Longcroft Wind Farm
Bat Survey Report

Technical Appendix 8.4

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1 INTRODUCTION

MacArthur Green was commissioned by Renewable Energy Systems Ltd. (the 'applicant') to carry out bat surveys at the proposed Longcroft Wind Farm located near Lauder, Scottish Borders, (hereafter referred to as the 'proposed development').

Bat surveys included:

- Desk study; and
- Automated activity surveys.

The aim of the surveys was to quantify the usage by bats and variation in bat activity levels within the proposed development, and to inform the ecological impact assessment for the Longcroft Wind Farm Environmental Impact Assessment (EIA) Report.

2 THE PROPOSED DEVELOPMENT AND SURVEY AREA

The proposed development is located approximately 8.5km north-north-east of Lauder, Scottish Borders, with access being taken via a D124 to the south-west of the proposed development. The proposed development comprises a series of steep, moorland slopes and named hills, which are separated by several burns that ultimately drain into the Lauder Water. The site is approximately 1,290 hectares and is adjacent to the operational Fallago Rig Wind Farm.

The proposed development does not overlap with any statutory designated sites containing bat related qualifying features.

The temporal (Anabat) survey area covered the site and consisted of 16 Anabat deployment locations as shown in **Figure 1.**

3 BATS AND WIND FARMS

3.1 Policy and Guidance

All bat species are protected under the following legislation:

- The Habitats Directive 92/43/EEC (as amended);
- The Wildlife and Countryside Act 1981 (as amended); and
- The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended).

Details pertaining to the legal status of bats are included within **Annex A** and in **Table A-1.**

In the UK and Europe, guidelines have been produced with regards to assessing the ecological impact upon bats from wind farm developments. These guidelines help to inform survey and mitigation strategies.

The following guidance documents have been used in the preparation of this report:

- Reason, P.F. and Wray, S. (2023). UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats. Chartered Institute of Ecology and Environmental Management, Ampfield;
- Collins, J. (ed) (2023). *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (4th edn). The Bat Conservation Trust, London. ISBN-978-1-7395126-0-6;
- Andrews, H. (2018) *Bat Roosts in Trees: a guide for identification and assessment for tree-care and ecology professionals*. Pelagic Publishing, Exeter;
- Russ, J. (2012) *British Bat Calls, A Guide to Species Identification*, Pelagic Publishing, Exeter; and
- NatureScot, Natural England, Natural Resources Wales, Renewable UK, Scottish Power Renewables, Ecotricity Ltd, the University of Exeter & the Bat Conservation Trust (BCT). (August 2021). *Bats and Onshore Wind Turbines: Survey Assessment and Mitigation*.

4 METHODS

4.1 Desk-Based Study

A desk-based study was undertaken with regards to the presence of bat species within the proposed development and its environs.

A National Biodiversity Network (NBN)[1] Atlas Scotland search was completed to obtain bat records from 2008 to 2023 within 10km of the proposed development.

4.2 Field Survey Methods

4.2.1 Automated Activity Surveys

NatureScot *et al.* (2021) recommends that, "*Where developments have more than ten turbines, detectors should be placed within the developable area at ten potential turbine locations plus a third of additional potential turbine sites up to a maximum of 40 detectors for the largest developments.*"

The proposed development layout at the time of survey in 2022 included 29 proposed wind turbines. A 29-turbine site would therefore require 16 locations to be sampled. Detectors were placed at potential turbine locations across the proposed development, deployed seasonally (three deployment periods) from May to October. Detector locations are shown in **Figure 1**.

NatureScot *et al.* (2021) recommends a minimum of ten consecutive nights of sampling per seasonal deployment. Anabat Swift and Express detectors recording full spectrum and zero-crossing files were deployed for a minimum period of 14 consecutive nights across the proposed development (i.e. exceeding minimum survey requirements) and were positioned at a height of 2m. Each detector recorded bats from dusk to dawn with detectors starting 30 minutes before dusk and finishing 30 minutes after dawn. Detector operating times and a description of the habitat type at each location shown in **Table B-1** of **Annex B**.

[1] *NBN Atlas occurrence download at https://nbnatlas.org accessed on Fri Jul 14 08:07:02 UTC 2023.*

Following the publication of guidance (NatureScot *et al.* 2019, updated 2021) stating that "*full spectrum automatic detectors should be deployed, as a minimum*". NatureScot[2] were consulted (21st March 2019) and advised that the use of zero-crossing detectors would be permitted with a transition period towards full spectrum detectors. The Express detectors was deployed with a sensitivity value of 8 (High). The full spectrum detector was deployed with the following settings:

- Sensitively value of 14;
- Minimum frequency of 15 kHz;
- Maximum frequency of 250 kHz;
- Maximum file length of 15 s;
- Minimum event of -2 ms; and
- Sampling rate of 320 kHz.

Data was analysed using Kaleidoscope Pro Auto ID classifier which assigns a species label to a sound file[3]. To ensure that all bat calls (with the exception of common and soprano pipistrelle which were excluded) were identified correctly by the software, they were manually reviewed by an appropriately trained ecologist using Kaleidoscope Viewer and AnalookW software. This method of analysis is in line with current guidelines for data analysis which recommends the manual checking of all non-*Pipistrellus* calls (excluding Nathusius' pipistrelle) when using automated methods (Collins, 2023). Sound files labelled as noise were also reviewed. Guidance on call parameters was taken from Russ (2012).

At the time of preparing this report (August/September 2023), the secure online tool Ecobat (Mammal Society, 2017) was not available. Analysis of bat data followed recommendations within NatureScot *et al.* (2021) to use a measure of relative bat activity at the proposed development[4]. Reference sites were used as a comparison for bat activity level with the proposed development. The data was then evaluated in accordance with NatureScot *et al.* (2021) guidance to determine the overall site risk level.

4.3 Methods for Analysing Bat Activity Levels and Risks

NatureScot *et al.* (2021) details the methodology for analysing bat activity levels. This method is summarised below and involves the following steps:

1. Estimating bat activity levels;
2. Categorising collision risk of the relevant species;
3. Identifying population relevant abundance (size of the populations);

[2] Formerly Scottish National Heritage (SNH).
[3] Reason, P.F., Newson, S.E. & Jones,K.E. (2016) Recommendations for using automatic bat identification software with full spectrum recordings. Bat Conservation Trust
[4] Section 6.1 of NatureScot 2021 states, "*Assessments of bat activity that do not use the online repository must detail how the inferred level of relative bat activity has been derived.*" https://www.nature.scot/doc/bats-and-onshore-wind-turbines-survey-assessment-and-mitigation.

4. Categorising the potential vulnerability of bat populations by combining collision risk with population abundance;
5. Categorising the site risk level;
6. Completing the overall risk assessment; and
7. An assessment of significance and mitigation.

The following sections outline the methods used in each step.

4.3.1 Step 1: Bat Activity Levels

To understand behaviour of species at the proposed development, and how bat activity levels vary across the proposed development both spatially and throughout the seasons, bat passes per hour for each species, location and season were ranked by percentile and assigned an activity category corresponding to the following percentile scores:

- 0 to 20 – Low
- 21 to 40 – Low to Moderate
- 41 to 60 – Moderate
- 61 to 80 – Moderate to High
- 81 to 100 - High

A measure of relative bat activity compared to other sites in similar areas at the same time of year could not be obtained using Ecobat due to the tool not being available at the time of reporting. The approach for estimating relative bat activity levels in relation to other sites therefore uses bat passes per hour to provide the relative bat activity from comparing four reference sites within 20 km of the proposed development.

Bat activity level have been categorised as High, Moderate or Low.

4.3.2 Step 2: Vulnerability to Collision

Appendix 3 of NatureScot *et al.* (2021) presents a generic assessment of vulnerability to collision for UK species, based on species behaviour, flight characteristics and casualties in the UK and Europe. **Table 4-1** provides a summary of the vulnerability of each bat species to collision.

Table 4-1: Vulnerability of Bat Species to Turbine Impact in the UK

Risk of Turbine Impact (Collision Risk)		
Low Risk	**Medium Risk**	**High Risk**
Myotis spp.	Serotine	Common pipistrelle
Long-eared bats	Barbastelle	Soprano pipistrelle
Horseshoe bats		Noctule
		Leisler's bat

Risk of Turbine Impact (Collision Risk)		
		Nathusius' pipistrelle

Habitat characteristics at the location of wind turbines can have an important influence on the vulnerability of bat species to collision. For example, proximity to key feeding sites and commuting routes such as water features and woodland edge habitats is known to increase the likelihood of bat collision (NatureScot *et al*. 2021).

4.3.3 Step 3: Population Relative Abundance

NatureScot *et al.* (2021) details the sensitivity of a bat species to impact based on their population's relative abundance in Scotland as detailed in **Table 4-2**. Species with the rarest relative abundance are more susceptible to significant effects.

Table 4-2: Population Relative Abundance of Bats in Scotland

Relative Abundance	Species
Common	Common pipistrelle (*Pipistrellus pipistrellus*)
	Soprano pipistrelle (*Pipistrellus pygmaeus*)
Rarer	Brown long-eared bat (*Plecotus auritus*)
	Daubenton's bat *(Myotis daubentonii)*
	Natterer's bat (*Myotis nattereri)*
Rarest	Whiskered bat (*Myotis mystacinus*)
	Brandt's bat (*Myotis brandtii*)
	Nathusius' pipistrelle (*Pipistrellus nathusii*)
	Noctule bat (*Nyctalus noctule*)
	Leisler's bat (*Nyctalus leisleri*)

4.3.4 Step 4: Potential Vulnerability of Bat Populations

Table 4-3 below, sourced from NatureScot *et al.* (2021), uses the measure of collision risk, in combination with population relative abundance, to indicate the potential vulnerability of populations of British bat species. The overall potential vulnerability of bat populations is identified as: low (yellow), medium (orange), high (red).

Table 4-3: Level of Potential Vulnerability of Populations of British Bat Species

Relative Abundance of Bats in Scotland	Collision Risk		
	Low collision risk	Medium collision risk	High collision risk
Common species			Common pipistrelle Soprano pipistrelle
Rarer species	Brown long-eared bat Daubenton's bat Natterer's bat		
Rarest species	Whiskered bat Brandt's bat		Nathusius' pipistrelle Noctule bat Leisler's bat

4.3.5 Step 5: Categorise the Site Risk Level

The site risk level is categorised through a combination of habitat risk and project size which is then entered into the table matrix as shown below in

Table 4-4 to calculate the overall site risk level. The full matrix table **Table C-1,** as provided within NatureScot *et al.* (2021), is shown in **Annex C** of this report which includes descriptions on how to determine the habitat risk and project size for the proposed development.

Table 4-4: Initial Site Risk Assessment

Habitat Risk	Project Size		
	Small	Medium	Large
Low	1	2	3
Moderate	2	3	4
High	3	4	5
Key: Green (1-2) – low/lowest site risk; Amber (3) – medium site risk; Red (4-5) – high/highest site risk *			

* Some sites could conceivably be assessed as being of no (0) risk to bats. This assessment is only likely to be valid in more extreme environments, such as above the known altitudinal range of bats, or outside the known geographical distribution of any resident British species.

4.3.6 Step 6: Risk Assessment

The overall risk assessment is undertaken for high collision risk species identified onsite and involves combining site risk level (Section 4.3.5,

Table 4-4) with the Reference site activity category (Section 4.3.1). The overall risk assessment matrix is shown in **Table 4-5** below where 'Low' site risk level (green) is 0-4, 'Medium' site risk level (amber) is 5-12, and 'High' site risk level (red) is 15-25.

Table 4-5: Overall Risk Assessment

Site Risk Level		Reference Site activity category					
		Nil (0)	Low (1)	Low-Moderate (2)	Moderate (3)	Moderate-High (4)	High (5)
	Lowest (1)	0	1	2	3	4	5
	Low (2)	0	2	4	6	8	10
	Medium (3)	0	3	6	9	12	15
	High (4)	0	4	8	12	15	18
	Highest (5)	0	5	10	15	20	25

4.3.7 Step 7: Assessment of Significance and Mitigation

The outputs of the risk assessment detailed in step 6 above are then used to assess the significance of effect within the Ecological Impact Assessment. At this stage, other site-specific factors should be considered such as habitat characteristics (and how they may change), behaviour of species at the proposed development, and location of the proposed development regarding the natural range of the species and how this could affect favourable conservation status.

Mitigation measures as detailed within section 7.1 of NatureScot *et al.* (2021) are then considered where appropriate.

5 BAT SURVEY LIMITATIONS

The guidance recommends the minimum level of pre-application survey required for ground level static detectors to be ten nights of recordings in each of spring (April - May), summer (June to mid-August) and autumn (Mid-August to October). In Scotland, due to unfavourable weather conditions and low activity levels for bats in April, ground-level automated activity surveys commenced in May and were completed in October.

Automated activity surveys should capture a sufficient number of nights (minimum of ten nights) with appropriate weather conditions for bat activity (i.e., temperatures at or above of 8°C in Scotland at dusk, maximum ground level wind speed of 5m/s and no, or only very light, rainfall) (NatureScot *et al*, 2021). To account for the potential limitations of weather on the number of suitable nights recorded, surveys were carried out over longer deployment periods, with a minimum of 14 nights recorded.

Due to unexpected technical issues with the detectors, microphones, batteries, it was not always possible to achieve 14 consecutive nights of recordings. One detector failed to record data for minimum ten nights during a deployment period (Location 7 in July). At five locations, the detectors had fallen during the deployment (Locations 4 and 14 in June, Location 9 in July and Locations 4 and 11 in October). Location 14 was moved to Location 14a for the second and third deployment due to cattle. Location 14 recorded during the first deployment. As the majority of locations recorded for more than ten nights, with a total of 738 complete nights recorded which exceeds the minimum number of nights (16 Anabats * 10 nights * 3 seasonable deployments = 480 nights of data) required for a development of this size, the small loss of data is not considered to have materially altered the overall assessment of risk. The survey timings can be seen in **Annex B**, **Table B-1**.

Anabat detectors are a commonly used bat detector for acoustic monitoring at wind farm sites, however all bat detectors have limitations and will only monitor bat activity within a limited area, which for Anabats is usually around 30m, depending on a variety of environmental factors. Furthermore, due to passive monitoring methodologies depending on sound reaching the microphone, the detection rate of bat calls varies with a bias towards loud bat calls with quieter calls, namely brown long-eared bats (low collision risk species), potentially being under-recorded.

6 SURVEY RESULTS & ANALYSIS

6.1 Desk-Based Study

The NBN Atlas data search[1] returned records of the following bat species within 10km of the proposed development between 2008-2023 inclusive:

- Brown long-eared bat;
- Common pipistrelle;
- Daubenton's;
- Natterer's; and

- Soprano pipistrelle.

Details regarding licences and data providers for these records are included in **Table 6-1** below.

Table 6-1 Data Providers for NBN Atlas Scotland Records Used

Species/Species Group	Data Provider	Licence[5]
Brown long-eared	Bat Conservation Trust (BCT) & Scottish Natural Heritage (SNH)	OGL
Common pipistrelle	BCT & SNH	OGL
Daubenton's	SNH	OGL
Natterer's	SNH	OGL
Soprano pipistrelle	BCT & SNH	OGL

6.2 Automated Activity Surveys

MacArthur Green deployed detectors at 16 locations within the proposed development from May to October in 2022 over a total period of 47 days and collecting 738 complete recording nights of data, see **Table B-1** of **Annex B** and **Figure 1**.

A total of six bat species were recorded for these locations. The total number of passes recorded for each species across all the detectors within the proposed development and average (mean) Bat Passes Per Hour and average (mean) Bat Passes Per Night are shown below in **Table 6-2**.

Table 6-2 Total Number of Bat Passes for Each Species Across all Locations

Species/Species Group	No of Registrations	Percentage of total (%)	Mean Bat Passes Per Hour*	Mean Bat Passes Per Night
Common pipistrelle	459	54.84	0.05	0.48
Soprano pipistrelle	287	34.29	0.03	0.30
Brown long-eared	26	3.11	0.003	0.03
Daubenton's	35	4.18	0.004	0.04
Natterer's	2	0.24	0.0002	0.002
Noctule	28	3.35	0.003	0.03
Total	837	100	0.10	0.89

***The number of hours the detectors recorded for each visit was based on an assumed time. Visit 1 recorded 8 hours per night, visit 2 recorded 9 hours per night, visit 3 recorded 14 hours per night. Any failed recordings were not included in the calculations.

The survey results were processed using the reference sites as a comparison to gain a measure of relative bat activity (bat passes per hour or night) at the proposed development. The summarised results and analysis are presented in Steps 1 – 6 below.

[5] Open Government Licence (OGL) https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/ (Accessed May 2023)

6.2.1 Step 1: Bat Activity Levels

Bat Activity Levels Across the Site and Through the Seasons

Data on the activity levels for all species across the site and through the seasons is provided in **Table D- 1** in **Annex D**.

Average Annual Site Activity Levels (Bat Activity Index)

A summary of the four reference sites is provided below. All four reference site assessments concluded that the high collision risk species had Low risk.

Site A[6] was surveyed in 2013 and categorised bat activity level as Low. The assessment was for an extension of ten proposed turbines. The habitat was mainly grassland, some heathland and patches of conifer plantation. **Table 6-3** presents the total number of bat passes per hour at all locations across the site.

Table 6-3 Site A: Bat Activity Index of Entire Site

Species/Genus	Mean Bat Passes Per Hour
Common pipistrelle	2.25
Soprano pipistrelle	2.12
Noctule	0.02
Myotis spp.	0.01
Pipistrelle spp.	0.02
Unidentified	0.01

Site B[7] was surveyed in 2014 and categorised bat activity level as Low. The assessment was for an extension of six proposed turbines. The habitat was mainly grassland and plantation, with a few burns dissecting the site. Site B recorded common and soprano pipistrelle with the mean bat passes per hour for *Pipistrelle* spp., as 11.24.

Site C[8] was surveyed in 2014 and categorised bat activity as Low. The assessment was for an extension of nine proposed turbines. The habitat was composed of grassland, wet and dry heath and plantation. **Table 6-4** presents the average total number of bat passes per night at all locations across the site.

Table 6-4 Site C: Bat Activity Index of Entire Site

Species/Genus	Mean Bat Passes Per Night
Common pipistrelle	8.60
Soprano pipistrelle	12.06
Nathusius' pipistrelle	0.065

[6] Longpark Wind Farm Extension Environmental Statement (April 2014).
[7] Bat Survey for Pogbie Windfarm, Midlothian (October 2014).
[8] Crystal Rig Wind Farm (Phase IV), Appendix 6.1, Ecology (May 2018).

Species/Genus	Mean Bat Passes Per Night
Pipistrelle spp.	1.32
Daubenton's	0.42
Natterer's	0.04
Myotis spp.	0.25
Brown long-eared	0.25
Noctule	0.10
Nyctalus spp.	0.13
Unidentified	0.08

Site D[9] was surveyed in 2014 and categorised bat activity as Low. The assessment was for an extension of an existing 48 turbine site. The habitat was composed moorland and bog habitat. **Table 6-5** presents the average total number of bat passes per night at all locations across the site.

Table 6-5 Site D: Bat Activity Index of Entire Site

Species/Genus	Mean Bat Passes Per Night
Common pipistrelle	43.40
Soprano pipistrelle	16.92
Pipistrelle spp.	8.22
Myotis spp.	0.87
Noctule	0.23
Nyctalus spp.	0.08
Leisler's	0.05
Unidentified	0.10

Table 6-6, Table 6-7 and Table 6-8 detail the average annual site activity levels for High-risk species, calculated using the reference sites.

Table 6-6: Common Pipistrelle Average Annual Site Activity Levels – Bat Passes Per Hour/Night

Species		Site A	Site B	Site C	Site D
Common pipistrelle	Bat passes per hour	2.25	-	n/a	n/a
	Bat passes per night	n/a	n/a	8.60	43.40
	Sensitivity*	Low	-	Low	Low

[9] Fallago Rig 2, Bat Survey Report, Appendix 9.B (August 2015).

Species		Site A	Site B	Site C	Site D
Proposed development	Bat passes per hour	(0.05) ranked 1st relative to other reference sites			
	Bat passes per night	(0.48) ranked 1st relative to other reference sites			
	Sensitivity	Low (2)			

*as reported by project's Technical Appendix/Environmental Statement.

Table 6-7 Soprano Pipistrelle Average Annual Site Activity Levels – Bat Passes Per Hour/Night

Species		Site A	Site B	Site C	Site D
Soprano pipistrelle	Bat passes per hour	2.12	-	n/a	n/a
	Bat passes per night	n/a	n/a	12.06	16.92
	Sensitivity*	Low	-	Low	Low
Proposed development	Bat passes per hour	(0.03) ranked 1st relative to other reference sites			
	Bat passes per night	(0.30) ranked 1st relative to other reference sites			
	Sensitivity	Low (2)			

*as reported by project's Technical Appendix/Environmental Statement.

Table 6-8 *Nyctalus* Species Average Annual Site Activity Levels – Bat Passes Per Hour/Night

Species		Site A	Site B	Site C	Site D
Nyctalus spp.	Bat passes per hour	0.02	-	n/a	n/a
	Bat passes per night	n/a	n/a	0.23	0.31
	Sensitivity*	Low	-	Low	Low
Proposed development	Bat passes per hour	(0.003) ranked 1st relative to other reference sites			
	Bat passes per night	(0.03) ranked 1st relative to other reference sites			

Species		Site A	Site B	Site C	Site D
	Sensitivity	Low (2)			

*as reported by project's Technical Appendix/Environmental Statement.

6.2.2 Step 2, 3 and 4: Collision Risk, Population Relative Abundance and Potential Vulnerability

Table 6-9 details the collision risk, population relative abundance and potential vulnerability of the bat species recorded within the proposed development.

Table 6-9: Collision Risk, Population Relative Abundance and Potential Vulnerability

Bat Species	Collision Risk	Population Relative Abundance	Potential Vulnerability
Soprano pipistrelle	High	Common	Medium
Common pipistrelle	High	Common	Medium
Daubenton's	Low	Rarer	Low
Brown long-eared	Low	Rarer	Low
Nyctalus spp.	High	Rarest	High
Natterer's	Low	Rarer	Low

6.2.3 Step 5: Categorising Site Risk Level

The site risk level is determined by project size and habitat risk (see

Table 4-4). The proposed development consists of 29 wind turbines that are over 50m in height, and so falls within the 'Medium' project size, as shown in

Table 4-4 and **Table C-1** of **Annex C**.

In terms of habitat risk for bats, there are no buildings, structures, or trees with moderate and/or high bat roosting potential within 200m plus the rotor radius of wind turbines. Foraging habitat quality and connectivity within this buffer area is low with a largely treeless environment and small open upland burns and a fairly homogenous area of open moorland and marshy grassland habitat present, resulting in a habitat risk classification of 'Low' as shown in

Table 4-4 and **Table C-1** of **Annex C**. According to

Table 4-4 above, the 'Medium' project size combined with a 'Low' habitat risk level results in an overall site risk assessment of 'Low/Lowest' (2).

6.2.4 Step 6: Risk Assessment – High Collision Risk Species Only

The overall risk assessment is undertaken for high collision risk species which were identified within the proposed development. Low-risk species have a low risk of collision with a turbine blade, so the impact of the proposed development on the local bat population would likely be negligible.

The overall risk assessment involves combining the site's risk level (Section 4.3.5,

Table 4-4) with the average reference site bat activity levels (Section 4.3.1) to calculate the typical (mean) site risk level (**Table 4-5**).

Table 6-10 combines the seasonal data and summarises the overall risk assessment score for high-risk species based on the average reference site comparison for the proposed development. The overall site risk scores for all high collision risk species based on the comparison were Low (2).

Table 6-10: Risk Assessment Scores Based on average comparison Reference Site for High Collision Risk Species

Species	Risk Assessment Score based on average comparison Reference site
Common pipistrelle	Low (2)
Soprano pipistrelle	Low (2)
Nyctalus spp.	Low (2)

Figures 2, 3 and **4** illustrate the results of the mean seasonal bat activity for high collision risk bat species recorded at the proposed development at each survey location, illustrating how bat activity and risk levels varies within the site across the year and by species. This data is also presented in **Table D- 1** of **Annex D** which includes the mean bat passes per hour, mean bat passes per night and maximum bat activity (bat passes per night).

The maximum bat passes per night ranges from 1 to 42, generally the mean bat passes per hour is considered Low.

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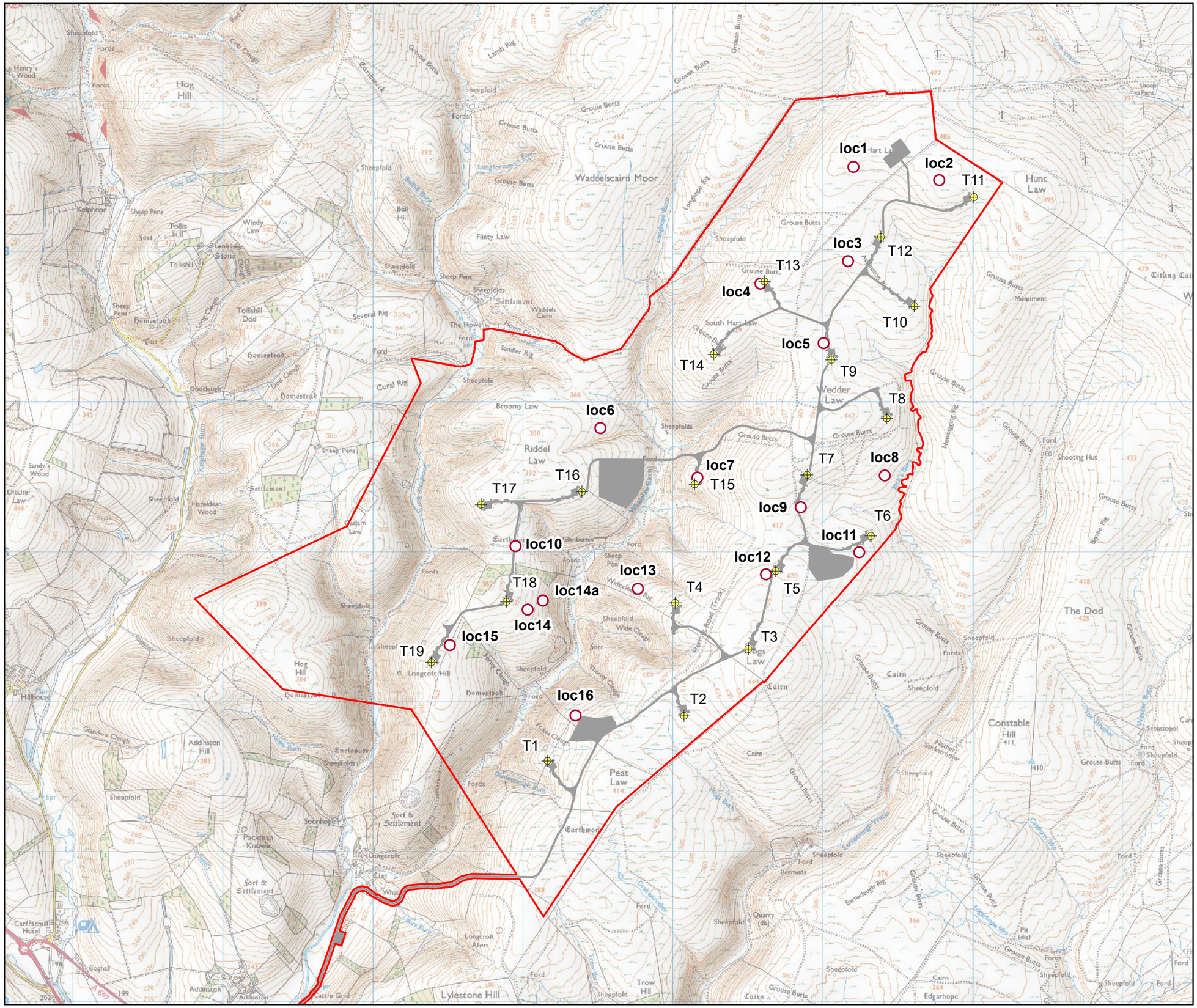

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LONGCROFT WIND FARM

Figure 1

BAT SURVEY AREA & ANABAT LOCATIONS

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KEY

- PROPOSED DEVELOPMENT AREA
- TURBINE
- ANABAT DETECTOR LOCATION
- INFRASTRUCTURE

LAYOUT DWG	T-LAYOUT NO.
04728-RES-LAY-DR-PE-003	PSCOLCF021

DRAWING NUMBER
E_EIA_Fig1_BatSvA_Anabat_LCR

SCALE - 1:25,000 @ A3

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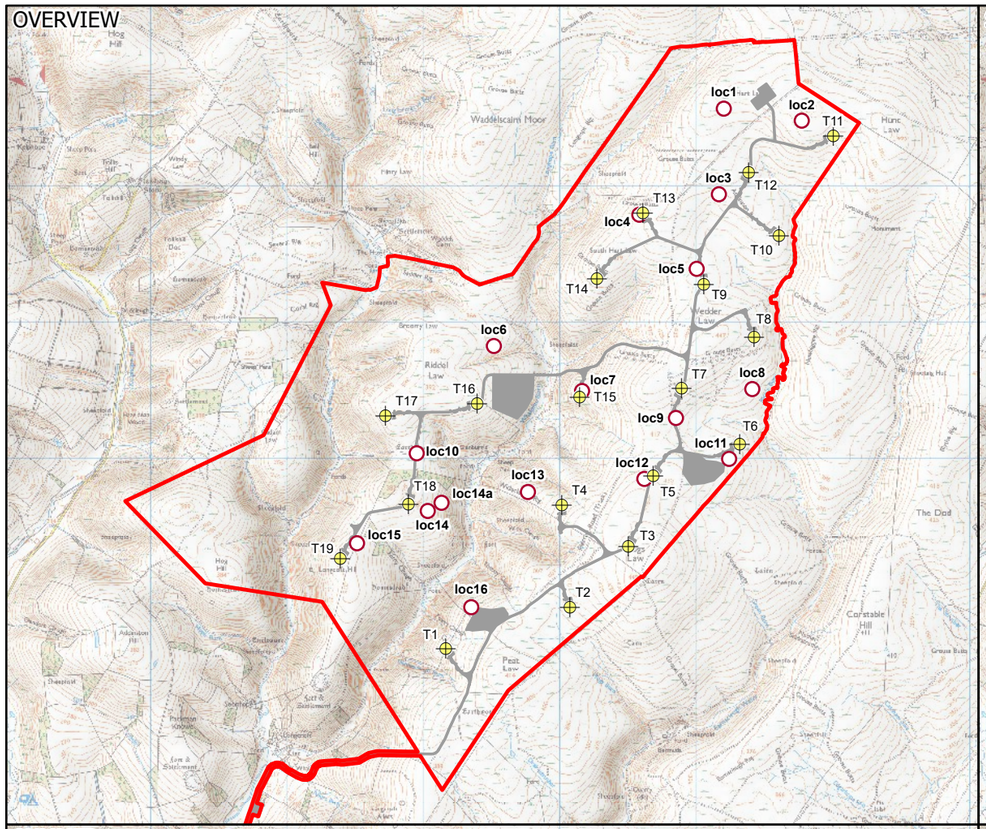
OVERVIEW



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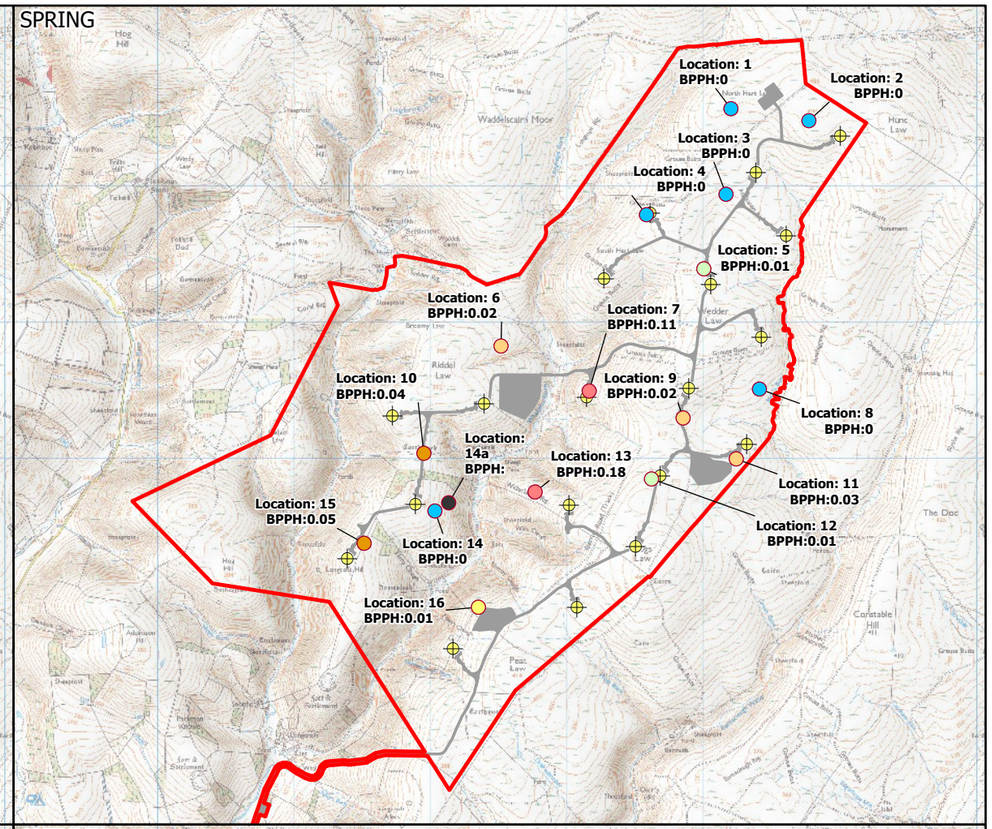

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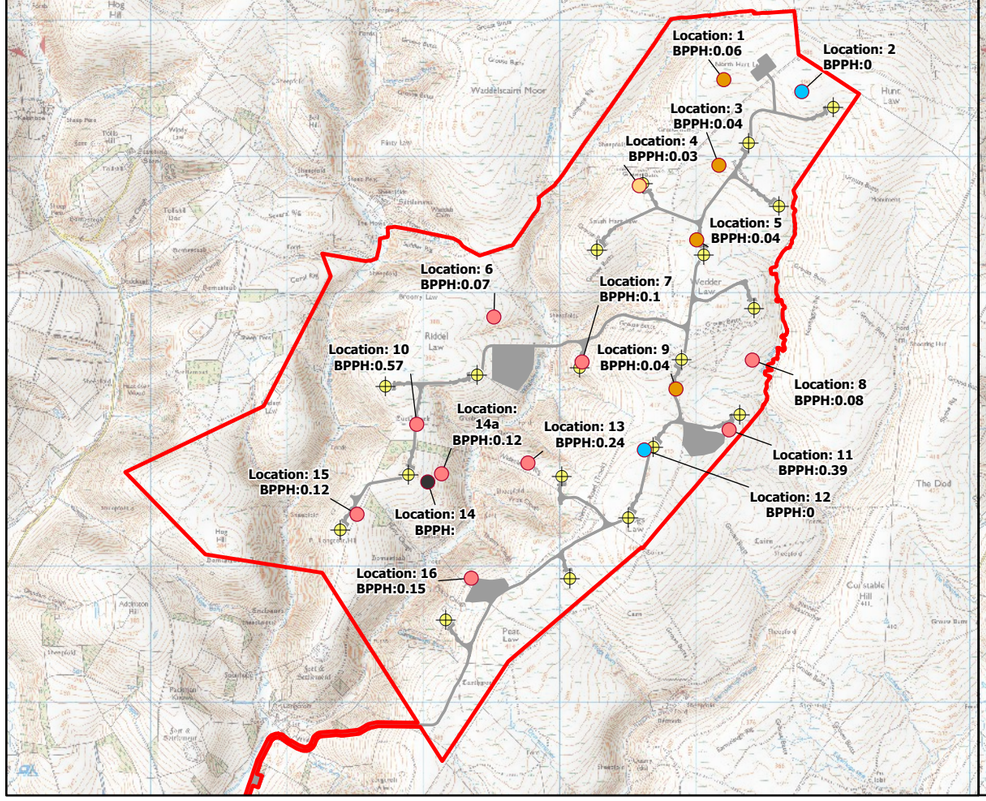

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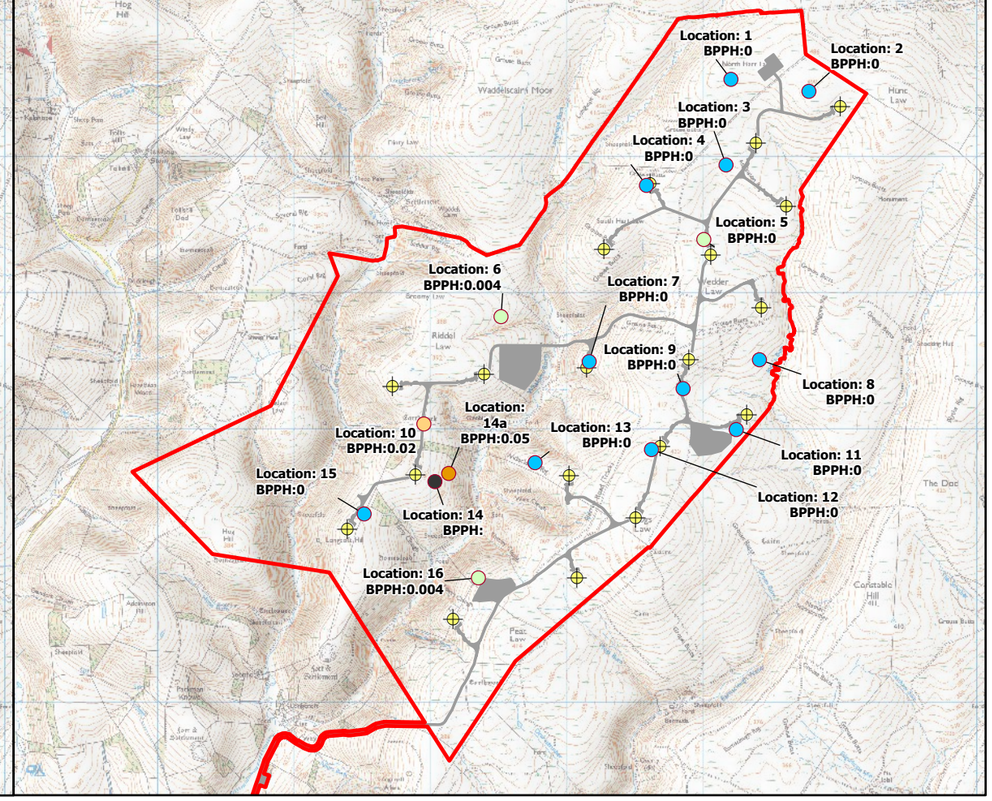

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Figure 2

AVERAGE SEASONAL BAT SITE ACTIVITY 2022 - COMMON PIPISTRELLE

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KEY

- PROPOSED DEVELOPMENT AREA
- TURBINE
- ANABAT DETECTOR LOCATION
- INFRASTRUCTURE

SITE ACTIVITY LEVEL (BASED ON MEAN BAT PASSES PER HOUR (BPPH))

- HIGH
- MODERATE TO HIGH
- MODERATE
- LOW TO MODERATE
- LOW
- NO ACTIVITY
- NO DATA

LAYOUT DWG	T-LAYOUT NO.
04728-RES-LAY-DR-PE-003	PSCOLCF021

DRAWING NUMBER

E_EIA_Fig2_AvgBatActivity2022_CP_LCR

SCALE - 1:45,000 @ A3

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OVERVIEW

SPRING

SUMMER

AUTUMN

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Figure 3

AVERAGE SEASONAL BAT SITE ACTIVITY 2022 - SOPRANO PIPISTRELLE

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KEY

- PROPOSED DEVELOPMENT AREA
- TURBINE
- ANABAT DETECTOR LOCATION
- INFRASTRUCTURE

SITE ACTIVITY LEVEL (BASED ON MEAN BAT PASSES PER HOUR (BPPH))

- HIGH
- MODERATE TO HIGH
- MODERATE
- LOW TO MODERATE
- LOW
- NO ACTIVITY
- NO DATA

LAYOUT DWG	T-LAYOUT NO.
04728-RES-LAY-DR-PE-003	PSCOLCF021

DRAWING NUMBER

E_EIA_Fig3_AvgBatActivity2022_SP_LCR

SCALE - 1:45,000 @ A3

ENVIRONMENTAL IMPACT ASSESSMENT REPORT 2023

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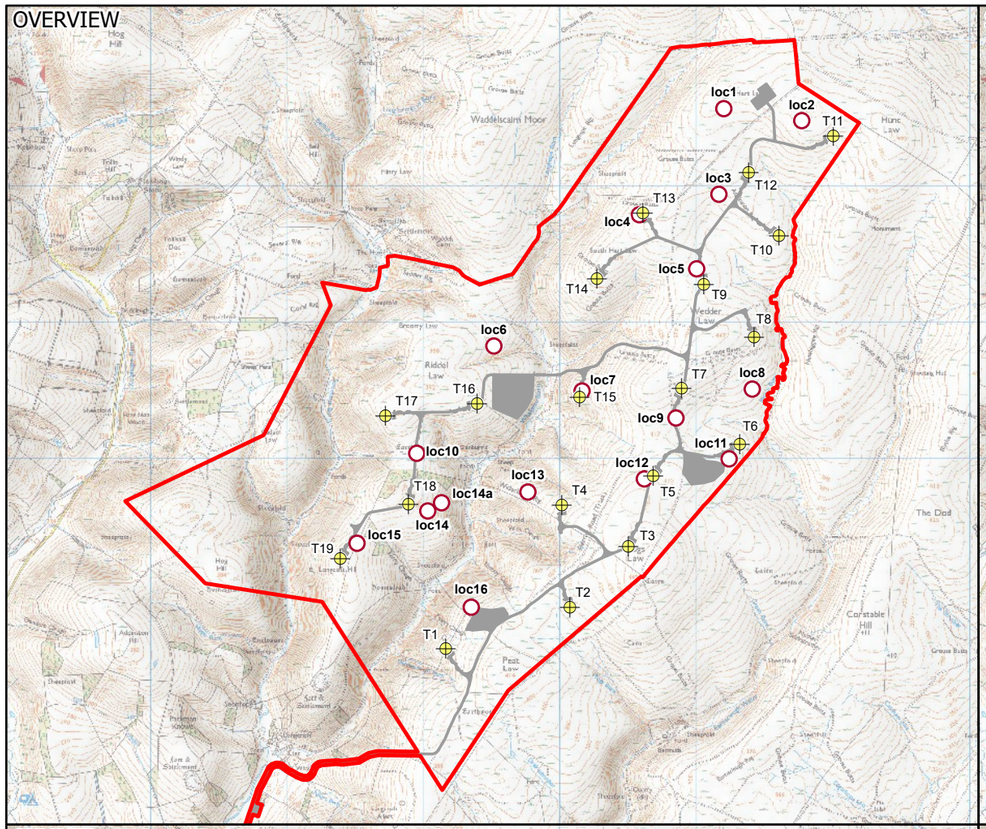
OVERVIEW



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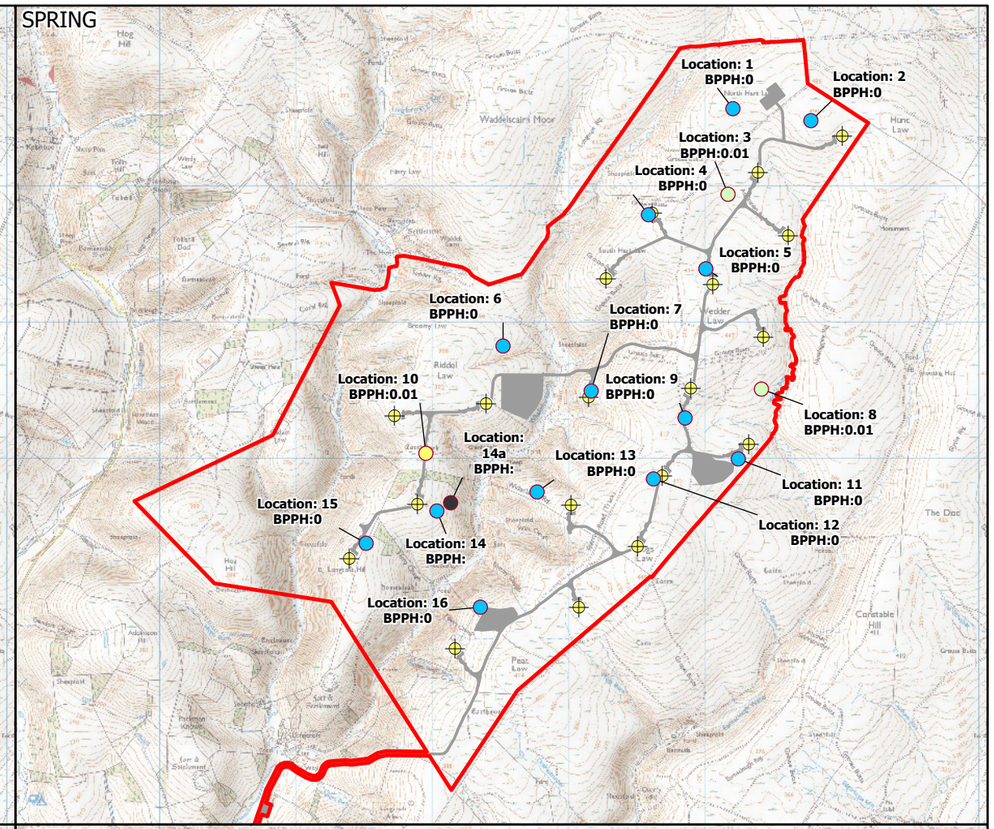
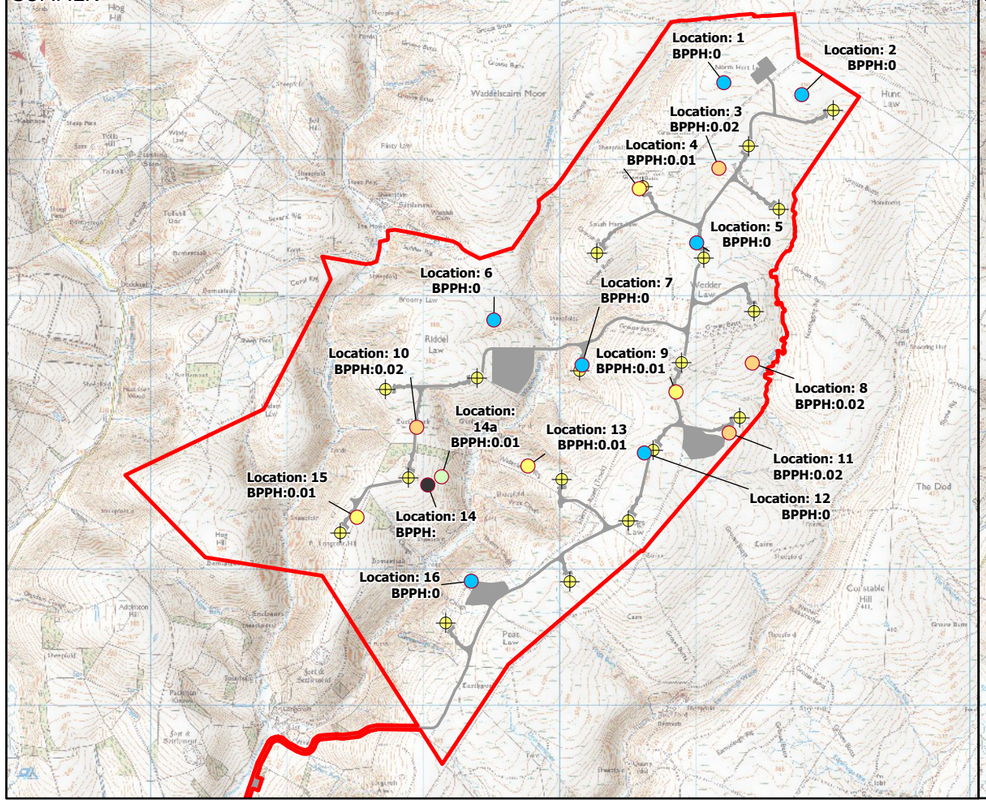


SUMMER



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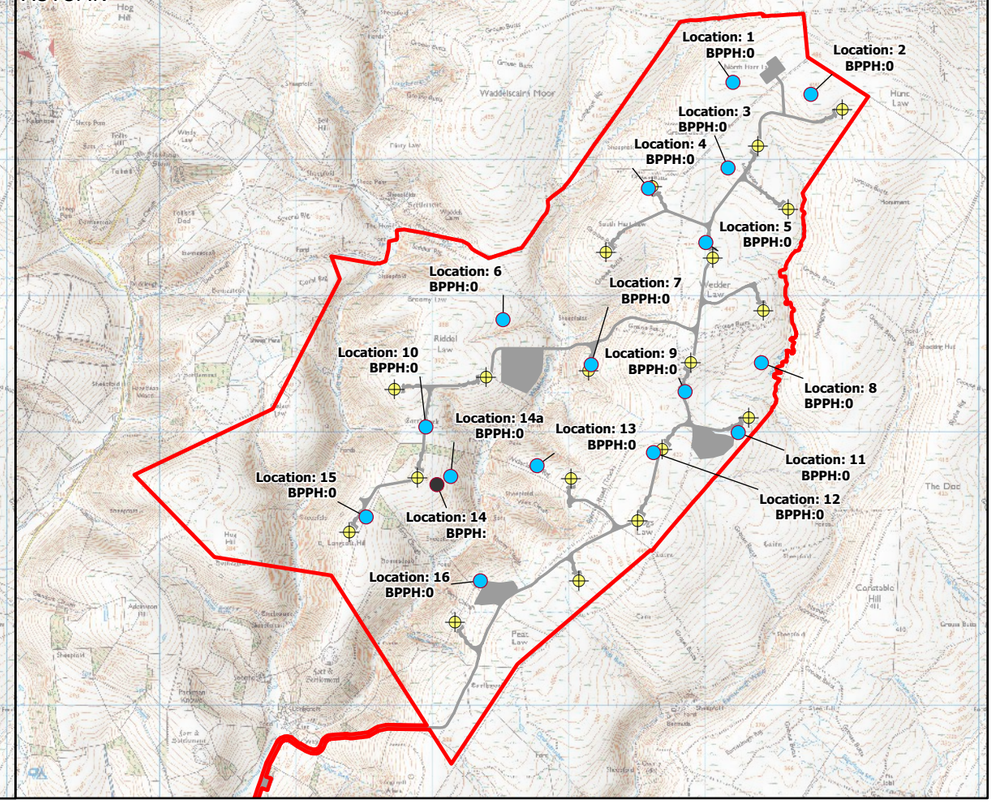

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LONGCROFT WIND FARM

Figure 4

AVERAGE SEASONAL BAT SITE ACTIVITY 2022 - NOCTULE

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KEY

- PROPOSED DEVELOPMENT AREA
- TURBINE
- ANABAT DETECTOR LOCATION
- INFRASTRUCTURE

SITE ACTIVITY LEVEL (BASED ON MEAN BAT PASSES PER HOUR (BPPH))

- HIGH
- MODERATE TO HIGH
- MODERATE
- LOW TO MODERATE
- LOW
- NO ACTIVITY
- NO DATA

LAYOUT DWG	T-LAYOUT NO.
04728-RES-LAY-DR-PE-003	PCCCaccXXX

DRAWING NUMBER

E_EIA_Fig4_AvgBatActivity2022_N_LCR

SCALE - 1:45,000 @ A3

ENVIRONMENTAL IMPACT ASSESSMENT REPORT 2023

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ANNEX A. BATS LEGAL STATUS

The information contained in this Annex is a summarised version of the legislation and should be read in conjunction with the appropriate legislation.

All bat species receive protection under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended)[10].

For any wild bat species, it is an offence to deliberately or recklessly:

- capture, injure or kill a bat;
- harass a bat or group of bats;
- disturb a bat in a roost (any structure or place it uses for shelter or protection);
- disturb a bat while it is rearing or otherwise caring for its young;
- obstruct access to a bat roost or otherwise deny an animal use of a roost;
- disturb a bat in a manner or in circumstances likely to significantly affect the local distribution or abundance of the species;
- disturb a bat in a manner or in circumstances likely to impair its ability to survive, breed or reproduce, or rear or otherwise care for its young; and
- disturb a bat while it is migrating or hibernating.

It's also an offence to:

- damage or destroy a breeding site or resting place of such an animal (whether or not deliberately or recklessly); and
- keep, transport, sell or exchange, or offer for sale or exchange any wild bat (or any part or derivative of one) obtained after 10 June 1994[11]

[10] Sections 39(1) – (3)
[11] https://www.nature.scot/professional-advice/protected-areas-and-species/protected-species/protected-species-z-guide/protected-species-bats

Table A-1 Legal and Conservation Status of all UK Bats[12]

Species	Legislation / Convention													
	Bern Convention Appendix II	Bonn Convention Appendix II	WCA	Habitats Directive Annex IV	Habitats Directive Annex II	Habs Regs 1994 (as amended) *Scotland*	Conservation of Habs & Species Regs 2010	Conservation Regs (N Ireland) 1995	CROW Act 2000	NERC Act 2006	Wild Mammals Protection Act	UK BAP Priority species	IUCN Red List*	EUROBATS Agreement
Greater horseshoe bat	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	LC	✓
Lesser horseshoe bat	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	LC	✓
Daubenton's bat	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		LC	✓
Natterer's bat	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		LC	✓
Whiskered bat	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		LC	✓
Brandt's bat	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		LC	✓
Bechstein's bat	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NT	✓
Alcathoe bat	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		DD	✓
Noctule	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	LC	✓
Leisler's bat	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		LC	✓
Serotine	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		LC	✓
Common pipistrelle	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		LC	✓
Soprano pipistrelle	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	LC	✓
Nathusius' pipistrelle	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		LC	✓
Brown long-eared bat	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	LC	✓
Grey long-eared bat	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		LC	✓
Barbastelle	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	NT	✓
Greater mouse-eared bat	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		LC	✓

*IUCN categories: LC is Least Concern, NT is Near Threatened, DD is Data deficient; see www.iucnredlist.org for more details.

[12] Source: Bat Conservation Trust http://www.bats.org.uk/pages/bats_and_the_law.html

ANNEX B. SURVEY TIMINGS & ANABAT LOCATIONS

Table B-1 Description of Anabat Locations and Summary of Temporal Survey Effort

Location	Easting	Northing	Bearing	Habitat	Total Number of Complete Recording Nights		
					Visit 1 30/05/2022 – 14/06/2022	Visit 2 18/07/2022 – 05/08/2022	Visit 3 29/10/2022 – 13/10/2022
1	356206	658562	140	Open moorland	15	18	14
2	356778	658474	230	Open moorland	15	18	14
3	356170	657934	240	Open moorland	15	18	14
4	355586	657784	236	Open moorland	15	18	14
5	356007	657387	91	Open moorland	15	18	14
6	354519	656821	95	Within 100m of tributary to Whalplaw Burn	15	13	14
7	355166	656491	237	Open moorland	15	9	14
8	356415	656505	160	Open moorland	15	18	14
9	355855	656293	101	Open moorland	15	18	14
10	353953	656034	130	Within 150m of plantation	15	18	14
11	356245	655993	30	Open moorland	15	18	14
12	355623	655846	346	Open moorland	15	18	14
13	354769	655750	339	Open moorland	15	18	14
14**	354034	655611	50	Within 210m of plantation	15	-	-
14a	354135	655671	16	Within 100m of plantation	-	18	14
15	353515	655374	30	Within 100m of plantation	15	18	14
16	354353	654905	362	Open moorland	15	18	14
Total					**738**		

***** This is the number of nights that the detectors had recorded as the data does not indicate when a detector may have fallen over.

** Location 14 moved to Location 14a for visits 2 and 3 due to cattle present in field.

ANNEX C. INITIAL SITE RISK ASSESSMENT

Table C-1 Initial Site Risk Assessment[13].

Site Risk Level (1-5)14	Project Size			
Habitat Risk		Small	Medium	Large
	Low	1	2	3
	Moderate	2	3	4
	High	3	4	5
Key: Green (1-2) – low/lowest site risk; Amber (3) – medium site risk; Red (4-5) – high/highest site risk				

Habitat Risk	Description
Low	Small number of potential roost features, of low quality. Low-quality foraging habitats that could be used by small numbers of foraging bats. Isolated site not connected to the wider landscape by prominent linear features.
Moderate	Buildings, trees or other structures with moderate-high potential as roost sites on or near the site. Habitat could be used extensively by foraging bats. Site is connected to the wider landscape by linear features such as scrub, tree lines and streams.
High	Numerous suitable buildings, trees (particularly mature ancient woodland) or other structures with moderate-high potential as roost sites on or near the site, and/or confirmed roosts present close to or on the site. Extensive and diverse habitat mosaic of high quality for foraging bats. Site is connected to the wider landscape by a network of strong linear features such as rivers, blocks of woodland and mature hedgerows. At/near edge of range and or an important flyway. Close to key roost and /or swarming.
Project Size	**Description**
Small	Small scale development (<10 turbines). No other wind energy developments within 10km. Comprising turbines <50m in height.
Medium	Larger developments (between 10 and 40). May have some other wind development within 5km. Comprising turbines 50 – 100m in height.
Large	Largest developments (>40 turbines) with other wind energy developments within 5km. Comprising turbines >100m in height.

[13] Sourced from: NatureScot, Natural England, Natural Resources Wales, Renewable UK, Scottish Power Renewables, Ecotricity Ltd, the University of Exeter & Bat Conservation Trust (BCT). (2021). *Bats and Onshore Wind Turbines: Survey Assessment and Mitigation*.

[14] Some sites could conceivably be assessed as being of no (0) risk to bats. This assessment is only likely to be valid in more extreme environments, such as above the known altitudinal range of bats, or outside the known geographical distribution of any resident British species.

ANNEX D. SEASONAL LOCATION SPECIFIC DATA

Table D- 1 Seasonal Location Specific Data for all Species

Detector ID	Species	Season	Maximum bat activity (bat passes per night)	Average bat activity (mean bat passes per night)	Average bat activity (mean bat passes per hour)	Bat Site Activity (based on bat passes per hour)
loc1	Common pipistrelle	Summer	6	0.524	0.058	Moderate to High
loc3	Common pipistrelle	Summer	4	0.381	0.042	Moderate to High
loc4	Common pipistrelle	Summer	2	0.238	0.026	Moderate
loc5	Common pipistrelle	Spring	1	0.056	0.007	Low
loc5	Common pipistrelle	Summer	4	0.350	0.039	Moderate to High
loc5	Common pipistrelle	Autumn	1	0.059	0.004	Low
loc6	Common pipistrelle	Spring	2	0.176	0.022	Moderate
loc6	Common pipistrelle	Summer	3	0.588	0.065	High
loc6	Common pipistrelle	Autumn	1	0.063	0.004	Low
loc7	Common pipistrelle	Spring	9	0.882	0.110	High
loc7	Common pipistrelle	Summer	8	0.917	0.102	High
loc8	Common pipistrelle	Summer	3	0.684	0.076	High
loc9	Common pipistrelle	Spring	2	0.167	0.021	Moderate
loc9	Common pipistrelle	Summer	2	0.350	0.039	Moderate to High
loc10	Common pipistrelle	Spring	3	0.294	0.037	Moderate to High
loc10	Common pipistrelle	Summer	30	5.091	0.566	High
loc10	Common pipistrelle	Autumn	2	0.250	0.018	Moderate
loc11	Common pipistrelle	Spring	4	0.222	0.028	Moderate

Detector ID	Species	Season	Maximum bat activity (bat passes per night)	Average bat activity (mean bat passes per night)	Average bat activity (mean bat passes per hour)	Bat Site Activity (based on bat passes per hour)
loc11	Common pipistrelle	Summer	42	3.476	0.386	High
loc12	Common pipistrelle	Spring	1	0.056	0.007	Low
loc13	Common pipistrelle	Spring	15	1.471	0.184	High
loc13	Common pipistrelle	Summer	25	2.190	0.243	High
loc14a	Common pipistrelle	Summer	5	1.095	0.122	High
loc14a	Common pipistrelle	Autumn	7	0.625	0.045	Moderate to High
loc15	Common pipistrelle	Spring	3	0.412	0.051	Moderate to High
loc15	Common pipistrelle	Summer	4	1.048	0.116	High
loc16	Common pipistrelle	Spring	1	0.059	0.007	Low to Moderate
loc16	Common pipistrelle	Summer	16	1.381	0.153	High
loc16	Common pipistrelle	Autumn	1	0.063	0.004	Low
loc1	Soprano pipistrelle	Summer	3	0.524	0.058	Moderate to High
loc2	Soprano pipistrelle	Summer	2	0.250	0.028	Moderate
loc3	Soprano pipistrelle	Summer	2	0.333	0.037	Moderate to High
loc4	Soprano pipistrelle	Spring	1	0.059	0.007	Low to Moderate
loc4	Soprano pipistrelle	Summer	7	0.571	0.063	High
loc5	Soprano pipistrelle	Summer	3	0.500	0.056	Moderate to High
loc5	Soprano pipistrelle	Autumn	2	0.118	0.008	Low to Moderate
loc6	Soprano pipistrelle	Spring	1	0.059	0.007	Low to Moderate
loc6	Soprano pipistrelle	Summer	2	0.176	0.020	Moderate
loc7	Soprano pipistrelle	Spring	3	0.176	0.022	Moderate

Detector ID	Species	Season	Maximum bat activity (bat passes per night)	Average bat activity (mean bat passes per night)	Average bat activity (mean bat passes per hour)	Bat Site Activity (based on bat passes per hour)
loc7	Soprano pipistrelle	Summer	6	0.500	0.056	Moderate to High
loc7	Soprano pipistrelle	Autumn	1	0.059	0.004	Low
loc8	Soprano pipistrelle	Spring	1	0.056	0.007	Low
loc8	Soprano pipistrelle	Summer	2	0.474	0.053	Moderate to High
loc9	Soprano pipistrelle	Spring	1	0.111	0.014	Low to Moderate
loc9	Soprano pipistrelle	Summer	3	0.400	0.044	Moderate to High
loc10	Soprano pipistrelle	Spring	3	0.235	0.029	Moderate to High
loc10	Soprano pipistrelle	Summer	16	2.500	0.278	High
loc10	Soprano pipistrelle	Autumn	1	0.188	0.013	Low to Moderate
loc11	Soprano pipistrelle	Summer	10	1.095	0.122	High
loc12	Soprano pipistrelle	Spring	2	0.111	0.014	Low to Moderate
loc13	Soprano pipistrelle	Spring	4	0.294	0.037	Moderate to High
loc13	Soprano pipistrelle	Summer	11	1.429	0.159	High
loc14a	Soprano pipistrelle	Summer	3	0.619	0.069	High
loc14a	Soprano pipistrelle	Autumn	2	0.250	0.018	Moderate
loc15	Soprano pipistrelle	Spring	3	0.353	0.044	Moderate to High
loc15	Soprano pipistrelle	Summer	4	0.905	0.101	High
loc15	Soprano pipistrelle	Autumn	2	0.313	0.022	Moderate
loc16	Soprano pipistrelle	Spring	2	0.118	0.015	Moderate
loc16	Soprano pipistrelle	Summer	17	1.571	0.175	High
loc16	Soprano pipistrelle	Autumn	1	0.063	0.004	Low

Detector ID	Species	Season	Maximum bat activity (bat passes per night)	Average bat activity (mean bat passes per night)	Average bat activity (mean bat passes per hour)	Bat Site Activity (based on bat passes per hour)
loc3	Noctule	Spring	1	0.056	0.007	Low
loc3	Noctule	Summer	4	0.190	0.021	Moderate
loc4	Noctule	Summer	2	0.095	0.011	Low to Moderate
loc8	Noctule	Spring	1	0.056	0.007	Low
loc8	Noctule	Summer	2	0.211	0.023	Moderate
loc9	Noctule	Summer	1	0.100	0.011	Low to Moderate
loc10	Noctule	Spring	1	0.059	0.007	Low to Moderate
loc10	Noctule	Summer	2	0.182	0.020	Moderate
loc11	Noctule	Summer	1	0.190	0.021	Moderate
loc13	Noctule	Summer	1	0.095	0.011	Low to Moderate
loc14a	Noctule	Summer	1	0.048	0.005	Low
loc15	Noctule	Summer	1	0.095	0.011	Low to Moderate
loc3	Daubenton's	Summer	1	0.048	0.005	Low
loc6	Daubenton's	Summer	2	0.118	0.013	Low to Moderate
loc6	Daubenton's	Autumn	1	0.063	0.004	Low
loc8	Daubenton's	Summer	1	0.053	0.006	Low
loc10	Daubenton's	Spring	1	0.059	0.007	Low to Moderate
loc10	Daubenton's	Summer	1	0.136	0.015	Moderate
loc11	Daubenton's	Summer	1	0.095	0.011	Low to Moderate
loc11	Daubenton's	Autumn	1	0.059	0.004	Low
loc13	Daubenton's	Summer	1	0.095	0.011	Low to Moderate

Detector ID	Species	Season	Maximum bat activity (bat passes per night)	Average bat activity (mean bat passes per night)	Average bat activity (mean bat passes per hour)	Bat Site Activity (based on bat passes per hour)
loc15	Daubenton's	Summer	3	0.286	0.032	Moderate to High
loc15	Daubenton's	Autumn	8	0.938	0.067	High
loc3	Brown long-eared	Autumn	1	0.118	0.008	Low to Moderate
loc6	Brown long-eared	Autumn	1	0.063	0.004	Low
loc10	Brown long-eared	Spring	3	0.235	0.029	Moderate to High
loc10	Brown long-eared	Summer	1	0.045	0.005	Low
loc10	Brown long-eared	Autumn	1	0.063	0.004	Low
loc11	Brown long-eared	Summer	1	0.048	0.005	Low
loc13	Brown long-eared	Summer	1	0.095	0.011	Low to Moderate
loc14a	Brown long-eared	Autumn	3	0.375	0.027	Moderate
loc15	Brown long-eared	Spring	2	0.118	0.015	Moderate
loc15	Brown long-eared	Autumn	2	0.375	0.027	Moderate
loc10	Natterer's	Summer	1	0.045	0.005	Low
loc15	Natterer's	Summer	1	0.048	0.005	Low
loc1	Common pipistrelle	Spring	0.000	0.000	0.000	No Activity
loc1	Common pipistrelle	Autumn	0.000	0.000	0.000	No Activity
loc2	Common pipistrelle	Spring	0.000	0.000	0.000	No Activity
loc2	Common pipistrelle	Summer	0.000	0.000	0.000	No Activity
loc2	Common pipistrelle	Autumn	0.000	0.000	0.000	No Activity
loc3	Common pipistrelle	Spring	0.000	0.000	0.000	No Activity
loc3	Common pipistrelle	Autumn	0.000	0.000	0.000	No Activity

Detector ID	Species	Season	Maximum bat activity (bat passes per night)	Average bat activity (mean bat passes per night)	Average bat activity (mean bat passes per hour)	Bat Site Activity (based on bat passes per hour)
loc4	Common pipistrelle	Spring	0.000	0.000	0.000	No Activity
loc4	Common pipistrelle	Autumn	0.000	0.000	0.000	No Activity
loc7	Common pipistrelle	Autumn	0.000	0.000	0.000	No Activity
loc8	Common pipistrelle	Spring	0.000	0.000	0.000	No Activity
loc8	Common pipistrelle	Autumn	0.000	0.000	0.000	No Activity
loc9	Common pipistrelle	Autumn	0.000	0.000	0.000	No Activity
loc11	Common pipistrelle	Autumn	0.000	0.000	0.000	No Activity
loc12	Common pipistrelle	Summer	0.000	0.000	0.000	No Activity
loc12	Common pipistrelle	Autumn	0.000	0.000	0.000	No Activity
loc13	Common pipistrelle	Autumn	0.000	0.000	0.000	No Activity
loc14	Common pipistrelle	Spring	0.000	0.000	0.000	No Activity
loc15	Common pipistrelle	Autumn	0.000	0.000	0.000	No Activity
loc1	Soprano pipistrelle	Spring	0.000	0.000	0.000	No Activity
loc1	Soprano pipistrelle	Autumn	0.000	0.000	0.000	No Activity
loc2	Soprano pipistrelle	Spring	0.000	0.000	0.000	No Activity
loc2	Soprano pipistrelle	Autumn	0.000	0.000	0.000	No Activity
loc3	Soprano pipistrelle	Spring	0.000	0.000	0.000	No Activity
loc3	Soprano pipistrelle	Autumn	0.000	0.000	0.000	No Activity
loc4	Soprano pipistrelle	Autumn	0.000	0.000	0.000	No Activity
loc5	Soprano pipistrelle	Spring	0.000	0.000	0.000	No Activity
loc6	Soprano pipistrelle	Autumn	0.000	0.000	0.000	No Activity

Detector ID	Species	Season	Maximum bat activity (bat passes per night)	Average bat activity (mean bat passes per night)	Average bat activity (mean bat passes per hour)	Bat Site Activity (based on bat passes per hour)
loc8	Soprano pipistrelle	Autumn	0.000	0.000	0.000	No Activity
loc9	Soprano pipistrelle	Autumn	0.000	0.000	0.000	No Activity
loc11	Soprano pipistrelle	Spring	0.000	0.000	0.000	No Activity
loc11	Soprano pipistrelle	Autumn	0.000	0.000	0.000	No Activity
loc12	Soprano pipistrelle	Summer	0.000	0.000	0.000	No Activity
loc12	Soprano pipistrelle	Autumn	0.000	0.000	0.000	No Activity
loc13	Soprano pipistrelle	Autumn	0.000	0.000	0.000	No Activity
loc14	Soprano pipistrelle	Spring	0.000	0.000	0.000	No Activity
loc1	Noctule	Spring	0.000	0.000	0.000	No Activity
loc1	Noctule	Summer	0.000	0.000	0.000	No Activity
loc1	Noctule	Autumn	0.000	0.000	0.000	No Activity
loc2	Noctule	Spring	0.000	0.000	0.000	No Activity
loc2	Noctule	Summer	0.000	0.000	0.000	No Activity
loc2	Noctule	Autumn	0.000	0.000	0.000	No Activity
loc3	Noctule	Autumn	0.000	0.000	0.000	No Activity
loc4	Noctule	Spring	0.000	0.000	0.000	No Activity
loc4	Noctule	Autumn	0.000	0.000	0.000	No Activity
loc5	Noctule	Spring	0.000	0.000	0.000	No Activity
loc5	Noctule	Summer	0.000	0.000	0.000	No Activity
loc5	Noctule	Autumn	0.000	0.000	0.000	No Activity
loc6	Noctule	Spring	0.000	0.000	0.000	No Activity

Detector ID	Species	Season	Maximum bat activity (bat passes per night)	Average bat activity (mean bat passes per night)	Average bat activity (mean bat passes per hour)	Bat Site Activity (based on bat passes per hour)
loc6	Noctule	Summer	0.000	0.000	0.000	No Activity
loc6	Noctule	Autumn	0.000	0.000	0.000	No Activity
loc7	Noctule	Spring	0.000	0.000	0.000	No Activity
loc7	Noctule	Summer	0.000	0.000	0.000	No Activity
loc7	Noctule	Autumn	0.000	0.000	0.000	No Activity
loc8	Noctule	Autumn	0.000	0.000	0.000	No Activity
loc9	Noctule	Spring	0.000	0.000	0.000	No Activity
loc9	Noctule	Autumn	0.000	0.000	0.000	No Activity
loc10	Noctule	Autumn	0.000	0.000	0.000	No Activity
loc11	Noctule	Spring	0.000	0.000	0.000	No Activity
loc11	Noctule	Autumn	0.000	0.000	0.000	No Activity
loc12	Noctule	Spring	0.000	0.000	0.000	No Activity
loc12	Noctule	Summer	0.000	0.000	0.000	No Activity
loc12	Noctule	Autumn	0.000	0.000	0.000	No Activity
loc13	Noctule	Spring	0.000	0.000	0.000	No Activity
loc13	Noctule	Autumn	0.000	0.000	0.000	No Activity
loc14	Noctule	Spring	0.000	0.000	0.000	No Activity
loc14a	Noctule	Autumn	0.000	0.000	0.000	No Activity
loc15	Noctule	Spring	0.000	0.000	0.000	No Activity
loc15	Noctule	Autumn	0.000	0.000	0.000	No Activity
loc16	Noctule	Spring	0.000	0.000	0.000	No Activity

Detector ID	Species	Season	Maximum bat activity (bat passes per night)	Average bat activity (mean bat passes per night)	Average bat activity (mean bat passes per hour)	Bat Site Activity (based on bat passes per hour)
loc16	Noctule	Summer	0.000	0.000	0.000	No Activity
loc16	Noctule	Autumn	0.000	0.000	0.000	No Activity
loc1	Daubenton's	Spring	0.000	0.000	0.000	No Activity
loc1	Daubenton's	Summer	0.000	0.000	0.000	No Activity
loc1	Daubenton's	Autumn	0.000	0.000	0.000	No Activity
loc2	Daubenton's	Spring	0.000	0.000	0.000	No Activity
loc2	Daubenton's	Summer	0.000	0.000	0.000	No Activity
loc2	Daubenton's	Autumn	0.000	0.000	0.000	No Activity
loc3	Daubenton's	Spring	0.000	0.000	0.000	No Activity
loc3	Daubenton's	Autumn	0.000	0.000	0.000	No Activity
loc4	Daubenton's	Spring	0.000	0.000	0.000	No Activity
loc4	Daubenton's	Summer	0.000	0.000	0.000	No Activity
loc4	Daubenton's	Autumn	0.000	0.000	0.000	No Activity
loc5	Daubenton's	Spring	0.000	0.000	0.000	No Activity
loc5	Daubenton's	Summer	0.000	0.000	0.000	No Activity
loc5	Daubenton's	Autumn	0.000	0.000	0.000	No Activity
loc6	Daubenton's	Spring	0.000	0.000	0.000	No Activity
loc7	Daubenton's	Spring	0.000	0.000	0.000	No Activity
loc7	Daubenton's	Summer	0.000	0.000	0.000	No Activity
loc7	Daubenton's	Autumn	0.000	0.000	0.000	No Activity
loc8	Daubenton's	Spring	0.000	0.000	0.000	No Activity

Detector ID	Species	Season	Maximum bat activity (bat passes per night)	Average bat activity (mean bat passes per night)	Average bat activity (mean bat passes per hour)	Bat Site Activity (based on bat passes per hour)
loc8	Daubenton's	Autumn	0.000	0.000	0.000	No Activity
loc9	Daubenton's	Spring	0.000	0.000	0.000	No Activity
loc9	Daubenton's	Summer	0.000	0.000	0.000	No Activity
loc9	Daubenton's	Autumn	0.000	0.000	0.000	No Activity
loc10	Daubenton's	Autumn	0.000	0.000	0.000	No Activity
loc11	Daubenton's	Spring	0.000	0.000	0.000	No Activity
loc12	Daubenton's	Spring	0.000	0.000	0.000	No Activity
loc12	Daubenton's	Summer	0.000	0.000	0.000	No Activity
loc12	Daubenton's	Autumn	0.000	0.000	0.000	No Activity
loc13	Daubenton's	Spring	0.000	0.000	0.000	No Activity
loc13	Daubenton's	Autumn	0.000	0.000	0.000	No Activity
loc14	Daubenton's	Spring	0.000	0.000	0.000	No Activity
loc14a	Daubenton's	Summer	0.000	0.000	0.000	No Activity
loc14a	Daubenton's	Autumn	0.000	0.000	0.000	No Activity
loc15	Daubenton's	Spring	0.000	0.000	0.000	No Activity
loc16	Daubenton's	Spring	0.000	0.000	0.000	No Activity
loc16	Daubenton's	Summer	0.000	0.000	0.000	No Activity
loc16	Daubenton's	Autumn	0.000	0.000	0.000	No Activity
loc1	Brown long-eared	Spring	0.000	0.000	0.000	No Activity
loc1	Brown long-eared	Summer	0.000	0.000	0.000	No Activity
loc1	Brown long-eared	Autumn	0.000	0.000	0.000	No Activity

Detector ID	Species	Season	Maximum bat activity (bat passes per night)	Average bat activity (mean bat passes per night)	Average bat activity (mean bat passes per hour)	Bat Site Activity (based on bat passes per hour)
loc2	Brown long-eared	Spring	0.000	0.000	0.000	No Activity
loc2	Brown long-eared	Summer	0.000	0.000	0.000	No Activity
loc2	Brown long-eared	Autumn	0.000	0.000	0.000	No Activity
loc3	Brown long-eared	Spring	0.000	0.000	0.000	No Activity
loc3	Brown long-eared	Summer	0.000	0.000	0.000	No Activity
loc4	Brown long-eared	Spring	0.000	0.000	0.000	No Activity
loc4	Brown long-eared	Summer	0.000	0.000	0.000	No Activity
loc4	Brown long-eared	Autumn	0.000	0.000	0.000	No Activity
loc5	Brown long-eared	Spring	0.000	0.000	0.000	No Activity
loc5	Brown long-eared	Summer	0.000	0.000	0.000	No Activity
loc5	Brown long-eared	Autumn	0.000	0.000	0.000	No Activity
loc6	Brown long-eared	Spring	0.000	0.000	0.000	No Activity
loc6	Brown long-eared	Summer	0.000	0.000	0.000	No Activity
loc7	Brown long-eared	Spring	0.000	0.000	0.000	No Activity
loc7	Brown long-eared	Summer	0.000	0.000	0.000	No Activity
loc7	Brown long-eared	Autumn	0.000	0.000	0.000	No Activity
loc8	Brown long-eared	Spring	0.000	0.000	0.000	No Activity
loc8	Brown long-eared	Summer	0.000	0.000	0.000	No Activity
loc8	Brown long-eared	Autumn	0.000	0.000	0.000	No Activity
loc9	Brown long-eared	Spring	0.000	0.000	0.000	No Activity
loc9	Brown long-eared	Summer	0.000	0.000	0.000	No Activity

Detector ID	Species	Season	Maximum bat activity (bat passes per night)	Average bat activity (mean bat passes per night)	Average bat activity (mean bat passes per hour)	Bat Site Activity (based on bat passes per hour)
loc9	Brown long-eared	Autumn	0.000	0.000	0.000	No Activity
loc11	Brown long-eared	Spring	0.000	0.000	0.000	No Activity
loc11	Brown long-eared	Autumn	0.000	0.000	0.000	No Activity
loc12	Brown long-eared	Spring	0.000	0.000	0.000	No Activity
loc12	Brown long-eared	Summer	0.000	0.000	0.000	No Activity
loc12	Brown long-eared	Autumn	0.000	0.000	0.000	No Activity
loc13	Brown long-eared	Spring	0.000	0.000	0.000	No Activity
loc13	Brown long-eared	Autumn	0.000	0.000	0.000	No Activity
loc14	Brown long-eared	Spring	0.000	0.000	0.000	No Activity
loc14a	Brown long-eared	Summer	0.000	0.000	0.000	No Activity
loc15	Brown long-eared	Summer	0.000	0.000	0.000	No Activity
loc16	Brown long-eared	Spring	0.000	0.000	0.000	No Activity
loc16	Brown long-eared	Summer	0.000	0.000	0.000	No Activity
loc16	Brown long-eared	Autumn	0.000	0.000	0.000	No Activity
loc1	Natterer's	Spring	0.000	0.000	0.000	No Activity
loc1	Natterer's	Summer	0.000	0.000	0.000	No Activity
loc1	Natterer's	Autumn	0.000	0.000	0.000	No Activity
loc2	Natterer's	Spring	0.000	0.000	0.000	No Activity
loc2	Natterer's	Summer	0.000	0.000	0.000	No Activity
loc2	Natterer's	Autumn	0.000	0.000	0.000	No Activity
loc3	Natterer's	Spring	0.000	0.000	0.000	No Activity

Detector ID	Species	Season	Maximum bat activity (bat passes per night)	Average bat activity (mean bat passes per night)	Average bat activity (mean bat passes per hour)	Bat Site Activity (based on bat passes per hour)
loc3	Natterer's	Summer	0.000	0.000	0.000	No Activity
loc3	Natterer's	Autumn	0.000	0.000	0.000	No Activity
loc4	Natterer's	Spring	0.000	0.000	0.000	No Activity
loc4	Natterer's	Summer	0.000	0.000	0.000	No Activity
loc4	Natterer's	Autumn	0.000	0.000	0.000	No Activity
loc5	Natterer's	Spring	0.000	0.000	0.000	No Activity
loc5	Natterer's	Summer	0.000	0.000	0.000	No Activity
loc5	Natterer's	Autumn	0.000	0.000	0.000	No Activity
loc6	Natterer's	Spring	0.000	0.000	0.000	No Activity
loc6	Natterer's	Summer	0.000	0.000	0.000	No Activity
loc6	Natterer's	Autumn	0.000	0.000	0.000	No Activity
loc7	Natterer's	Spring	0.000	0.000	0.000	No Activity
loc7	Natterer's	Summer	0.000	0.000	0.000	No Activity
loc7	Natterer's	Autumn	0.000	0.000	0.000	No Activity
loc8	Natterer's	Spring	0.000	0.000	0.000	No Activity
loc8	Natterer's	Summer	0.000	0.000	0.000	No Activity
loc8	Natterer's	Autumn	0.000	0.000	0.000	No Activity
loc9	Natterer's	Spring	0.000	0.000	0.000	No Activity
loc9	Natterer's	Summer	0.000	0.000	0.000	No Activity
loc9	Natterer's	Autumn	0.000	0.000	0.000	No Activity
loc10	Natterer's	Spring	0.000	0.000	0.000	No Activity

Detector ID	Species	Season	Maximum bat activity (bat passes per night)	Average bat activity (mean bat passes per night)	Average bat activity (mean bat passes per hour)	Bat Site Activity (based on bat passes per hour)
loc10	Natterer's	Autumn	0.000	0.000	0.000	No Activity
loc11	Natterer's	Spring	0.000	0.000	0.000	No Activity
loc11	Natterer's	Summer	0.000	0.000	0.000	No Activity
loc11	Natterer's	Autumn	0.000	0.000	0.000	No Activity
loc12	Natterer's	Spring	0.000	0.000	0.000	No Activity
loc12	Natterer's	Summer	0.000	0.000	0.000	No Activity
loc12	Natterer's	Autumn	0.000	0.000	0.000	No Activity
loc13	Natterer's	Spring	0.000	0.000	0.000	No Activity
loc13	Natterer's	Summer	0.000	0.000	0.000	No Activity
loc13	Natterer's	Autumn	0.000	0.000	0.000	No Activity
loc14	Natterer's	Spring	0.000	0.000	0.000	No Activity
loc14a	Natterer's	Summer	0.000	0.000	0.000	No Activity
loc14a	Natterer's	Autumn	0.000	0.000	0.000	No Activity
loc15	Natterer's	Spring	0.000	0.000	0.000	No Activity
loc15	Natterer's	Autumn	0.000	0.000	0.000	No Activity
loc16	Natterer's	Spring	0.000	0.000	0.000	No Activity
loc16	Natterer's	Summer	0.000	0.000	0.000	No Activity
loc16	Natterer's	Autumn	0.000	0.000	0.000	No Activity