Rush Wall Solar Park

Environmental Statement

Appendix 5.3

Bat surveys

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The natural choice for good advice

Bat surveys
Rush Wall Solar Park
June 2020

Report no: Bats-526.1

A report by
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CIEEM Chartered Institute of Ecology and Environmental Management

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Report details

Site name:	Rush Wall Solar Park
Site address:	Redwick, Newport
Grid reference:	ST 416 853
Report date:	5th June 2020
Report author:	Colin Hicks BSc (Hons) MCIEEM
Checked by:	Yolande Knight BSc (Hons), PhD, MRSB
Report no:	Bats-526.1

Declaration of compliance

BS 42020:2013

This study has been undertaken in accordance with British Standard 42020:2013 Biodiversity, Code of practice for planning and development.

Code of Professional Conduct

The information which we have prepared is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management's Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

Validity of survey data and report

The findings of this report are valid for 24 months from the date of survey. If work has not commenced within this period, an updated survey by a suitably qualified ecologist will be required.

Revisions

Date	Report no:	Comment
05/06/2020	Bats-526.1	Original report

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1. Introduction

1.1. Background

Western Ecology has been commissioned to complete bat surveys in relation to the proposed Rush Wall Solar Park near Redwick.

1.2. Survey aims

The aim of the survey is to characterise the assemblage of bats using the site allowing an assessment of the potential impacts of the proposals for this site. Where appropriate, recommendations for impact avoidance, mitigation and post-development enhancement are made to ensure compliance with wildlife legislation and relevant planning policy.

2. Survey methodology

2.1. Bat activity transects

Two-hour bat activity transects were completed each month during the bat active period April to October 2019. Due to the extent of the site, two surveyors were used to walk a northern and southern transect route, each of which was approximately 3.3km in length. Whilst walking the route, the surveyors recorded bat activity in the area using Wildlife Acoustics EMT2 bat detectors paired with mobile devices running the Echometer Touch app. Each surveyor also carried a BatBox Duet or Griffin bat detector and paper maps to record any bat passes not captured by the EMT2 system. At 10 fixed stations along the route, stops were made of approximately 5 minutes to record activity in locations adjacent to hedgerows, reens and in field centres.

Map 1 provides traces from the EMT2 devices whilst details of the surveys are provided in Table 1.

Table 1. Bat activity transect details

Date	Surveyors	Start time	Finish time	Sunset time	Weather conditions
23 April 2019	Colin Hicks and Michael Sanders	20:10	22:10	20:21	21deg, clear, light SE breeze and dry
28 May 2019	Colin Hicks and Michael Sanders	21:00	23:00	21:15	14deg, clear, calm and dry
22 June 2019	Colin Hicks and Michael Sanders	21:30	23:30	21:33	18deg, clear, calm and dry
22 July 2019	Colin Hicks (northern transect)	21:10	21:10	21:15	19deg, light cloud, calm and dry
30 July 2019	Colin Hicks (southern transect)	21:00	23:00	21:05	19deg, light cloud, fresh SW breeze and light drizzle for 15 minutes towards end
29 August 2019	Colin Hicks and Michael Sanders	19:55	21:55		16deg, light SW breeze, dry
26 September 2019	Colin Hicks and Michael Sanders	19:07	21:07	19:01	17deg, 40% cloud, fresh SW wind and dry
21 October 2019	Michael Sanders and Yolande Knight	18:00	20:00	18:08	16deg, 80% cloud, calm and dry

2.2. Remote monitoring

Each month, in the bat active period April and October 2019, Wildlife Acoustics remote bat detectors were deployed into 4 locations and left to record for 7 nights (Table 2 and Map 1). Locations were chosen to allow comparison between boundary habitats likely to be used by bats (hedgerows and reens) and the solar park footprint where bat activity is likely to be constrained by agricultural management.

After deployment, sonograms were downloaded and analysed using Kaleidoscope Pro (v4.5.4) and Analook software (ver. 4.2n).

Table 2. Remote monitoring periods and locations (Map 1)

Date period	Location
10th to 17th April 2019	B, C, D
1st to 8th May 2019	A
1st to 8th May 2019	G, H

13th to 20th May 2019	A, B
1st to 8th June 2019	A, B, C, D
1st to 8th July 2019	E, F, I, J
1st to 8th August 2019	L, M, N, O
21st to 28th September 2019	K, M, N, O
1st to 8th October 2019	K, M, N, O

2.3. Tree assessment

Trees were assessed for features likely to support roosting bats by a suitably qualified ecologist on 14th February 2020. This involved inspection from ground level with binoculars for features such as rot holes, torsion fissures, splits and crevices that may support roosting bats.

2.4. Desktop survey

The desktop survey from South East Wales Biodiversity Records Centre collated existing biological records for bat species within 2km. The data search also included a search within 4km for statutory and non-statutory nature conservation sites selected for bats.

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Legend

- Development footprint
- Remote detector location A to O
- Transect routes

Title: Map 1. Bat activity transect routes and location of remote monitors

Project: Rush Wall Solar Park

Checked by: CDH Version: 01
Date: 24/04/2020

0 50 100 150 200 250 m

N

3. Results

3.1. Activity transects

This section, in combination with Map 2 and Table 3, describes how each species of bat that was encountered during the activity transects is using the site.

Table 3. Bat activity levels during transects

Species	April 2019	May 2019	June 2019	July 2019	August 2019	September 2019	October 2019
Common Pipistrelle	98	23	33	53	36	4	31
Myotis	0	1		1	0	0	0
Noctule	12	23	3	1	2	3	
Soprano Pipistrelle	2	2	11	7	2		5
Grand Total	**112**	**49**	**47**	**62**	**40**	**7**	**36**

Common Pipistrelle (278 calls recorded)

During the transects, Common Pipistrelle were the most commonly recorded bat with a total of 278 encounters. Activity was focused in the south of the site along hedgerows (Map 2) where frequent feeding buzzes were noted with prolonged periods of foraging. It was noted that at times bats followed the surveyor and appeared to be feeding on insects disturbed by footfall. No evidence of commuting activity was observed.

Noctule (44 calls recorded)

Noctule were the second most common bat recorded, with occasional calls throughout the site, some of which showed signs of feeding. This relates to bats foraging high over the site (Map 2).

Soprano Pipistrelle (29 calls recorded)

Soprano Pipistrelle were occasionally recorded at most locations across the site along boundary features (Map 2). This probably is a single bat.

Myotis (2 calls recorded)

Myotis were very occasionally encountered in the east of the site (Map 2).

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Legend

- Development footprint
- Common Pipistrelle
- Myotis
- Noctule
- Soprano Pipistrelle

F1 F2 F3 F4 F5 F6 F7 F8 F9 F10 F12 F13 F14 F15 F16 F17 F18 F19 F20 F21 F22 F23 F24 F25 F26 F27 F28 F29 F30 F31

0 50 100 150 200 250 m

N

Title: Map 2. Bat activity transect results

Project: Rush Wall Solar Park

Checked by: CDH Version: 01
Date: 24/04/2020

3.2. Remote monitoring

Wildlife Acoustics SM4ZC and SMZC remote monitors where positioned at 15 locations for a summed total of 196 nights in the period 10th April and 8th October 2019 (Table 2 & Map 1). Units associated with hedgerows and reens were fixed to trees or fence posts, whilst those in open habitats were fixed on driven posts.

Due to the large amount of data it was analysed using Kaleidoscope Pro software set to identify single pulses, although calls for Horseshoe bats were visually checked for accuracy of automated ID. Myotis bats have been grouped together.

Common Pipistrelle

Common Pipistrelle were the most commonly recorded bat with 26161 calls during the 196 nights of survey. Determined by call duration, Common Pipistrelle accounted for 83.4% of all bat activity at site.

Bat Activity Index (BAI)[1] was highest in May at 7.635%, lowest in October at 0.202%, and with an average of 2.403% (Table 4). The location with the highest level of activity was Site A, a hedgerow in the east of the Site. Although calls were recorded at all monitoring stations, activity levels were very low at Station H, J and F, a maize field beneath power lines and two low hedgerows within the site interior.

Noctule

3881 Noctule calls were recorded. Determined by call duration, Noctule accounted for 13.4% of all bat activity at site.

BAI was highest in June at 1.136%, lowest in April at 0.035%, and with an average of 0.371% (Table 4). The location with the highest level of activity was Site C, a hedgerow in the north of the Site. Although calls were recorded at all monitoring stations, activity levels were very low at Station H, a maize field beneath power lines in the north west of the site.

Myotis

326 Myotis calls were recorded. Determined by call duration, Myotis bats accounted for 1.1% of all bat activity at site.

BAI was highest in June at 0.133%, lowest in September at 0.003%, and with an average of 0.034% (Table 4). The location with the highest level of activity was Site C, a hedgerow in the north of the Site. No calls were recorded at Station H, a maize field beneath power lines in the north west of the site, and Station B, improved grassland in the east.

Leisler's

231 Leisler's calls were recorded. Determined by call duration, Leisler's accounted for 0.7% of all bat activity at site.

[1] This is the survey time during which bat calls were recorded expressed as a percentage of the total survey period.

BAI was highest in June at 1.136%, lowest in April at 0.001%, and with an average of 0.018% (Table 4). The location with the highest level of activity was Site K immediately to the east of the farm. Although calls were recorded at all monitoring stations, activity levels were very low at Station E, I and J.

Serotine

81 Serotine calls were recorded. Determined by call duration, Serotine accounted for 0.02% of all bat activity at site.

BAI was highest in August at 0.044%, lowest in May at 0.001%, and with an average of 0.010% (Table 4). The location with the highest level of activity was Site M, a hedgerow in the west of the site. No calls were recorded at stations D, G and H, all beneath power lines in the north west of the site.

Long eared

135 Long-eared calls were recorded. Determined by call duration, Long-eared bats accounted for 0.2% of all bat activity at site.

BAI was highest in October at 0.02% with an average of 0.006% (Table 4). The location with the highest level of activity was Site C, a hedgerow in the north of the Site. No calls were recorded at Stations B, E, F, I and J. These are on low hedgerows and improved grassland within the interior of the site

Lesser Horseshoe

12 Lesser horseshoe calls were recorded at Stations A, C, I and N, towards the site periphery. Calls were only recorded in June, July and August whilst all duration was brief not allowing meaningful calculation of BAI.

Table 4. BAI of bat calls recorded during remote monitoring

Month	Myotis	Noctule	Common Pipistrelle	Long-eared	Serotine	Leisler's	Lesser Horseshoe
April	0.013	0.035	0.825	0.000	0.002	0.001	0.000
May	0.044	0.054	7.635	0.000	0.001	0.008	0.000
June	0.133	1.136	3.263	0.010	0.003	0.030	0.002
July	0.021	0.256	0.828	0.000	0.004	0.007	0.001
August	0.019	0.454	3.647	0.010	0.044	0.034	0.001
September	0.003	0.317	0.422	0.000	0.011	0.015	0.000
October	0.007	0.345	0.202	0.020	0.013	0.028	0.000
Average	**0.034**	**0.371**	**2.403**	**0.006**	**0.010**	**0.018**	**0.001**

3.3. Desktop study

There are 66 records for bats within 2km of the Site. The species recorded are detailed in Table 5. The nearest record for a known bat roost is 0.6km and describes an unknown bat roost in 1986. There are no statutory or non-statutory sites within 4km that have been designated for bats.

Table 5. Bat records within 2km

Common name	Number of records
Bat	2
Common Pipistrelle	43
Greater Horseshoe	1
Lesser Horseshoe	3
Nathusius' Pipistrelle	1
Noctule	13
Soprano Pipistrelle	1
Whiskered	1

Welsh distribution of the bats recorded here is given in Table 6.

Table 6. Bat distribution in Wales (NRW, 2020)

Species	Distribution
Common Pipistrelle, Soprano Pipistrelle and (Brown) Long-eared	The three most common species. Found throughout Wales. Very dependent on buildings.
Noctule	Found throughout Wales – mainly roosts in tree-holes. Quite common.
Myotis (excluding Daubenton's and Bechstein's)	The members of this closely related group may be more numerous in Wales than in much of Britain. Widespread and not uncommon.
Serotine and Leisler's	Both species are rare in Wales and are more commonly found in southern England.
Lesser Horseshoe	Critically endangered species. The greater horseshoe is largely confined to Pembrokeshire and Gwent. The lesser horseshoe has a wider distribution but is nevertheless still rare.

3.4. Summary of activity survey results

3.4.1. Commuting bats

The bat activity transects do not indicate commuting across the site.

3.4.2. Foraging bats

Common Pipistrelle

Common Pipistrelle were the most frequently encountered bats during both the activity and remote monitoring surveys. Common Pipistrelle activity was greatest along the tall southern hedgerow during the remote monitoring periods and the activity transects. Common Pipistrelle activity at this site is considered to be moderate/low and was focussed along hedgerows. This probably reflects the management of the site to provide high quality forage and fodder for livestock.

Common Pipistrelle range between 1 to 2km per night and it is likely that the site is exploited on a regular basis by at least two or three Common Pipistrelle bats.

Noctule

Noctule traversed the site during the transects and remote monitoring. Calls were well dispersed across the site during the activity transects, suggesting bats are using this site for foraging, but without focus on individual habitats, such as reens. Quite a large number of calls were recorded during remote monitoring, but with a BAI of less than 1% this site is unlikely to be important to these bats.

The number of calls recorded here during remote monitoring suggests that this is not an important foraging resource for this bat species.

Soprano Pipistrelle

Soprano Pipistrelle were recorded during the activity transects, but not during remote monitoring. Activity levels were low and are likely to be due to a single bat occasionally foraging here. This site is not important for this bat.

Myotid

Myotid were occasionally recorded during remote monitoring and activity transects. Levels of activity were very low. This site is extremely unlikely to be important for this group of bats.

Long-eared

Occasional Long-eared calls were recorded during remote monitoring. Activity levels were low and are likely to be due to a single bat occasionally foraging here. This bat probably roosts locally in a nearby building. This site is not important for this bat.

Leisler's and Serotine

Very occasional Leisler's and Serotine calls were recorded during remote monitoring. Serotine would be expected here as they are a grassland specialist and there are likely to be occasional flying invertebrates associated with marginal grassland habitats at field margins. This site is not important for these bats.

Lesser Horseshoe

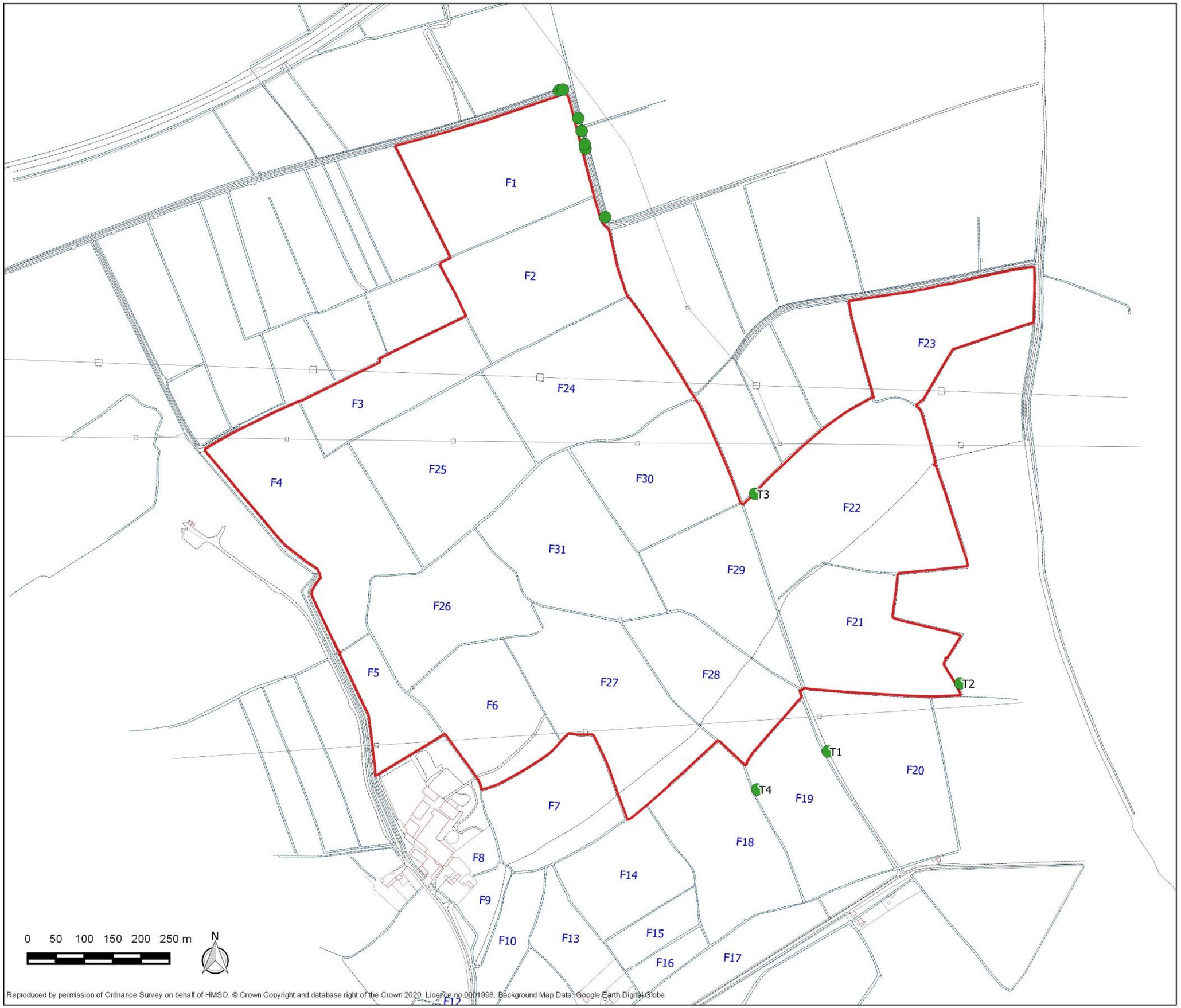
Lesser Horseshoe were rarely recorded during remote monitoring. This site is not important for this bat.

3.5. Tree assessment

Four individual trees and a group pf trees associated with field boundaries have features with potential for day roosting bats (Map 3).

- T1 Oak on the western boundary of F20 with stem hole.
- T2 Willow in south eastern corner of F21 with stem hole and fissure in main stem.
- T3 Common Ash on northern boundary of F22 with large cavity in main stem.
- T4 Low Oak on western boundary of F19 with stem cavity.

- G1 Dispersed group of low coppiced Willow along the bank of Rush Wall Reen South with complex cavities in main stems.



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Legend

- Development footprint
- Tree with potential for roosting bats

Title: Map 3. Trees with potential for roosting bats

Project: Rush Wall Solar Park

Checked by: CDH Version: 01
Date: 24/04/2020

4. Assessment

4.1. Survey constraints

All surveys were completed at an optimal time of year to detect bat activity and the majority equipment functioned correctly for the survey period. However, due to the presence of livestock and harvesting operations, remote bat detectors could not be placed in the centre of fields during summer months. In addition, tall maize crops in August/September required activity transect routes to travel along field edges as the centres of fields became in accessible. This is not considered a significant constraint as most bat activity will have been associated with fields margins.

Due to the large amount of remote monitoring data, automated ID was completed for the majority of calls. This may have resulted in over-estimation of activity levels by certain species, in particular Leisler's which is a relatively rare bat. However, calls from this bat were rare and this will not have affected the results in a material way.

Long-eared bats have very faint calls and are seldom recorded by both remote and had held bat detectors unless they are in close proximity, whilst Common Pipistrelle have very loud calls that can be recorded at 20 metre or more. The data will be skewed in favour of bats with louder calls. This is an accepted constraint of modern bat surveying and careful considerations is given to sites where greater than expected numbers of Long-eared calls are recorded.

It is the professional opinion of the surveying ecologist that the initial bat assessment, in combination with the bat emergence surveys provides sufficient information in relation to bats to allow the decision-maker to determine the planning permission. Further survey work would not make any material difference to the information provided.

4.2. Value of the site for foraging bats

Six species of bat and two groups of bats were recorded here. Of these, only Common Pipistrelle are regularly active here, with occasional use by Noctule, very occasional use by Long-eared, Soprano Pipistrelle, Myotid, Leisler's and Serotine, and rare visits from Lesser Horseshoe.

Using methods suggested for valuing bat foraging habitats within EIA (Wray et al, 2010) the site has been valued as follows for each species recorded foraging here on a regular basis:

- Common Pipistrelle – Local value (Score = 19)

Research into habitat preferences of bats in Britain (Walsh and Harris, 1996) found that although bats could be found in almost all habitats, they showed clear preference for woodland edges and water bodies along with treelines and hedgerows. Strong avoidance was seen for a number of habitats, including improved grassland, and this was common in all landscapes.

Improved grassland and arable habitats within the development footprint would provide little in the way of foraging opportunities for bats as they do not support significant populations of

flying insects. Application of slurry appeared to increase insect numbers for a short period of time, during which Common Pipistrelle were active. Taller hedgerows and reen habitats are likely to support and accumulate flying insects is sufficient numbers for occasional foraging bats.

The bat community as a whole is as would be expected within a modern agricultural landscape with occasional features (boundary habitats) of some value.

This site is of Local value for foraging bats.

4.3. Value of the site for roosting bats

A small number of trees associated with site boundaries have potential for roosting bats. Informed by the numbers and frequency of bats encountered during the activity transects, it is extremely unlikely that these trees support a significant population of roosting bats, although occasional roosting cannot be discounted.

Trees are of Local value for roosting bats.

4.4. Legislation and policy guidance

Bat species and their breeding or resting places (roosts) are protected under the Wildlife and Countryside Act 1981 (as amended) and The Conservation of Habitats and Species Regulations 2017. They are identified as European Protected Species. Under these laws it is an offence to:

- capture, kill, disturb or injure bats (on purpose or by not taking enough care);
- damage or destroy a breeding or resting place (even accidentally);
- obstruct access to their resting or sheltering places (on purpose or by not taking enough care); or
- possess, sell, control or transport live or dead bats, or parts of them.

Bechstein's, Noctule, Common Pipistrelle, Soprano Pipistrelle, Brown Long-eared, Greater Horseshoe and Lesser Horseshoe are listed under Section 7 of Environment (Wales) Act 2016 as living organisms of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales.

References

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