



Parc Ynni Calon y Gwynt

ENVIRONMENTAL STATEMENT

Appendix 5G: Main Site Bat Activity Survey Report





Parc Ynni Calon y Gwynt

ENVIRONMENTAL STATEMENT

Appendix 5G: Main Site Bat Activity Survey Report

TYPE OF DOCUMENT (VERSION) PUBLIC

PROJECT NO. UK-62282400

OUR REF. NO. UK-62282400_APP5G_002

DATE: JULY 2026

WSP

1 Capital Quarter

Tyndall Street

Cardiff

CF10 4BZ

Phone: +44 2920 769 200

WSP.com



QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks				
Date	June 2026			
Prepared by	Megan Watts			
Signature				
Checked by	Aaron Davies			
Signature				
Authorised by	Megan Brenchley			
Signature				
Project number	62282400			
Report number	62282400_APP5G_002			
File reference				

CONTENTS

1	INTRODUCTION	1
1.1	PROJECT BACKGROUND	1
1.2	ECOLOGICAL BACKGROUND	1
1.3	OBJECTIVES	1
2	LEGISLATION	2
3	METHODOLOGY	3
3.1	DESK STUDY	3
3.2	BAT ACTIVITY	3
3.3	ECOBAT	6
3.4	SPECIES TRENDS WALES/SITE	6
3.5	POTENTIAL ROOSTS WITHIN OR CLOSE TO THE SITE	6
3.6	POTENTIAL COLLISION RISK	7
3.7	NOTES AND LIMITATIONS	8
4	RESULTS	9
4.1	DESK STUDY	9
4.2	SITE FORAGING, COMMUTING AND ROOSTING SUITABILITY	9
4.3	BAT ACTIVITY	9
4.4	SPECIES TRENDS IN WALES AND THE SITE	13
4.5	POTENTIAL ROOSTS WITHIN OR CLOSE TO THE SITE	14
4.6	POTENTIAL COLLISION RISK	17

TABLES

Table 5G-1 - Automated detector settings.	4
Table 5G-2 - Habitat types at each detector location.	4
Table 5G-3 - Kaleidoscope Pro 5.6.8 Auto Identification Parameters.	5
Table 5G-4 - Level of potential vulnerability of population of British bat species in Wales	7
Table 5G-5 - Stage 1- initial site risk assessment.	8
Table 5G-6 - Stage 2 - overall risk assessment	8
Table 5G-7 - Total Bat Passes Per Species.	9
Table 5G-8a - Average Bat Passes Per Night for each species per detector.	11
Table 5G-8b - Average Bat Passes Per Night for each species per detector.	12
Table 5G-9 - Species population trends determined from static bat detectors deployed within the Site.	13

APPENDICES

ANNEX 5G.1

FIGURES

EXECUTIVE SUMMARY

WSP UK Limited (WSP) was commissioned by Wind2 to undertake bat activity surveys to support the prospective Parc Ynni Calon Y Gwynt; the 'Proposed Development'. The Proposed Development is understood to comprise 11 turbine locations, a construction compound, substation and tracks.

Bat activity surveys were undertaken in 2024 and 2025 to determine the suitability of the location of the Proposed Development for roosting, foraging and commuting and the baseline bat activity to determine the risk of turbine-related mortality for all bat species recorded at the Site during bat activity surveys; and the likely effect on the species' population status if risks are not mitigated.

Following Bat Conservation Trust guidelines¹⁶, the Site was assessed as having moderate suitability for commuting and foraging bats based on evaluation of the habitats present.

Eleven species/genera of bats were recorded, including common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, Nathusius' pipistrelle *Pipistrellus nathusii*, bats belonging to the *Myotis* genera, Daubenton's *Myotis daubentonii*, noctule *Nyctalus noctula*, Leisler's *Nyctalus leisleri*, serotine *Cnephaeus serotinus*, brown long-eared bat *Plecotus auritus*, greater horseshoe *Rhinolophus ferrumequinum* and lesser horseshoe *Rhinolophus hipposideros*.

The most widely recorded species was noctule (34.9% of all bat passes), followed by common and soprano pipistrelle (28.6% and 24.1% of all bat passes respectively).

For species identified as having a high risk of turbine collision, activity levels were 'Low', with the exception of noctule that was recorded as having 'Low/Moderate' activity at one detector location.

Based on the results of analysis, multiple species activity overlaps with Species-Specific Emergence Times (S-SET), suggesting proximity to a roost location, either within or outside the boundary of the Site. In the absence of mitigation, the Proposed Development could pose a mortality risk to bats using these roosts.

Further survey should be undertaken to establish the presence/absence of bat roosts with proximity to finalised turbine locations and other associated infrastructure. Mitigation and post-construction operational monitoring for bats should be designed for the Proposed Development as appropriate for the species present and bat activity levels recorded during monitoring survey effort.

1 INTRODUCTION

1.1 PROJECT BACKGROUND

- 1.1.1. WSP UK Limited (WSP)¹ was commissioned by Wind2 to undertake bat activity surveys to support the prospective Calon Y Gwynt Energy Park (hereafter referred to as the 'Proposed Development'). The Proposed Development is understood to comprise 11 turbine locations, a construction compound, substation and tracks.
- 1.1.2. The location of the Proposed Development, hereafter referred to as the 'Site,' is centred on grid reference SO 001 983, shown in **Figure 5G.1**. It is located on the hills to the north of the A470 trunk road, approximately 3.5km east of the village of Carno, 3.5km north of the village of Pontdolgoch and 12km north-west of Newtown.

1.2 ECOLOGICAL BACKGROUND

- 1.2.1. A Daytime Bat Walkover (DBW) was undertaken of the Site in June 2023 as part of the Preliminary Ecological Appraisal (PEA)². Buildings were not checked for roosting suitability during the original PEA².
- 1.2.2. A further PEA was undertaken on a proposed access road, which is to extend 2km south from the Site³, where the DBW identified buildings and trees suitable for roosting bats. The proposed access road will not be included in this report.

1.3 OBJECTIVES

- 1.3.1. This report details the methods, limitations, and results of bat surveys undertaken within the Site.
- 1.3.2. The programme of bat surveys conducted at the Site aimed to determine:
- The suitability of the Site for foraging and commuting bats;
 - The risk of turbine-related mortality for all bat species recorded at the Site; and
 - The likely effect on the species' population status if risks are not mitigated.

¹ WSP have provided this report solely for the use of the recipient and accepts no liability to any third parties or any other party using or reviewing the report or any part thereof. WSP makes no warranties or guarantees, actual or implied, in relation to this report, or the ultimate commercial, technical, economic, or financial effect on the project to which it relates, and bears no responsibility or liability related to its use other than as set out within the scope of the contract under which it was supplied.

² WSP (2024a) Calon Y Gwynt: Preliminary Ecological Appraisal.

³ WSP (2024b) Calon Y Gwynt – Access Road: Preliminary Ecological Appraisal.

2 LEGISLATION

- 2.1.1. All bat species found in Wales are classed as European Protected Species (EPS). They receive full protection under the Conservation of Habitats and Species Regulations 2017 (as amended)⁴.
- 2.1.2. For any wild bat species, it is an offence to:
- Deliberately kill, capture, or injure a bat;
 - Deliberately disturb wild bats (disturbance is defined as any activity likely to impair the ability to breed, reproduce, rear or nurture young, hibernate, migrate and/or significantly affect the local distribution or abundance of the species);
 - Damage or destroy a breeding site or resting place (i.e. roost); and
 - Possess, control, transport, sell, exchange, offer for sale or exchange, any live or dead or part of an animal.
- 2.1.3. Bats are also partially protected under the Wildlife and Countryside Act 1981 (as amended)⁵ which makes it an offence to intentionally or recklessly:
- Damage or destroy any structure or place which bats use for shelter or protection;
 - Disturb bats while occupying a structure or place which is used for shelter or protection; and
 - Obstruct access to any structure or place which bats use for shelter or protection.
- 2.1.4. Noctule bat *Nyctalus noctula*, common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, and brown long-eared *Plecotus auritus* bats are also listed on Section 7 of the Environment (Wales) Act 2016⁶ as Priority Species for maintaining and enhancing biodiversity in Wales. Additionally, under Section 6 of the Act, public authorities (including Welsh Government) must “seek to maintain and enhance biodiversity” and to “promote the resilience of ecosystems”.

⁴ Conservation of Habitats and Species Regulations (2017) (as amended) Available at: <https://www.legislation.gov.uk/uksi/2017/1012/contents> [Accessed: October 2025].

⁵ Wildlife and Countryside Act (1981) (as amended) Available at: <https://www.legislation.gov.uk/ukpga/1981/69> [Accessed: October 2025].

⁶ Environment (Wales) Act (2016) Available at: <https://www.legislation.gov.uk/anaw/2016/3/contents> [Accessed: October 2025].

3 METHODOLOGY

3.1 DESK STUDY

- 3.1.1. The desk study consisted of checking for any statutory or non-statutory designated sites for bat conservation present within 10km of the Site on MAGIC maps⁷.
- 3.1.2. The WSP PEA report² was checked for relevant bat data.

3.2 BAT ACTIVITY

AUTOMATED DETECTOR SURVEY

- 3.2.1. At sites where the proposed turbine locations are known, automated detectors should be placed to provide a representative sample of bat activity at, or close to, these points. Detectors should be placed at all known turbine locations at wind farms containing less than ten proposed turbines. 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 developments⁸.
- 3.2.2. At the time of planning the bat surveys up to 10 turbines were being considered for the Site. Automated detectors (Wildlife Acoustics Song Meter (SM) 4 & SM Mini) were deployed at all 10 potential turbine locations. The locations of the turbines and automated detectors is illustrated in **Figure 5G.1**.
- 3.2.3. When the surveys were first conducted (spring 2024), 11 turbines were being considered and therefore 11 detectors were deployed. During the summer 2025 and autumn 2025 detector deployment only 10 turbine locations were being considered and detector location 6 was removed. Therefore, during summer 2025 and autumn 2025, only 10 detector locations were deployed. Detector location 6 (from spring 2024) is not included in the results. The deployment of 10 detector locations at 10 potential turbine locations, despite 11 turbines being considered, is in line with best practice guidance, and is considered to give the necessary coverage of the Site.
- 3.2.4. Detectors were deployed above ground level by attaching to metal stakes in the ground or fences where possible. Each detector was set up with new batteries (four D batteries for SM4 and four AA batteries for SM Mini) and a 32 gigabyte (GB) Secure Digital (SD) memory card. Recording settings used are detailed in Table 5G-2.

⁷ MAGIC (2025) Statutory designated sites map. Available at: <https://magic.defra.gov.uk/> [Accessed: October 2025].

⁸ Nature Scot (2019) Bats and onshore wind turbines – survey, assessment, and mitigation (Version: August 2021). Available at: Bats and onshore wind turbines - survey, assessment and mitigation | NatureScot [Accessed: October 2025].

Table 5G-1 - Automated detector settings.

Parameter	Recording range
Recording range	30 minutes before sunset to 30 minutes after sunrise.
Trigger frequency range	16 kHz to 250 kHz
Minimum event	4 milliseconds
Max file length	15 seconds

3.2.5. Detectors were deployed on Site in 2024-2025 during three seasons as defined in the NatureScot⁸ guidance:

- Spring: 01/05/2024 - 21/05/2024;
- Summer: 05/08/2025 - 08/09/2025; and
- Autumn: 16/10/2025 - 28/10/2025.

3.2.6. The habitat types for each detector location are listed in **Table 5G-2**².

3.2.7. Bat calls registered by the automated detectors were recorded for later analysis using specialist computer software; further details of analysis are provided in **3.2.8** to **3.2.12**.

Table 5G-2 - Habitat types at each detector location.

Detector	Habitat type
1	Grassland
2	Marshy grassland
3	Bracken scrub
4	Grassland
5	Marshy grassland
7	Grassland
8	Grassland
9	Marshy grassland
10	Grassland

AUTOMATED DETECTOR ANALYSIS

3.2.8. The recordings of bat echolocation calls collected during the automated detector surveys were analysed using specialist computer software (Wildlife Acoustics Kaleidoscope Pro 5.6.8). All files were analysed using the built-in auto-identification software. The analysis of each of these files enables identification/confirmation of species or species group based on call parameters, and the relative activity of different species of bats by counting the minimum number of bats recorded within discrete sound files.

- 3.2.9. It should be recognised that a series of separate sound files may represent a series of different bats passing within the range of an automated detector, or a smaller number of bats repeatedly triggering the detector (e.g., bats making repeated foraging passes within the range of a detector).
- 3.2.10. During the auto-identification process an analysis parameter was applied to filter out noise files. The settings used during the filter process are detailed in **Table 5G-3**. All files outside these parameters were labelled as noise during the auto-identification process. Ten percent of these were manually checked to ensure no bat activity was missed.

Table 5G-3 - Kaleidoscope Pro 5.6.8 Auto Identification Parameters.

Signal of Interest	
Kilohertz	8 - 120 kHz
Milliseconds	2 – 500 ms
Minimum number of pulses	2

- 3.2.11. All remaining sound files were classified to species level by the auto-identification system. Files were attributed with a specific species identification or classified as 'NoID' where the call parameters could not be identified by the software.
- 3.2.12. Following the auto-identification process, all 'NoID' calls were manually checked to assign a species identification. A percentage of *Pipistrellus* species (sp.) calls were manually checked to verify the auto-identification, and 100% of species calls excluding *Pipistrellus* were manually checked. If the percentage checks returned a greater than 10% error rate all sound files in that session were checked manually.

BAT CALL IDENTIFICATION

- 3.2.13. For manual identification, where possible, bat calls were identified to species level. However, species of the genus *Myotis* are grouped together in (with the exception of Daubenton's bat), and are collectively referred to as *Myotis* sp. because, in most cases, their call characteristics are similar in structure and have overlapping call parameters, making species identification problematic⁹.

QUANTIFYING BAT ACTIVITY

- 3.2.14. To allow an objective assessment of bat activity across the Site a comparison was made using Bat Activity Index Values (BAIV) for the detector deployed across the three seasons of deployment. For the purpose of this report, a single labelled Kaleidoscope file of up to 12 seconds in length containing a sequence of bat pulses was counted as one bat registration (i.e. a single bat pass). If the file had multiple bats present, this entry was duplicated, and each bat registration was counted as a separate bat pass.
- 3.2.15. Data logs were generated by the automated detectors which detail the recording history for the periods they were deployed. These logs were assessed to identify the duration which the detectors were deployed. Where the data log indicated a fault, or where log information was not assessable, bat recordings were confined to all recordings up until the last full night prior to the final recording. These decisions were accounted for when calculating the BAIV to ensure fair comparisons were made between data sets.

⁹ Russ, J. (2012) British Bat Calls. A Guide to Species Identification. Pelagic Publishing, Exeter.

- 3.2.16. The BAIV was calculated in two ways, by Bat Passes per Night (BPpN) and Bat Passes per Hour (BPpH). BPpN was calculated by taking the total number of bat passes for a deployment period and dividing them by the number of nights recorded within this period. BPpH was calculated by dividing the total number of bat passes (within the recording period) by the average number of hours between half an hour before sunset to half an hour after sunrise for the deployment period.
- 3.2.17. Data was entered to allow analysis for within night variation (half an hour before sunset to half an hour after sunrise instead of midnight to midnight). Summer nights are shorter than spring and autumn in Wales.
- 3.2.18. The nights within the active bat season (April to October) which have longer lengths (more hours recorded, between sunrise and sunset) will generally have a larger number of BPpN, but this does not equate to more bats in the area, just a larger period of time in which the bats in the area are active.

3.3 ECOBAT

- 3.3.1. In addition to the above, the data gathered was processed using the online tool 'EcoBat' which is hosted and developed by the Mammal Society¹⁰. The data input reveals a percentile score and categorised level of bat activity, and the results can be interpreted at the local scale and site scale. Activity level is split into six categories on EcoBat which are 'Low', 'Low/mod', 'Mod', 'Mod/high', 'High' and 'Exceptional'.
- 3.3.2. The data set range used for the percentile analysis reference was selected to records within region which for this Site is "England North West & North Wales".

3.4 SPECIES TRENDS WALES/SITE

- 3.4.1. To provide context to the bat activity results, an extended desk study was conducted to assess bat species population trends in Wales compared to bat survey results within the Site. Information on bat activity levels according to species and habitat class was obtained from EcoBat (using regional datasets). Information on bat population trends was obtained from The National Bat Monitoring Programme (NBMP) Annual Report¹¹.

3.5 POTENTIAL ROOSTS WITHIN OR CLOSE TO THE SITE

- 3.5.1. To identify potential roosts within the Site, call data and peaks in bat activity was compared to the standard roost emergence times⁹. The location of detectors was then compared with aerial maps to identify potentially suitable roosting habitat such as mature trees/woodlands and buildings within or close to the Site. The closer to the expected roost emergence time a given bat pass was recorded, the closer to a roost the detector is assumed to be.

¹⁰ Lintott, P.R., Davison, S., van Breda, J., Kubasiewicz, L., Dowse, D., Daisley, J., Haddy, E. & Mathews, F. (2018) Ecobat: An online resource to facilitate transparent, evidence-based interpretation of bat activity. *Ecology and Evolution*, 8(2), 935-941.

¹¹ Bat Conservation Trust (2025) The National Bat Monitoring Programme Annual Report 2024. Bat Conservation Trust, London. Available at www.bats.org.uk/our-work/national-bat-monitoring-programme/reports/nbmp-annual-report [Accessed: October 2025].

3.6 POTENTIAL COLLISION RISK

3.6.1. A collision risk assessment for bats has been carried out within this report using the data from the recording period adapting the steps outlined in the NatureScot 2021⁸ guidance. Estimating the vulnerability of bat populations to wind farms is based on the following factors:

- relative abundance and collision risk of bat species;
- the project size and habitat suitability within the Site; and
- bat activity levels recorded at the Site.

3.6.2. **Table 5G-4** below shows the potential vulnerability of bat populations in Wales based on the collision risk (inferred by a number of factors including habitat preference, flight speed, foraging techniques, and echolocation characteristics) and relative abundance. Species which may be expected to be present within the Site have been highlighted with an asterisk (*).

Table 5G-4 - Level of potential vulnerability of population of British bat species in Wales⁸

Relative abundance	Collision risk		
	Low	Medium	High
Common species			Soprano pipistrelle* Common pipistrelle*
Rarer species	Brown long-eared bat* Daubenton's bat* Natterer's bat* Lesser horseshoe*		
Rarest species	Alcathoe Bechstein's Brandt's* Greater horseshoe* Grey long-eared Whiskered*	Barbastelle Serotine*	Noctule bat* Leisler's bat* Nathusius' pipistrelle*

3.6.3. The level of potential vulnerability identified in **Table 5G-4** is then considered alongside details of the Proposed Development and bat activity recorded at the Site. This requires a two-stage process. **Table 5G-5** provides an indication of the potential 'Site Risk' based on evaluation of overall Site habitat suitability (as per **Table 5G-2**) and the size of the development (Stage 1). An overall assessment of risk can then be made by assessing the results of **Table 5G-4** against the EcoBat median and highest level of activity outlier scores for "High" collision risk bat species as shown in **Table 5G-6**.

Table 5G-5 - Stage 1- initial site risk assessment¹².

Site risk level (1-5)	Project size small	Project size medium	Project size large
Habitat Risk Low	1	2	3
Habitat Risk Moderate	2	3	4
Habitat Risk High	3	4	5

Table 5G-6 - Stage 2 - overall risk assessment

Site Risk Level (Table 5G-5)	EcoBat Activity: Nil	EcoBat Activity: Low	EcoBat Activity: Low/ Mod	EcoBat Activity: Moderate	EcoBat Activity: Mod/ High	EcoBat Activity: High/ Exceptional
Lowest (1)	0	1	2	3	4	5
Low (2)	0	2	4	6	6	10
Med (3)	0	3	6	9	12	15
High (4)	0	4	8	12	15	18
Highest (5)	0	5	10	15	20	25

3.7 NOTES AND LIMITATIONS

- 3.7.1. Bat activity per night may be dependent on weather conditions, therefore affecting the number of sound recordings collected per night. Detectors were deployed for approximately 15-30 nights a season (April to May, June to mid-August, mid-August to September), reducing the likelihood of periods of unseasonal weather affecting the validity of data collected. Some detectors returned fewer than 10 nights of bat data, or no nights of bat data, and this is attributed to their having been no bat activity on the nights sampled; detectors were confirmed to be functional during this time period, due to this uncertainty analysis was undertaken on all nights of recorded data. The use of a bat activity index as opposed to comparison of absolute call numbers allows a comparison of bat activity at different locations across the Site to be made despite any differences in the number of nights a given detector was recording for. During the deployment periods of the detectors, the weather recorded was not as such that it would have greatly affected the number of bats recorded. Therefore, the weather is not considered to have been a limitation to the bat activity recorded.

Some species such as brown long-eared bats emit very faint echolocation and therefore, may not be registered during recording periods if not within 5m of the recording device. However, professional judgement and interpretation of surrounding habitat and suitability for different species groups can be used to determine likely species present within the Site.

¹² Key: 1= Lowest Site Risk, 2= Low Site Risk, 3 = Medium Site Risk, 4 = High Site Risk, 5 = Highest Site Risk

4 RESULTS

4.1 DESK STUDY

- 4.1.1. No statutory or non-statutory sites designated for bat conservation are present within 10km of the Site.

4.2 SITE FORAGING, COMMUTING AND ROOSTING SUITABILITY

- 4.2.1. The Site was found to vary between grassland, scrub, boundary features and coniferous woodland habitat. The Site was assessed as having moderate suitability for foraging and commuting bats with continuous habitat and connectivity to the wider landscape through boundary features.
- 4.2.2. The Site had buildings present such as barns and farm buildings that may be suitable for roosting bats. These were not surveyed during the PEA. Additionally within the wider area there were mature trees that could have suitability for roosting bats that have not been surveyed. At the time of the PEA, there were no trees within the Site that were considered to have suitability to support roosting bats.

4.3 BAT ACTIVITY

- 4.3.1. Static detectors were deployed within the Site across three seasons (spring, summer and autumn). This amounted to **63 nights** of deployment per location (20 nights in spring, 30 nights in summer and 13 nights in autumn). The location of the detectors, and the location of the turbines, are shown in **Annex 5G.1: Figure 5G.1**.
- 4.3.2. Throughout this period, eleven species (or genera in difficult to identify species) were recorded. Over the whole survey period across all the detectors, the total number of bat passes was **7,128**, as shown in **Table 5G-7**.

Table 5G-7 - Total Bat Passes Per Species.

Species	Passes (No.)	Percentage of Total (%)
Common pipistrelle	2,037	28.6
Soprano pipistrelle	1,718	24.1
Nathusius' pipistrelle	35	0.5
<i>Myotis</i> sp.	217	3.0
Daubenton's bat	298	4.2
Noctule bat	2,489	34.9
Leisler's bat	88	1.2
Serotine	103	1.4
Brown long-eared	131	1.8
Greater horseshoe	5	0.1

Species	Passes (No.)	Percentage of Total (%)
Lesser horseshoe	7	0.2
Total	7,128	100

- 4.3.3. The BPpN of each species at each detector is shown in **Table 5G-8a** and **4-2b**. In addition, the median activity levels and highest activity levels of each species at each detector is also compared against the regional dataset using EcoBat.

Table 5G-8a - Average Bat Passes Per Night for each species per detector.

	Common pipistrelle		Soprano pipistrelle		Nathusius' pipistrelle		Myotis sp.		Daubenton's bat		Noctule bat	
Detector	Bat passes per night	Activity level Ecobat	Bat passes per night	Activity level Ecobat	Bat passes per night	Activity level Ecobat	Bat passes per night	Activity level Ecobat	Bat passes per night	Activity level Ecobat	Bat passes per night	Activity level Ecobat
1	2.71	Low	3.38	Low	-	-	0.38	Low/Moderate	2.40	Low	6.48	Low
2	3.75	Low	3.48	Low	-	-	1.10	Low	1.13	Low	5.38	Low
3	1.62	Low	1.22	Low	0.17	Low	0.40	Low	0.02	Low	1.75	Low
4	7.16	Low	6.08	Low	0.13	Low	0.48	Low	0.60	Low	3.44	Low
5	2.44	Low	2.17	Low	0.03	Low	0.11	Low	0.32	Low	2.52	Low
7	2.25	Low	1.71	Low	0.11	Low	0.19	Low	0.27	Low	10.89	Low
8	3.08	Low	2.48	Low	0.05	Low	0.19	Low	0.79	Low	5.30	Low
9	2.62	Low	2.98	Low	0.08	Low	0.11	Low	0.24	Low	0.83	Low/Moderate
10	5.14	Low	2.33	Low	-	-	0.32	Low	0.40	Low	2.67	Low
11	1.38	Low	1.27	Low	-	-	0.10	Low	0.05	Low	0.11	Low

Table 5G-8b - Average Bat Passes Per Night for each species per detector.

	Leisler's bat		Serotine		Brown long-eared bat		Greater horseshoe		Lesser horseshoe	
Detector	Bat passes per night	Activity level Ecobat	Bat passes per night	Activity level Ecobat	Bat passes per night	Activity level Ecobat	Bat passes per night	Activity level Ecobat	Bat passes per night	Activity level Ecobat
1	0.12	Low	0.17	Low	0.05	Low	-	-	-	-
2	-	-	0.27	Low	0.67	Low	0.02	Low	-	-
3	-	-	0.03	Low	0.06	Low	-	-	-	-
4	0.06	Low	0.08	Low	0.14	Low	0.02	Low	-	-
5	0.06	Low	-	-	0.30	Low	0.02	Low	-	-
7	0.27	Low	0.08	Low	0.33	Low	0.02	Low	-	-
8	0.19	Low	0.16	Low	0.16	Low	0.02	Low	0.10	Low
9	-	-	0.02	Low	0.05	Low	-	-	-	-
10	0.17	Low	0.06	Low	0.17	Low	-	-	-	-
11	-	Low	0.49	Low	0.10	Low	-	-	-	-

4.4 SPECIES TRENDS IN WALES AND THE SITE

- 4.4.1. To provide context to bat activity results returned within the Site (**Section 4.3** above), data was compared to the results returned from a study of bat population trends in Wales obtained from the BCT¹¹, illustrated in **Table 5G-9**.

Table 5G-9 - Species population trends determined from static bat detectors deployed within the Site.

Genus/Species	Population sizes and trends in Wales
<i>Pipistrellus</i>	Common pipistrelle: 96,600 – 732,000 individuals, estimated at 297,000 individuals. Population of common pipistrelle has decreased since 2018; however, it is not a statistically significant change. Soprano pipistrelle: 202,000 – 862,000 individuals, estimated at 478,000 individuals. Population has significantly decreased since 2018. Nathusius': Population estimate unknown.
Myotis	Daubenton's: 2,860 – 466,000 individuals, estimated at 108,000 individuals. Population of Daubenton's bats have increased since 2018, but is not statistically significant. Whiskered/Brandt's: Population estimate unknown. Natterer's: 1,900 – 332,000 individuals, estimated at 52,000 individuals. Population of natterer's bats have increased since 2018, but is not statistically significant.
Nyctalus	Noctule: 2,880 – 304,000 individuals, estimated at 91,900 individuals. Populations in Great Britain have increased, however the change is not statistically significant (no population trend available for Wales only). Leisler's: Population estimate unknown.
Brown long-eared	5,370 – 228,000 individuals, estimated at 96,600 individuals. Populations of brown long-eared bats have decreased significantly since 2018.
Serotine	7,300 – 413,000 individuals, estimated at 136,000 individuals in Great Britain (no information available for Wales only). Population has increased significantly since 2018.
Horseshoe bats	Greater horseshoe: 1,930 – 3,850 individuals, estimated as 2,700 individuals. Population of greater horseshoe bats has increased significantly since 2018. Lesser horseshoe: 22,000 – 44,100 individuals, estimated at 30,900 individuals. Population of lesser horseshoe bats has increased since 2018.

- 4.4.2. Based on the results of bat species populations trends and bat activity recorded within the Site (**Table 5G-9**), trends of bat activity are 'Low' for the geographical location of the Site and habitats present relative to bat populations.

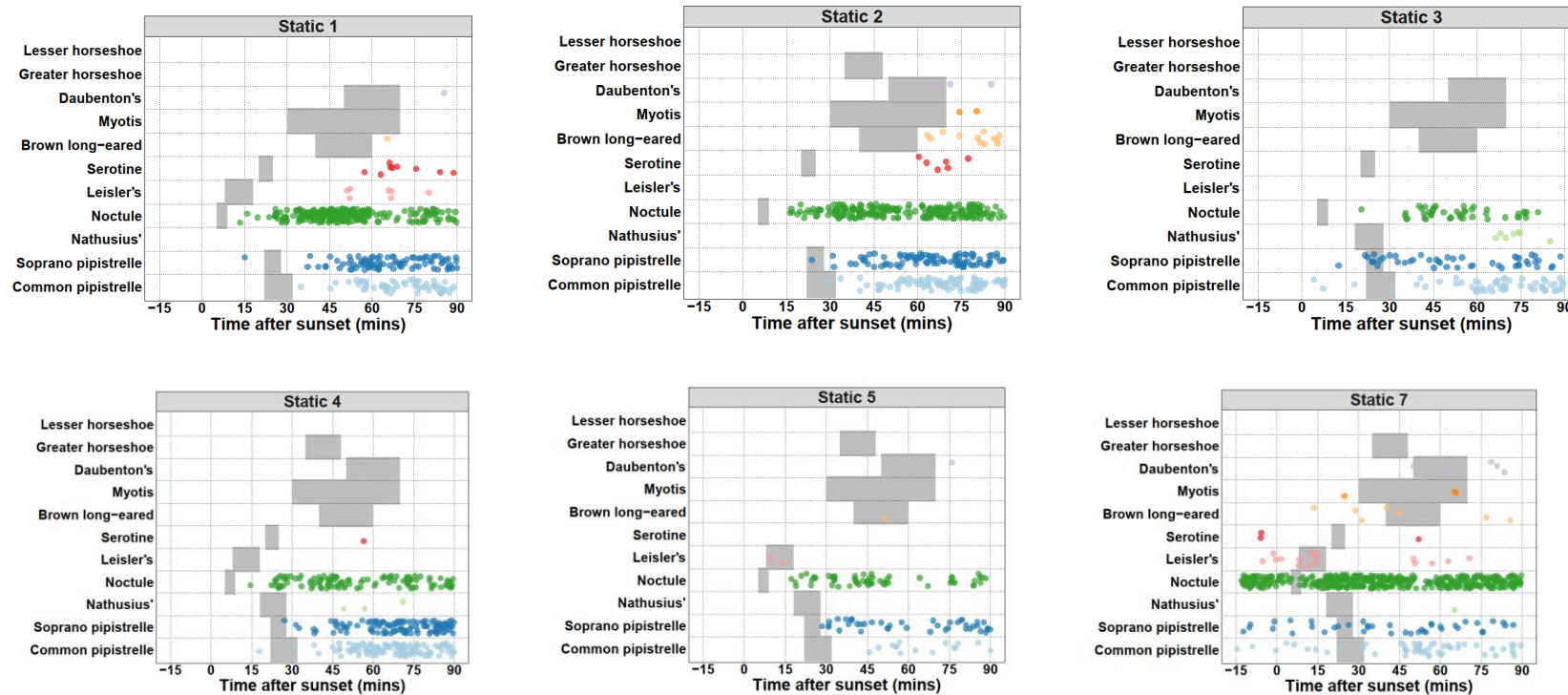
4.5 POTENTIAL ROOSTS WITHIN OR CLOSE TO THE SITE

- 4.5.1. Based on aerial mapping, the Site contains suitable habitat to provide roosting opportunities for bats such as barns and farm buildings across the Site, and a limited number of trees within the wider habitat. These buildings within the Site and trees within the wider area were not assessed during the original PEA.
- 4.5.2. Roosting opportunities within the Site and the wider habitat are located within the core sustenance zone¹³ for all species recorded relative to the Site (approximately five-to-ten-minute commute for pipistrelle bats).
- 4.5.3. To determine the likelihood of potential roosts being present within or close to the Site, peaks in bat activity were compared to Species-Specific Emergence Times (S-SET)¹⁴. **Plate 5G-1** below summarises the hours and minutes after sunset in which each species was first recorded as well as the number of calls within the S-SET. Where the coloured dots (representing bat activity for a given species) overlap with the grey band (which refers to the expected emergence times for that species) it is likely that roosts may be nearby.

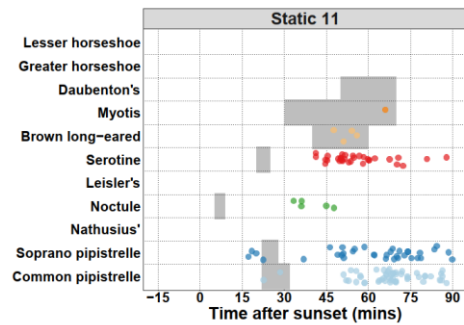
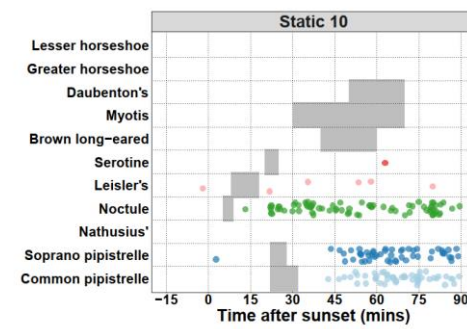
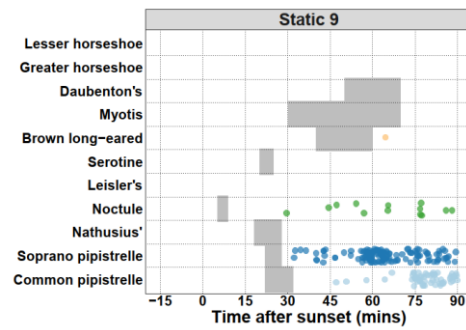
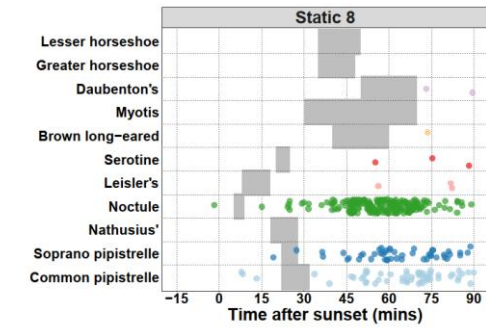
¹³ A core sustenance zone, as applied to bats, refers to the area surrounding a communal bat roost within which habitat availability and quality will have a significant influence on the resilience and conservation status of the colony using the roost. This zone has a radius of around 2km for common pipistrelle and Daubenton's bats and 4km for Natterer's bats. BCT (2016), Bat Conservation Trust, Core Sustenance Zones: Determining zone size.
[\[https://cdn.bats.org.uk/uploads/pdf/Resources/Core_Sustenance_Zones_Explained_04.02.16.pdf?v=1550597495\]](https://cdn.bats.org.uk/uploads/pdf/Resources/Core_Sustenance_Zones_Explained_04.02.16.pdf?v=1550597495)

¹⁴ Russ, J. (2012) British Bat Calls: A Guide to Species Identification. Pelagic Publishing, Exeter.

Plate 5G-1 - Time from 15 minutes before to 90 minutes after sunset. S-SET are grey bars with points referring to bat passes within each range¹⁵.



¹⁵ Where the grey bars are present in the graph with no relating bat pass points, this is due to the species being recorded at the detector location rather than being recorded within the S-SET sample period i.e. within the 105-minute time frame.



- 4.5.4. Based on the results (**Plate 5G-1**), it is possible that roosts for colonies or individual bats are within/proximal to the Site of seven species (or genera); common pipistrelle (static location 2, 3, 4, 7 & 11), soprano pipistrelle (static location 2, 3, 4, 5, 7, 8 & 11), *Myotis* (static location 7 & 11), Daubenton's (static location 2 & 7), brown long-eared (static location 5 & 11), noctule (static location 7) and Leisler's (static location 5 & 7). Peak calls recorded overlap S-SETs indicating detectors may be located within proximity to a roost location, either within or outside the boundary of the Site.

4.6 POTENTIAL COLLISION RISK

- 4.6.1. The following high collision risk species were recorded on Site during static detector activity surveys:
- Common pipistrelle;
 - Soprano pipistrelle;
 - Noctule bat;
 - Leisler's bat; and
 - Nathusius' pipistrelle.
- 4.6.2. The Site has been evaluated as providing moderate suitability to support foraging and commuting bats (see **Section 4.1**) with potential roosting habitat noted from aerial mapping.
- 4.6.3. The Proposed Development is taken to be for up to 11 turbines, falling within the 'medium project size' category⁸.
- 4.6.4. Based on evaluation of habitats and the size of the development (Stage 1 of the assessment) the Site is considered to have a **site risk level of 3 (medium site risk)** following **Table 5G-6**.
- 4.6.5. Bat activity levels for high-risk species were recorded (**Table 4-2**), with noctule bats accounting for the majority of the calls recorded (34.2%). Common and soprano pipistrelle had the next highest percentage of calls recorded (28.6% and 24.1% respectively). Leisler's bat and Nathusius' pipistrelle were infrequently recorded (call percentage 1.2% and 0.5% respectively).
- 4.6.6. Bat activity for all high collision risk species was 'Low' across all static detector locations, with the exception of noctule bat which was 'Low/Moderate' activity for static detector location 9.
- 4.6.7. In combination with the Site being evaluated to have a **site risk level of 3 ('Medium')**, the overall risk assessment at Stage 2 (**Table 3-8**), based on median activity, scores **3 ('Low')**. An assessment based on the highest activity result in the Site scored **6 ('Medium')**.

5 DISCUSSION

OVERVIEW

- 5.1.1. Ten static detectors were deployed across the Site between 2024 and 2025. Call analysis confirmed presence of 11 species (and genera). Noctule bats made up the majority of the passes (34.9%), with common and soprano pipistrelle the next most frequently recorded species (28.6% and 24.1% respectively).

COLLISION RISK

- 5.1.2. Five species recorded were considered to be at high risk of turbine collision at the individual level because their flight behaviour means they often fly in open spaces and above tree height⁸.
- 5.1.3. Ecobat was used to identify activity levels of all bat species recorded. Species of high risk of collision were all assessed as having 'Low' activity levels, with the exception of noctule bat having 'Low/Moderate' activity at static detector location 9.
- 5.1.4. Of the high collision risk species recorded, common pipistrelle, soprano pipistrelle, and noctule are considered widespread and common across Wales. Population data is not available on Nathusius' pipistrelle and Leisler's bat.
- 5.1.5. The site-wide collision risk considered the individual risk of collision at the highest level of activity recorded and was assessed as **6 ('Medium')** in line with NatureScot guidance⁸.
- 5.1.6. All other species recorded were considered to be at low individual risk of turbine collisions due to their typical flight characteristics are that they show preference for foraging within or close to vegetation and water bodies.
- 5.1.7. In the absence of mitigation, the Proposed Development could pose a mortality risk to common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, noctule, and Leisler's bats due to turbine impact on an individual level. The Proposed Development is likely to pose a lower risk nationally to bat populations.

PRESENCE OF ROOSTS

- 5.1.8. Using the S-SET data analysis tool which compares bat call times against published emergence times for each species.
- 5.1.9. Common pipistrelle, soprano pipistrelle, *Myotis* bats, Daubenton's bats, brown long-eared bats, noctule bats, and Leisler's bats were recorded close enough to sunset that their roost locations may be located within the Site.
- 5.1.10. Roosting opportunities for bats within the Site include barns and farm buildings, with trees present within the wider habitat.

RECOMMENDATIONS FOR SITE DESIGN

- 5.1.11. In the absence of mitigation, the Proposed Development has the potential to result in the loss of bat roosts and/or the killing/injury of bats if any of the structures (i.e. buildings, bridges or trees) were to be removed or altered to facilitate the construction of a wind farm or any of its ancillary infrastructure. In accordance with prevalent guidelines further survey should be undertaken to establish if bat roosts are present/likely absent within proximity to turbines (200m from rotor radius)⁸

and infrastructure (30m buffer)¹⁶. These surveys which were carried out in 2026, concluded that there are no features suitable to support roosting bats within the appropriate survey areas. Detailed methodology and results are presented in **Annex 5.A**. In addition, the clearance of vegetation and permanent loss of habitats may result in impacts on commuting and foraging availability at the local scale. The mitigation hierarchy must be applied such that impacts are avoided or reduced wherever possible, mitigated where impacts are unavoidable, and opportunities to enhance the Site for bats (without affecting collision risk) should be considered alongside wider biodiversity enhancement ambitions.

- 5.1.12. The Proposed Development could pose a mortality risk to bats from collisions with moving turbine blades or from barotrauma (internal injuries caused by changed in air pressure around moving turbine blades). The Site design avoids the placement of turbines along field boundaries or other linear features, with a 50m buffer maintained between these areas and the turbine tip.

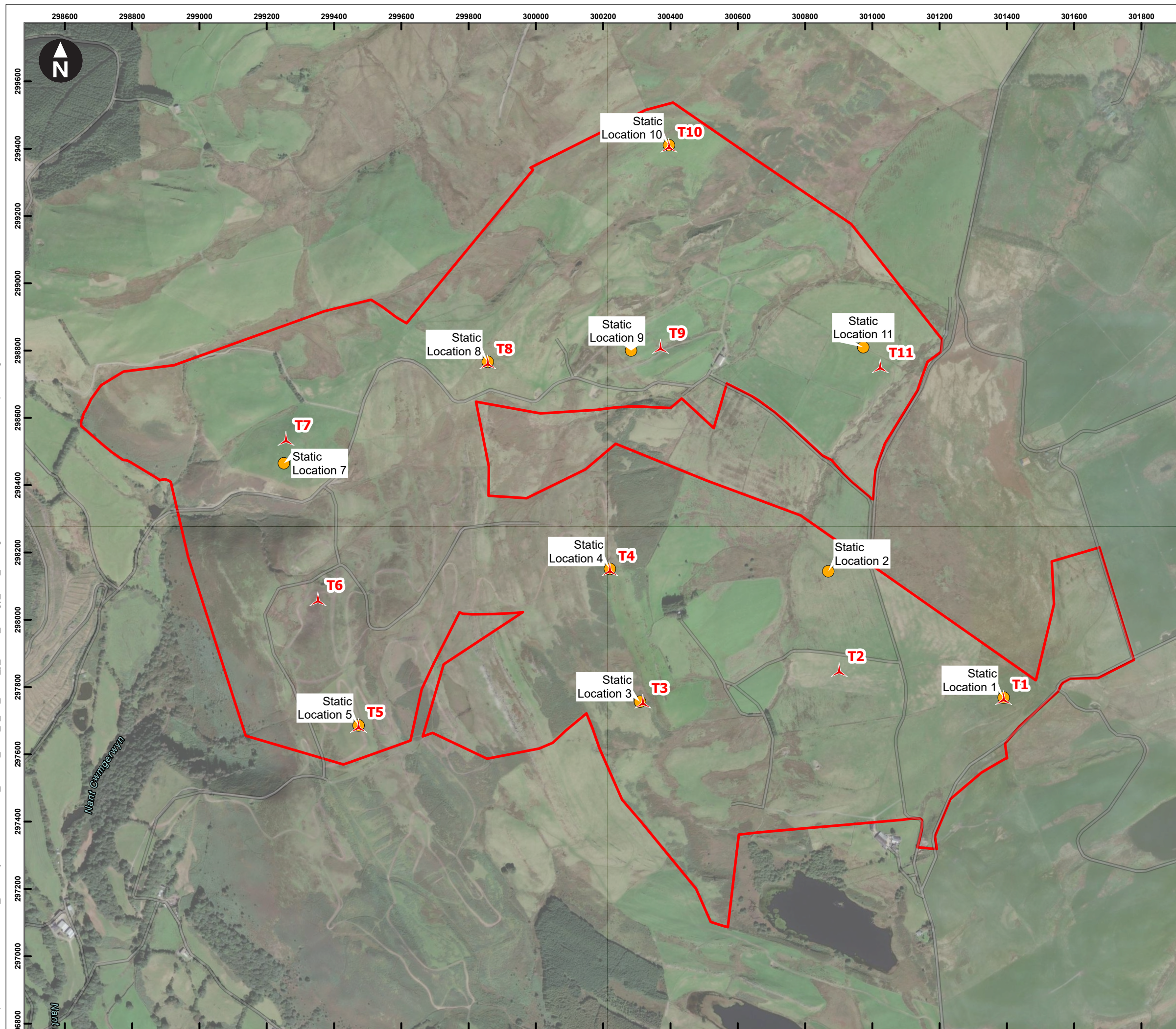
¹⁶ Collins, J (ed) (2023) Bat Surveys for Professional Ecologist: Good Practice Guidelines (4th ed). The Bat Conservation Trust, London.

Annex 5G.1

FIGURES



\\Corp\UK\Cloud\UK-GIS\1EE_GIS\Projects\UK62282400_229111_Wind_2_Ltd_Calon_y_Gwynt_Energy_Park_EIA\Figures\Static Bat Detector Location.aprx Originator: INAS06227



Key

- Site
- Static Bat Detector Locations
- Wind turbine

Llanbrynmair

Caersws

0 100 200 300 400 500 m

Main map scale at A3: 1:11,000

World Hillshade: Esri, Ordnance Survey, NASA, NGA, USGS
World Topographic Map: Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User

Client

Wind 2 Ltd
Parc Ynni Calon y Gwynt
Energy Park

Parc Ynni Calon y Gwynt

Appendix 5G: Calon y Gwynt Bat
Activity Report

Figure 5G.1
Static Bat Detector Locations

July 2026

wsp



1 Capital Quarter
Tyndall Street
Cardiff
CF10 4BZ

wsp.com