surveys carried out between May and September 2020. Three species were recorded in total, with common pipistrelle much the most frequently encountered.

TABLE 2. Number of bat-passes recorded during the walkover transect surveys, May-September 2020.

Species	Scientific name	1 May	26 May	25 June	22 July	18 Aug	22 Sept
Noctule	*Nyctalus noctula*	0	0	1	1	0	1
Common pipistrelle	*Pipistrellus pipistrellus*	2	25	14	10	19	4
Soprano pipistrelle	*Pipistrellus pygmaeus*	0	0	0	1	0	0

8. The distributions of bat records during these walkover surveys are plotted in Figures 2 (common pipistrelle) and 3 (other species). The numbers of locations are lower than the numbers of passes in Table 2 as a result of multiple passes being recorded at single locations. The highest concentration of common pipistrelle records was in the southern part of the survey area. Most were associated with hedgerow habitats. The three noctule records were scattered across the survey area, whilst the single soprano pipistrelle record was from the southern part.

Bat static recorders

9. The raw numbers of records of each species in each season during the bat static surveys are summarised in Table 3.

TABLE 3. Bat static recorder surveys raw bat pass totals by season.

Species	Spring (Apr/May)	Summer (Jun/July)	Autumn (Aug/Sep)	Total number of passes recorded
Barbastelle	0	0	50	50

Species	Spring (Apr/May)	Summer (Jun/July)	Autumn (Aug/Sep)	Total number of passes recorded
Serotine	0	0	28	28
Brandt's bat	1	3	3	7
Daubenton's bat	6	56	40	102
Whiskered bat	0	2	1	3
Natterer's bat	1	4	7	12
Unidentified *Myotis* species	4	30	28	62
Leisler's bat	2	16	37	55
Noctule	5	87	52	144
Nathusius' Pipistrelle	5	61	0	66
Common Pipistrelle	138	3,002	746	3,886
Soprano Pipistrelle	13	315	143	471
Brown long-eared bat	3	4	41	48

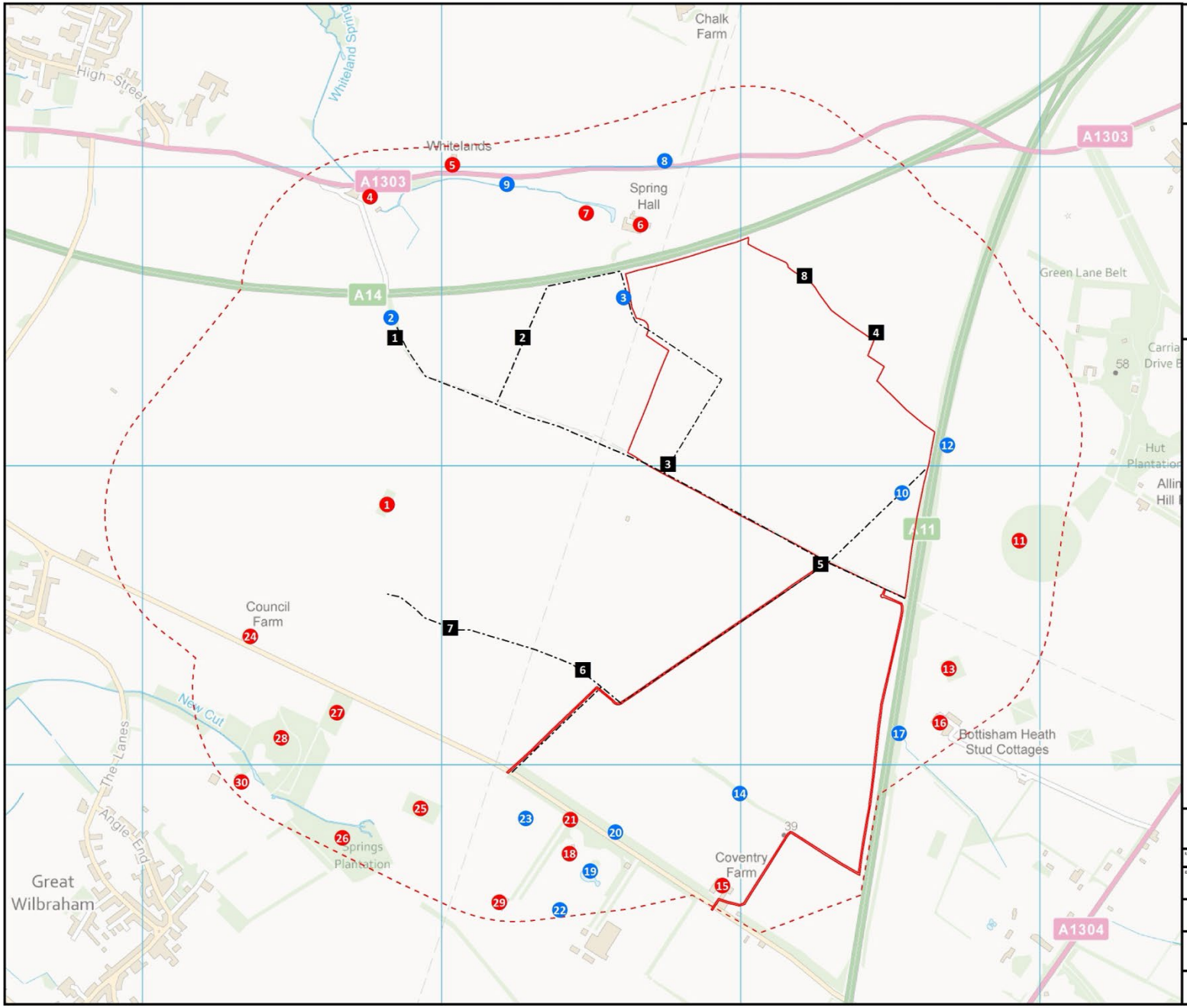
10. Bat pass rates are presented in Table 4, as medians following Lintott *et al*. (2018). Common pipistrelle *Pipistrellus pipistrellus* was the most frequently recorded species, with peak numbers in summer at locations 2, 3, 5 and 7. Soprano pipistrelle *Pipistrellus pygmaeus*, Daubenton's bat *Myotis daubentonii*, noctule *Nyctalus noctule,* Nathusius' pipistrelle *Pipistrellus nathusii,* and serotine *Eptesicus serotinus* were also recorded regularly, mainly during the summer and autumn surveys. Their median hourly pass rates for each location and season are summarised in Table 4.

11. Six additional species were also recorded but in lower numbers: whiskered bat *Myotis mystacinus,* Brandt's bat *Myotis brandtii,* Natterer's bat *Myotis nattereri*, barbastelle *Barbastella barbastellus*, Leisler's bat *Nyctalus leisleri* and brown long-eared *Plecotus auratus.* Their median hourly pass rates were zero for each location in each season.

Table 4. Bat static recorder surveys, April-September 2020, showing the median number of bat passes per hour per night at each location.

Species	Location	Spring (Apr/May)	Summer (Jun/July)	Autumn (Aug/Sep)	Overall (Apr-Sep)
Common pipistrelle	1	0	0.21	0.20	0
	2	0	1.43	0	0
	3	0	2.61	0	0
	4	0.26	0.25	0	0.24
	5	0	3.73	2.24	2.05
	6	0	0.83	0.09	0.14
	7	0	5.39	-	1.01
	8	-	0.12	0	0
	1	0	0	0	0

Species	Location	Spring (Apr/May)	Summer (Jun/July)	Autumn (Aug/Sep)	Overall (Apr-Sep)
Soprano pipistrelle	2	0	0.26	0	0
	3	0	0.14	0	0
	4	0.13	0	0	0.06
	5	0	0.28	0.16	0.11
	6	0	0.41	0	0
	7	0	0.40	-	0.12
	8	-	0.12	0	0
Nathusius' pipistrelle	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0
	5	0	0.14	0	0
	6	0	0	0	0
	7	0	0.13	-	0
	8	-	0	0	0
Noctule	1	0	0	0	0
	2	0	0.13	0	0
	3	0	0	0	0
	4	0	0	0	0
	5	0	0	0.11	0
	6	0	0.07	0	0
	7	0	0	-	0
	8	-	0	0	0
Daubenton's bat	1	0	0	0	0
	2	0	0.13	0	0
	3	0	0	0	0
	4	0	0	0	0
	5	0	0	0	0
	6	0	0	0	0
	7	0	0	-	0
	8	-	0	0	0
Serotine	1	0	0	0	0
	2	0	0	0	0
	3	0	0	0	0
	4	0	0	0	0
	5	0	0	0.11	0
	6	0	0	0	0
	7	0	0	-	0
	8	-	0	0	0



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Six Oaks Renewable Energy Park: Bat Surveys 2020

FIGURE 1

Bat static recorder locations and walked transect routes

KEY:

- Six Oaks site boundary
- Ecology survey area
- Bat static recorders 2020
- Bat walked transect route 2020

Bat Roost Potential

- High
- Medium

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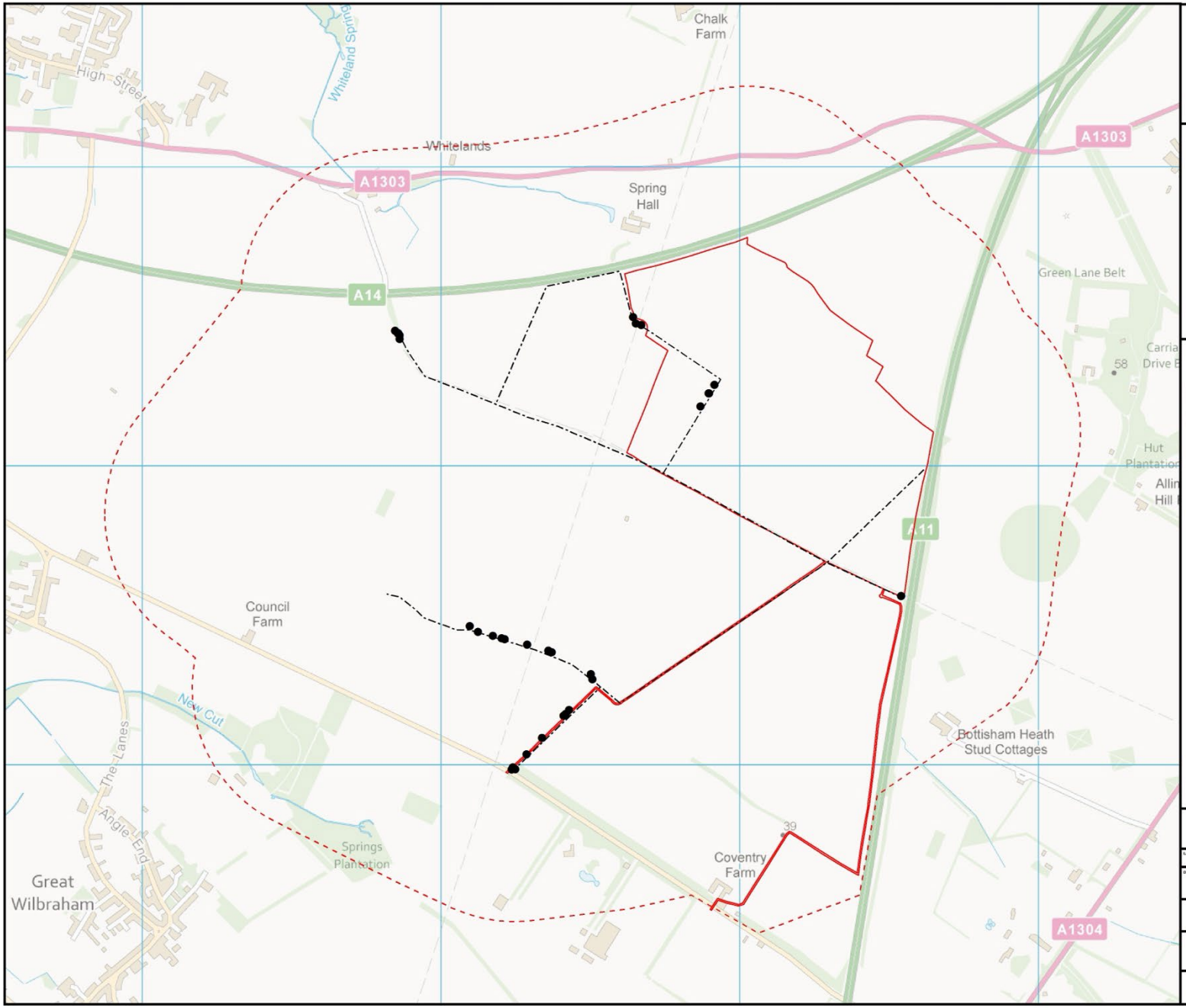

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Six Oaks Renewable Energy Park: Bat Surveys 2020

FIGURE 2

Walkover survey bat records: Common Pipistrelle

KEY:

- Six Oaks site boundary
- Ecology survey area
- Bat walked transect route 2020
- Bat walkover data 2020

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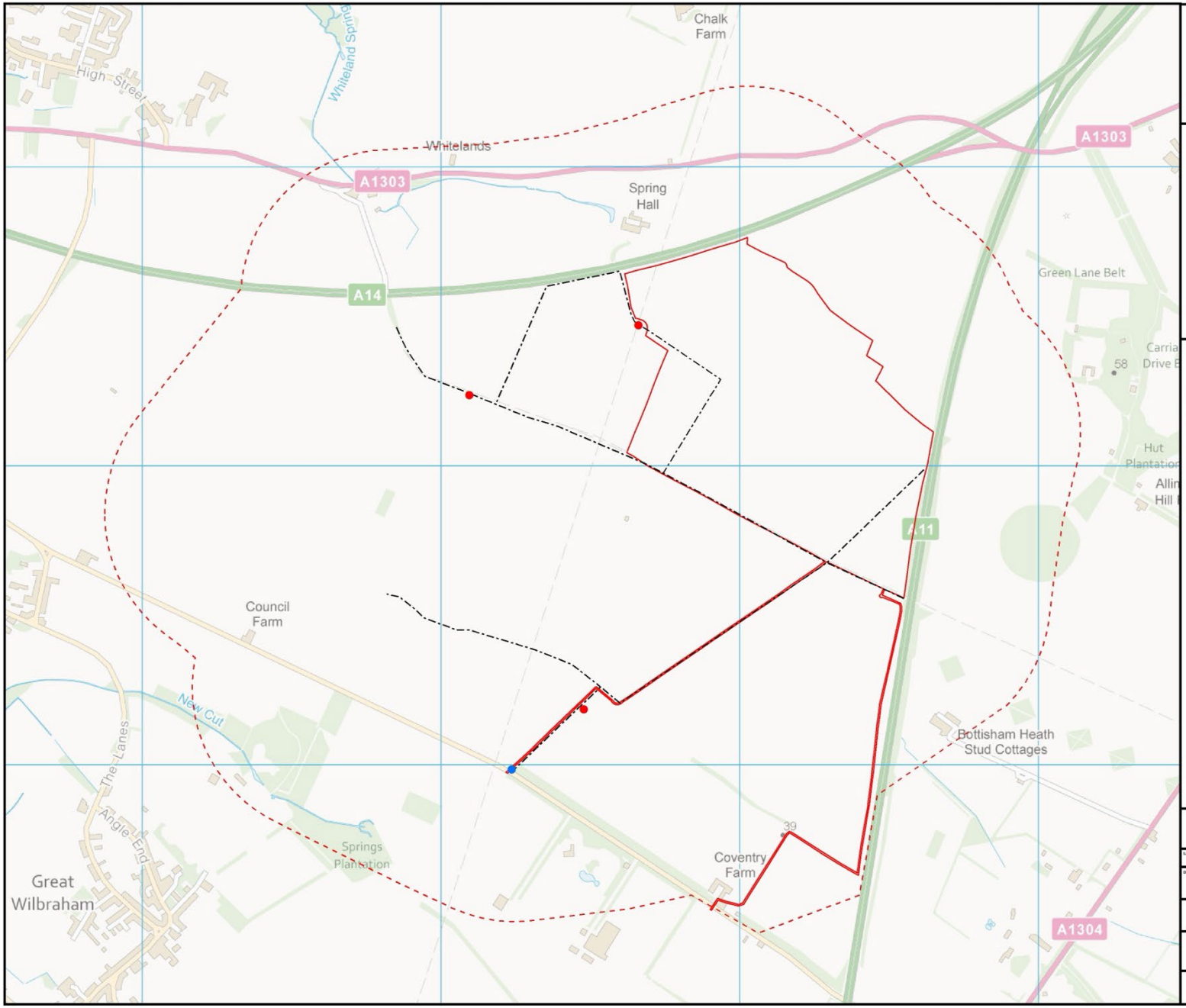

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Six Oaks Renewable Energy Park: Bat Surveys 2020

FIGURE 3

Walkover survey bat records: other species

KEY:

- Six Oaks site boundary
- Ecology survey area
- Bat walked transect route 2020

Species

- Noctule
- Soprano Pipistrelle

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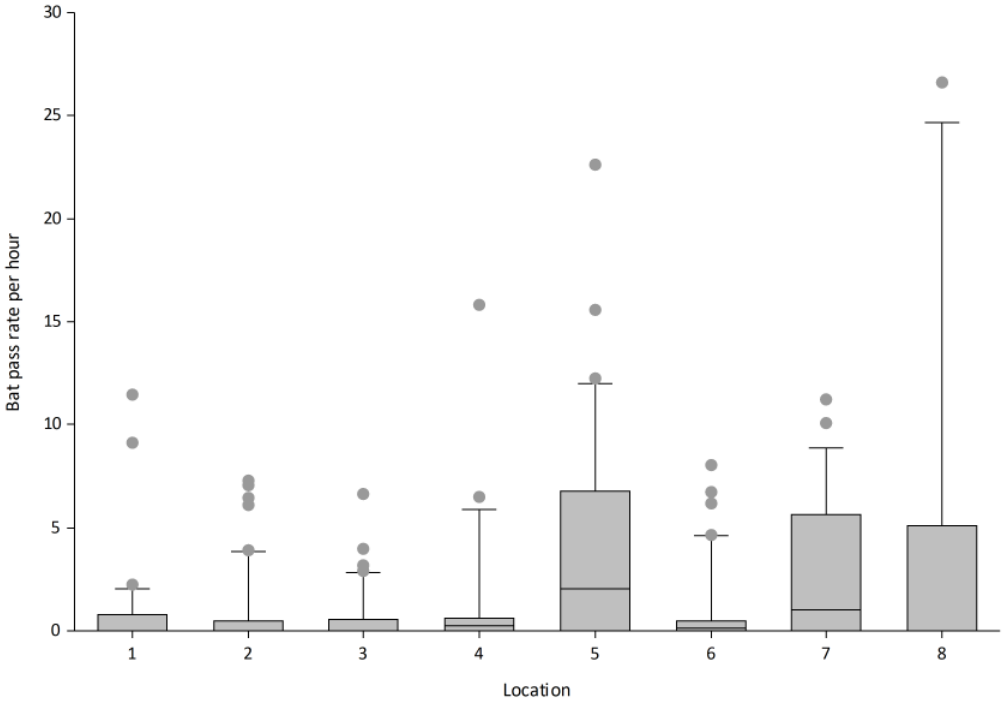
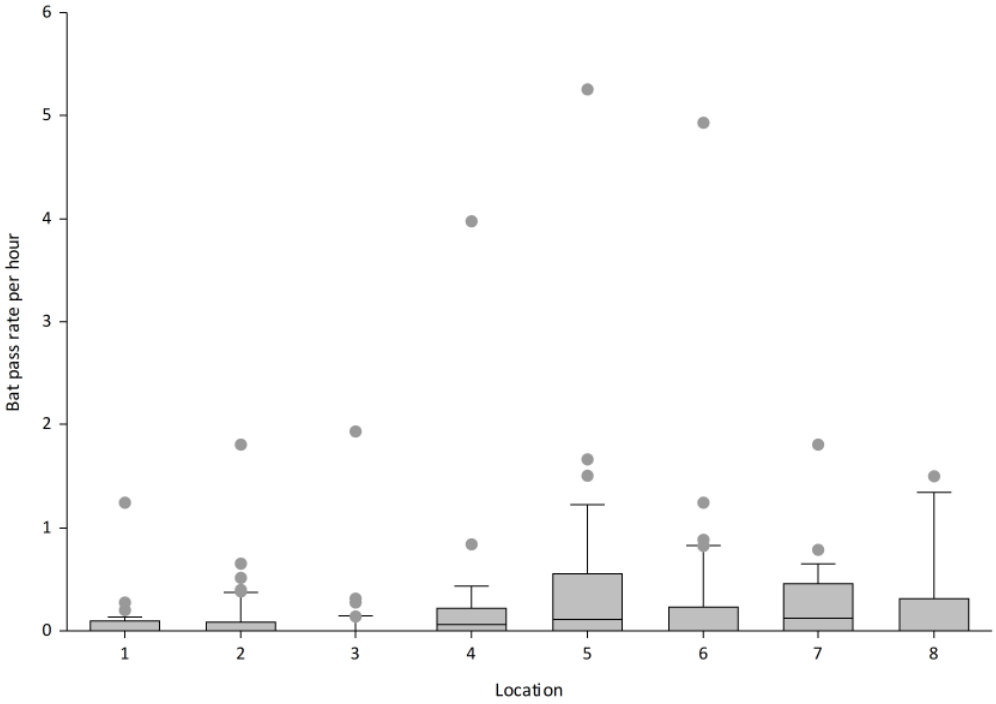
12. Figure 4 shows the activity levels of the four more abundant bat species over the whole survey period at each of the eight survey locations. Each plot shows the median value for each season (horizontal line), 25-75% quartiles (box), 90% percentile (whisker) and individual outliers (dots). Overall, it shows further the generally low levels of bat activity across the site.

Figure 4. Bat activity by recorder location: bat activity level (median pass rate per hour) recorded across each night of the bat survey for each of the eight survey locations (see Figure 1).

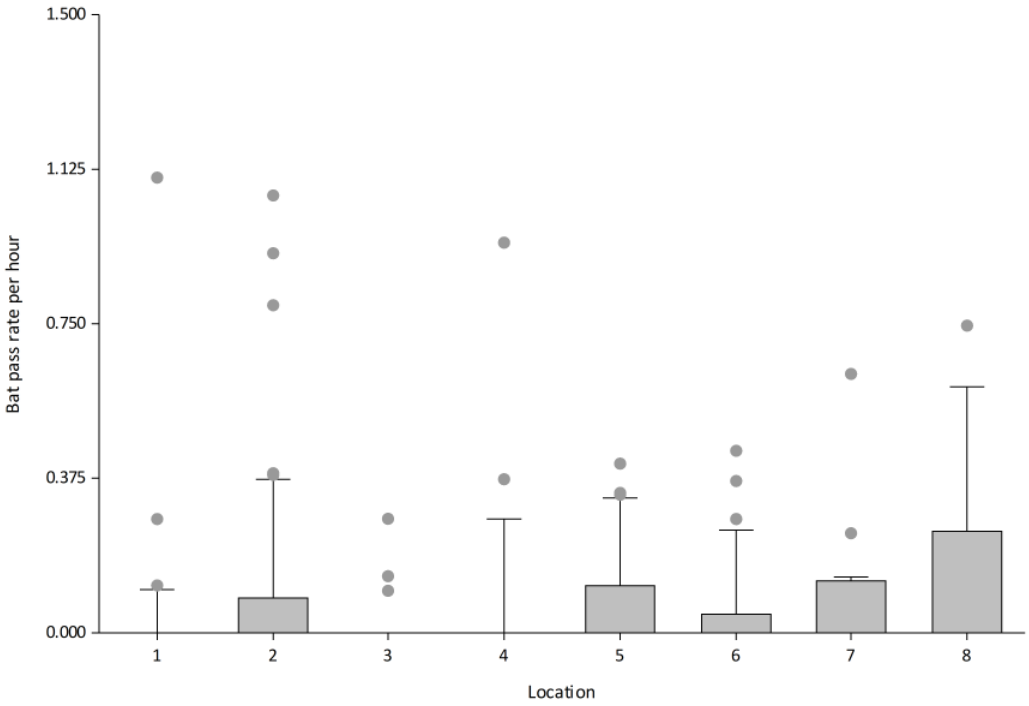
(a) Common Pipistrelle



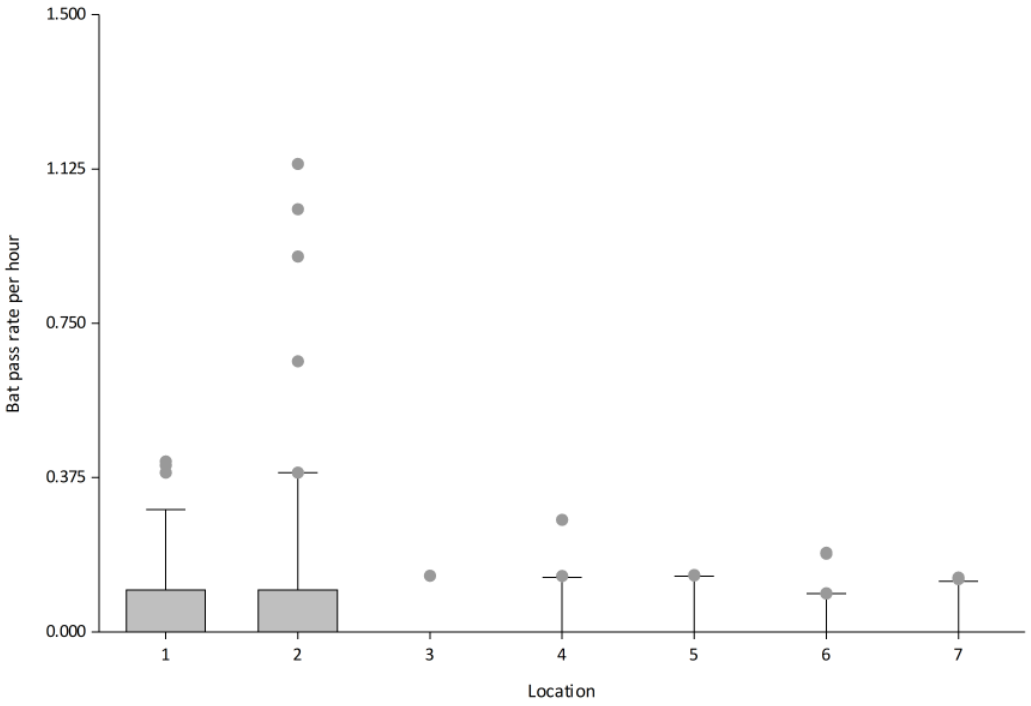
(b) Soprano Pipistrelle



(c) Noctule



(d) Daubenton's bat



CONCLUSIONS

13. The baseline bat surveys have shown the survey area to hold generally low levels of bat activity. Twelve species of bat were recorded in total during the surveys. Common pipistrelle was much the most frequently recorded species, with soprano pipistrelle, Daubenton's bat, noctule, Nathusius' pipistrelle and serotine also frequently encountered, particularly during the summer and autumn surveys. Other less abundant species comprised: whiskered bat, Brandt's bat, Natterer's bat, barbastelle, Leisler's and brown long-eared bats.

14. 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 would not affect any bat roosting habitat, and hedgerow loss would be minimal (and any losses would be compensated by new planting), so effects on bats would be negligible. In addition, the conversion of the development site from arable farmland to wildflower meadow will enhance the bat habitat overall and will deliver a clear net gain to these species.

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