



Pennant Walters Ltd.

Foel Trawsnant Wind Farm

Bat Survey Report



Report for

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1. Introduction

1.1 Background

- 1.1.1 On 25 November 2021 Neath Port Talbot County Borough Council (NPTCBC) granted planning permission (Decision Notice reference DN P2014/0825) for the installation of 11 wind turbines with a maximum blade tip height of 145m together with ancillary infrastructure (hereafter ‘the approved development’) at a site known as Foel Trawsnant, under *The Town and Country Planning Act 1990 (as amended)*¹ (TCPA).
- 1.1.2 The permission includes 40 planning conditions. Following initial discussions with officers at NPTCBC Pennant Walters (FoelT) Ltd (‘the Applicant’) submitted a Section 73 (S73) TCPA application to vary planning condition 3 (List of Approved Plans) to authorise the following:
- An increase in the maximum rotor diameter from up to 90m to up to 133m, whilst maintaining the maximum height to blade tip of 145m.
- 1.1.3 Whilst the approved development (by way of planning permission ref. P2014/082 and subsequent Non-Material Amendment (NMA) permission LPA Ref. P2022/0344) is for the installation of up to 11 turbines, the Applicant is currently proposing to only install eight turbines.
- 1.1.4 It has been agreed with NPTCBC that the potential environmental effects arising from the proposed increase in rotor diameter, and reduction in turbine numbers, can be presented in an addendum to the 2019 ES and 2019 Further Environmental Information Report. This addendum was submitted in May 2022 with the S73 application.
- 1.1.5 Natural Resources Wales requested that further bat surveys were undertaken to support the application and furthermore they required the results for the bat survey to be evaluated through The Mammal Society Ecobat standardisation tool².

1.2 Previous Surveys

- 1.2.1 The Foel Trawsnant site was subject to initial bat surveys in 2010; these were primarily used to inform the site layout process and so covered a substantially larger area than the final site or planning boundary. Further bat surveys were then undertaken in summer 2012, spring 2013, and 2018 with the survey area revised to reflect the site boundary and anticipated layout. The results of these surveys were combined into a single survey report (Appendix 9B of the 2019 ES Doc. Ref 40217rr066i1).
- 1.2.2 An updated desk study was undertaken in March 2022 and an extended Phase 1 Verification survey was undertaken on 15 February 2022 which confirmed that the site habitats remain fundamentally the same. The results of these surveys were presented in the Section 73 Application – Environmental Statement Addendum.

¹ Town and Country Planning Act 1990 [online]. Available at: <https://www.legislation.gov.uk/ukpga/1990/8/contents> [Accessed 17 January 2022]

² The Mammal Society (2017). Ecobat (Online) Available at: <http://www.ecobat.org.uk/> (Accessed October 2022).

1.3 This report

1.3.1 This report gives a brief summary of previous bat survey work and provides the methods and results of the additional bat automated detector surveys carried out between September and October 2022.

1.3.2 The structure of the report is as follows:

- Section 2 – Methodology.
- Section 3 – Results.
- Section 4 – Summary.
- Section 5 – Collision Risk Assessment.

1.4 Survey area

1.4.1 The Site is located at Foel Trawsnant, approximately 2.3km to the northwest of Maesteg, Bridgend in the Neath Valley, West Glamorgan in Wales (**Figure 1.1, Appendix A**). The site topography is undulating, with small river valleys bisecting several hill-tops and ridges, the highest point being 371m above sea level at Foel Trawsnant. The site comprises of upland farmland, with white moorland (dominated by Juncus rush and rough grasses) and enclosed pasture land, both used primarily for sheep grazing. The site access track runs north through the southern portion of the Afan Forest Park, which is dominated by commercial coniferous woodland. The site borders enclosed pasture land to the north, white moor to the east and coniferous woodland to the west and south.

1.5 Legislative and policy context

1.5.1 All British bat species are protected under UK and European legislation (see **Appendix B** of this report), such that it is a criminal offence to disturb, injure or kill any bat, or damage or destroy a bat roost (even when no bats are present).

1.5.2 In addition, the following national and local planning policies require the consideration of biodiversity/nature conservation and provide guidance/considerations for developments affecting designated sites and habitats, along with protected priority habitats and species:

- Future Wales: National Development Framework 2021.
- Planning Policy Wales – Chapter 6 Distinctive and Natural Places (11th Ed.) 2021.
- Technical Advice Note 5 (TAN5) Nature Conservation and Planning (2009).

1.5.3 In order to ensure compliance with the relevant legislation and policy, it is necessary to understand how bats use features within the site so that the effects of the approved development on bat populations can be appropriately assessed and mitigated for.

2. Methodology

2.1 Previous Surveys

2.1.1 The baseline for the site has been established through:

- Desk studies, involving searches for statutory or non-statutory nature conservation sites within 10km for which bats are a key interest feature, or records of bat-roosts within 10km.
- Surveys undertaken in 2010 (reported in the 2014 ES), comprising:
 - ▶ Preliminary roost assessments.
 - ▶ Three activity transects surveyed on multiple visits between May and October 2010 (two transects surveyed on seven occasions, with one transect surveyed on five occasions).
- Surveys undertaken in 2012/13 (reported in the 2014 ES), comprising:
 - ▶ Preliminary roost assessments.
 - ▶ Two activity transects (versions of the 2010 routes modified to reflect the revised site boundary) walked five times³ between June and October 2012, and once in April 2013.
 - ▶ Static detectors (SM2Bat+) deployed at six locations for 5 nights per month between June and October 2012, and in April/May 2013.
- Surveys undertaken in 2018 (reported in Appendix 9B, 2019 ES), comprising:
 - ▶ Preliminary roost assessments.
 - ▶ Two transect routes surveyed each month between April and October 2018.
 - ▶ Static detectors (SM2 Bat+) deployed at nine locations around the site for seven separate periods between April and October 2018, for at least five nights in each period.

2.1.2 The 2018 survey approach and results are detailed in Appendix 9B of the 2019 ES; this also includes a summary of the 2010 and 2012/13 bat survey methods and results, and details of any constraints or data gaps. The baseline is summarised in the following sections. It should be noted that the activity surveys (transects and statics) focused on the main site.

2.2 Overview Autumn 2022

2.2.1 Automated monitoring has been used to further assess the use of the site by bats, in line with best practice guidelines. Bats and Onshore Wind Turbines (2019 edition updated

³ Note, only one transect was walked in June 2012 due to equipment failure.

2021)⁴ and the Bat Conservation Trust (BCT) third edition of Good Practice Guidelines⁵ were the main source of guidance when designing the survey methodology and programme of survey work. The Bat Mitigation Guidelines⁶, Bat Workers' Manual⁷, Bat Tree Habitat Key⁸ and British Standard 8596:2015⁹ provide further guidance that has been taken into account. The available guidance has been interpreted using professional experience to develop a detailed survey design specific to the survey area and adapted as necessary to account for emerging survey data.

2.2.2 The remainder of this section describes the following survey methods that have been applied over the survey period (September / October 2022).

- Field survey: bat activity: Automated monitoring.

2.2.3 This section then goes on to describe:

- Methods used to aid species identification.
- Environmental conditions considered in survey design and recorded during field survey work.
- The presence of limitations which may affect field surveys.
- Personnel involved.

Automated monitoring

2.2.4 To monitor bat activity throughout the night at turbine locations, an Elekon Batlogger A+ was installed at, or as close as possible to each of the eight turbine locations and posts were used to elevate the microphones to a height of 2m from the ground. Detectors were deployed to record bat calls continuously from 30 minutes before sunset to 30 minutes after sunrise for a minimum of ten nights. The survey covered the autumn survey period in line with Bats and Onshore Wind Turbines guidance³.

2.2.5 The monitoring locations for 2022 are shown with reference to the turbine positions in **Figure 2.1 (Appendix A)** **Table 2.1** details the turbine locations and gives the automated monitoring survey dates.

Table 2.1 Automated monitoring at turbine locations survey dates

Turbine Locations	British National Grid Reference 2022	Autumn Monitoring (September / October 2022)
1	SS 83979 93530	29/09/2022 – 18/10/2022

⁴ SNH, NE, NRW, Renewable UK, Scottish Power Renewables, Ecotricity Ltd, University of Exeter and BCT *et al.* (2021). Bats and onshore wind turbines: survey, assessment and mitigation. (Online) Available at: <https://www.nature.scot/doc/bats-and-onshore-wind-turbines-survey-assessment-and-mitigation> (Accessed January 2022).

⁵ J. Collins (ed.).(2016) Bat surveys for professional ecologists: Good practice guidelines. 3rd Edition. Bat Conservation Trust; London.

⁶ A.J. Mitchell-Jones (2004). Bat Mitigation Guidelines. Natural England; Peterborough.

⁷ A.J. Mitchell-Jones A.P. McLeish, A.P. (2004). Bat Workers' Manual. 3rd Edition. JNCC; Peterborough.

⁸ H. Andrews (2018). Bat roosts in trees: a guide to identification and assessment for tree-care and ecology professionals. Pelagic Publishing; Exeter.

⁹ British Standards Institution (2015). BS 8596:2015: Surveying for bats in trees and woodland. BSI; London.

Turbine Locations	British National Grid Reference 2022	Autumn Monitoring (September / October 2022)
2	SS 83853 93719	29/09/2022 – 18/10/2022
3	N/A Turbine location removed from scheme	
4	N/A Turbine location removed from scheme	
5	SS 83096 94329	29/09/2022 – 18/10/2022
6	SS 82868 94591	29/09/2022 – 18/10/2022
7	N/A Turbine location removed from scheme	
8	SS 83996 94025	29/09/2022 – 18/10/2022
9	SS 83748 94174	29/09/2022 – 18/10/2022
10	SS 83726 94429	29/09/2022 – 18/10/2022
11	SS 83512 94698	29/09/2022 – 18/10/2022

- 2.2.6 With the exception of turbine location 1 which was vandalised after 6 nights of data had been collection, ten consecutive nights of data per month, from each recording location was analysed using BatExplorer software to identify bats to species level, or to genus or species group where the characteristics of the call were common to more than one species (**Section 2.2**). Each file was assigned to a species/species group, or multiple species and/or multiple individuals where such was observed. Each one was counted as a 'recording', which are typically the length of a single bat pass, or continue for a maximum of 20 seconds, where bat activity continues.
- 2.2.7 Prior to deployment and at intervals of every five days during recording periods, all automated bat detectors, cables and microphones were checked, and the microphones tested and calibrated to ensure operation at the same level of sensitivity.

Ecobat analysis

- 2.2.8 Analysis of the data collected during the automated monitoring included use of Ecobat¹⁰ to aid in quantifying bat activity levels in the context of bat activity levels recorded elsewhere in the region. Ecobat is an online tool that compares data collected by automated bat detectors at any given site with data collected by the same means at the same time of year within a defined search radius. The reference range data set were stratified to include:
- Geographic: Region.
 - Time: All Data.

¹⁰ The Mammal Society (2017). Ecobat (Online) Available at: <http://www.ecobat.org.uk/> (Accessed October 2022).

- 2.2.9 The Ecobat software runs the analysis at both the 'site scale' to allow an overall assessment of bat activity across the approved development and at the 'local scale', allowing assessment of individual automated monitoring locations.
- 2.2.10 Through generating a percentile rank for each night of bat activity, the Ecobat tool can identify the number of nights in which species data collected by a static detector could be considered to represent 'high', 'moderate/ high', moderate, 'low/moderate', or 'low' levels of activity, as shown in **Table 2.2**.

Table 2.2 Ecobat percentile score and categorised level of bat activity

Percentile Score	Bat Activity Level
81 - 100	High
61 - 80	Moderate - High
41 - 60	Moderate
21 - 40	Low - Moderate
0 - 20	Low

Extracted from *Bats and onshore wind turbines* (2019)³.

2.3 Species identification

- 2.3.1 Analysis of bat recordings was carried out with reference to published guidance to aid species identification^{11,12}. Where records from the automated monitoring were not identified to species level during the sound analysis process due to the overlapping call parameters of some species, records were identified to genus or species group, with the following groups used:
- CP/SP (common pipistrelle or soprano pipistrelle).
 - NP/CP (Nathusius' pipistrelle or common pipistrelle).
 - NSL or Nyctaloid (noctule, Leisler's bat or serotine).
 - *Nyctalus* sp. (noctule or Leisler's bat).
 - *Myotis* sp. (bat species in the genus *Myotis*).
 - *Plecotus* sp. (brown or grey long-eared bat).
 - Bat sp. (calls that could not be ascribed to a species group).
- 2.3.2 The majority of recordings of bats in the genus *Myotis* were grouped together, as these species in particular have widely overlapping call parameters. Similarly, it is not possible to distinguish between the two British species of long-eared bats through flight observations and sound recordings alone, therefore recordings were grouped as '*Plecotus* sp.' rather than identified to species.

¹¹ J. Russ, J (2012). *British Bat Calls a Guide to Species Identification*. Pelagic Publishing.; Exeter.

¹² N. Middleton, A. Froud and K. French (2014). *Social calls of the bats of Britain and Ireland*. Pelagic Publishing; Exeter.

2.4 Environmental conditions

- 2.4.1 During automated monitoring 2022, weather recordings were taken directly after each recording night from <https://www.wunderground.com>. Full details of weather conditions experienced during automated detector survey work are provided in **Table C.1 (Appendix C)**.

2.5 Field survey limitations

- 2.5.1 The site is open access and subject to high levels of public use, with vandalism being recorded on several occasions and two automated detectors being vandalised. This resulted in only six nights of data being collected for Location 1 in the autumn 2022 monitoring period. The automated detectors were small and could be concealed to a degree, however, it was not considered that a suitable weather station/s could be safely deployed on the site.
- 2.5.2 Best efforts were made to achieve ten consecutive nights of automated monitoring in optimal weather conditions. Notwithstanding, some monitoring nights fell outside of the optimum weather conditions. Ten nights were recorded without rain and in most cases, the weather was only marginally outside of the optimal range (e.g., 0.5 – 3m/s over the optimum wind or 1°C below the correct temperature), which is to be expected for a Welsh upland site. Given the nature and location of the site it is considered that the monitoring data was collected in the best available weather conditions for the autumn season and accurately reflects bat activity at this geographic location and time of year.
- 2.5.3 However, the results of the autumn survey work has been done to supplement survey work already undertaken for the site since 2012.

3. Results

3.1 Previous surveys

- 3.1.1 A total of nine species or species groups were recorded at the site during the previous transect and static detector surveys (common, soprano and Nathusius' pipistrelle; noctule; long-eared bat species; *Myotis* species; *Nyctalus* species; *Nyctalus* or serotine; and a small number of unidentified bat calls). The frequency of contacts with each species or species group is summarised in **Table 3.1**.

Table 3.1 Approximate proportion of contacts by species / species group for each previous survey year

Year and dataset	~Proportion of contacts by species / species group										
	CP	SP	CP/SP	CP/NP	NP	N	Nyc	NycSe	M	LE	Bat
2010 Transects	83.6%	5.4%	3.7%	-	-	1.9%	0.3%	-	3.3%	-	1.7%
2012/13 Transects	79.3%	13.8%	2.7%	-	-	-	0.6%	-	2.1%	-	1.5%
2018 Transects	87.9%	3.2%	-	4.5%	1.5%	0.1%	-	-	2.7%	0.1%	-
2012/13 Statics	89.67%	3.62%	-	-	-	1.47%	0.39%	-	4.73%	-	0.13%
2018 Statics	89.26%	1.48%	-	-	0.02%	0.60%	0.04%	0.01%	8.09%	0.50%	-

Key

CP – common pipistrelle; SP – soprano pipistrelle; NP – Nathusius' pipistrelle; M – *Myotis* sp.; N – Noctule; Nyc – *Nyctalus* sp.; NycSe – *Nyctalus* or Serotine; LE – long-eared bat; Bat – unidentified bat call.

3.2 Automated monitoring autumn 2022

Overview

- 3.2.1 At least four species of bat were confirmed to be using the bat survey area during the autumn automated monitoring:
- Common pipistrelle.
 - *Plecotus* sp.
 - *Myotis* sp.
 - Greater horseshoe bat.

3.2.2 Additional species may have been recorded within the *Myotis* sp. Group and the *pipistrellus* sp. group.

3.2.3 **Table 3.2** summarise the results of the automated monitoring in terms of the total number of recordings at each location, allocated to each species. To provide a means of comparison, an average number of recordings per night of each species has been calculated. It should be noted that these figures are intended to give an indication of relative levels of bat activity and do not represent actual numbers of bats.

Table 3.2 Total number of recordings (average number per night) recorded during automated monitoring at each location over the autumn monitoring period in 2022

Total							
Turbine Location	Number of nights recording	CP	Pip sp.	<i>Plecotus</i> sp.	M	GH	Total
1	6	68	11	2	3	1	85
		(11.3)	(1.83)	(0.3)	(0.5)	(0.16)	(14.16)
2	10	5	0	0	0	0	5
		(0.5)					(0.5)
3	N/A Turbine removed from scheme						
4	N/A Turbine removed from scheme						
5	10	2	0	0	1	0	3
		(0.2)			(0.1)		(0.3)
6	10	3	0	0	0	0	3
		(0.3)					(0.3)
7	N/A Turbine removed from scheme						
8	10	0	0	0	0	0	0
9	10	0	0	0	14	0	14
					(1.4)		(1.4)
10	10	0	0	0	0	0	0

Total							
11	10	0	0	0	0	0	0
Total	76	78	11	2	18	1	110
Proportion of all recordings		70.91%	10%	1.82%	16.36%	0.91%	

Species codes: CP = common pipistrelle; Pip sp. = *Pipistrellus* sp.; LE = *Plecotus* sp.; M = *Myotis* sp.; and GH = greater horseshoe bat.

- 3.2.4 There was an average of 1.45 recordings per night for all species, across all locations over the monitoring period. Activity levels were notably different between the monitoring locations, with by far the highest levels of activity recorded at monitoring location 1 in the south of the bat survey area, averaging 14.17 recordings per night. Monitoring locations 2, 5, 6 and 9 all had an average of less than 1.4 recordings per night. The remaining locations (8, 10 and 11) recorded no bat passes over the monitoring period.
- 3.2.5 Common pipistrelle was the most frequently recorded species, making up 70.91 percent of all recordings across all monitoring locations and the entire monitoring period (an average of 1.02 recordings per night). With an additional 16.36 percent which were assigned to the species group *Myotis* sp. *Pipistrelle* sp. accounted for 10 percent of all recordings (an average of 0.14 recordings per night) and the *Plecotus* sp., group 1.82 percent and an average of 0.03 recordings per night. Greater horseshoe bat accounted for less than 1 percent of the total recordings.
- 3.2.6 Greater horseshoe bat and the *Plecotus* sp., group were only recorded at location 1.

Ecobat analysis

Site scale analysis

- 3.2.7 A summary of the Ecobat outputs relating to 'site level' activity recorded within the bat survey area is provided in **Table 3.3** and shown in **Graph 3.1**. The centre line of each of the boxes on **Graph 3.1** indicates the median percentile, whereas each box represents the interquartile range for each species. This prevents the skewing of data by removing anomalous nights and including only the 25 percent of nights either side of the median. For detailed Ecobat outputs relating to 'site-wide' activity levels, refer to **Appendix E**.

Table 3.3 Key metrics for each species/species group for all automated monitoring locations in the autumn monitoring period 2022

Species/ Species Group	Median Percentile	Median Ecobat Activity Category	95% Confidence Intervals	Maximum Percentile	Nights Recorded
CP	0	Low	0	0	8
Pipistrellus	10	Low	0	10	1

Species/ Species Group	Median Percentile	Median Ecobat Activity Category	95% Confidence Intervals	Maximum Percentile	Nights Recorded
<i>Plecotus</i> sp.	19	Low	0	19	1
M	2	Low	2.5 - 10	10	9
GH	6	Low	0	6	1

Species codes: CP = common pipistrelle; *Pipistrellus* = common/soprano/Nathusius' pipistrelle; *Plecotus* sp. = long-eared bat; M = *Myotis* sp. and; GH = greater horseshoe bat.

Graph 3.1 Ecobat output showing the median activity level (percentile) of bats recorded on each night of automated monitoring at all locations across the bat survey area, in autumn 2022

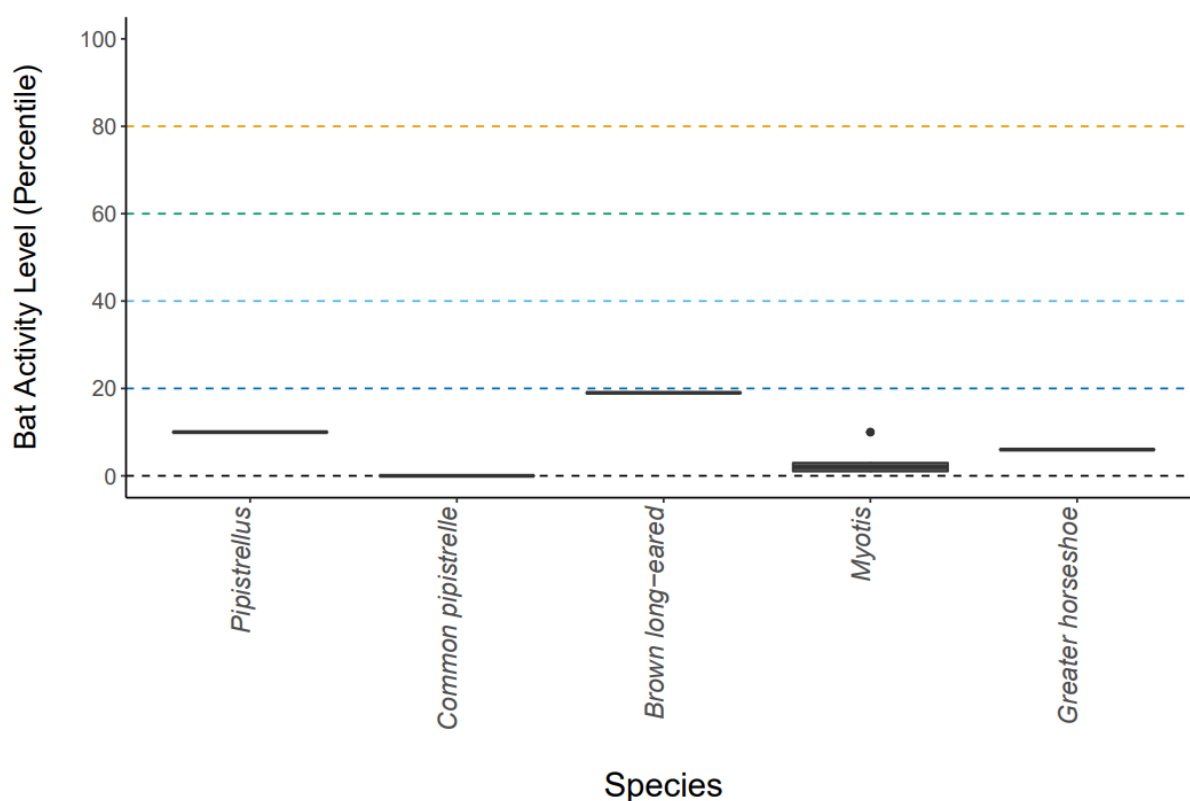


Table 3.4 Ecobat output of the number of nights (of 76) in which automated monitoring results fell within each activity band for each species or species group in the autumn 2022

Species/ Species Group	Nights of High Activity	Nights of Moderate - High Activity	Nights of Moderate Activity	Nights of Low - Moderate Activity	Nights of Low Activity
CP	0	0	0	0	8

Species/ Species Group	Nights of High Activity	Nights of Moderate - High Activity	Nights of Moderate Activity	Nights of Low - Moderate Activity	Nights of Low Activity
Pipistrellus	0	0	0	0	1
<i>Plecotus</i> sp.	0	0	0	0	1
M	0	0	0	0	9
GH	0	0	0	0	1

Species codes: CP = common pipistrelle; *Pipistrellus* = common/soprano/Nathusius' pipistrelle; *Plecotus* sp. = long-eared bat; M = *Myotis* sp. and; GH = greater horseshoe bat.

3.2.8 Based on the Ecobat outputs, the following observations can be made¹³.

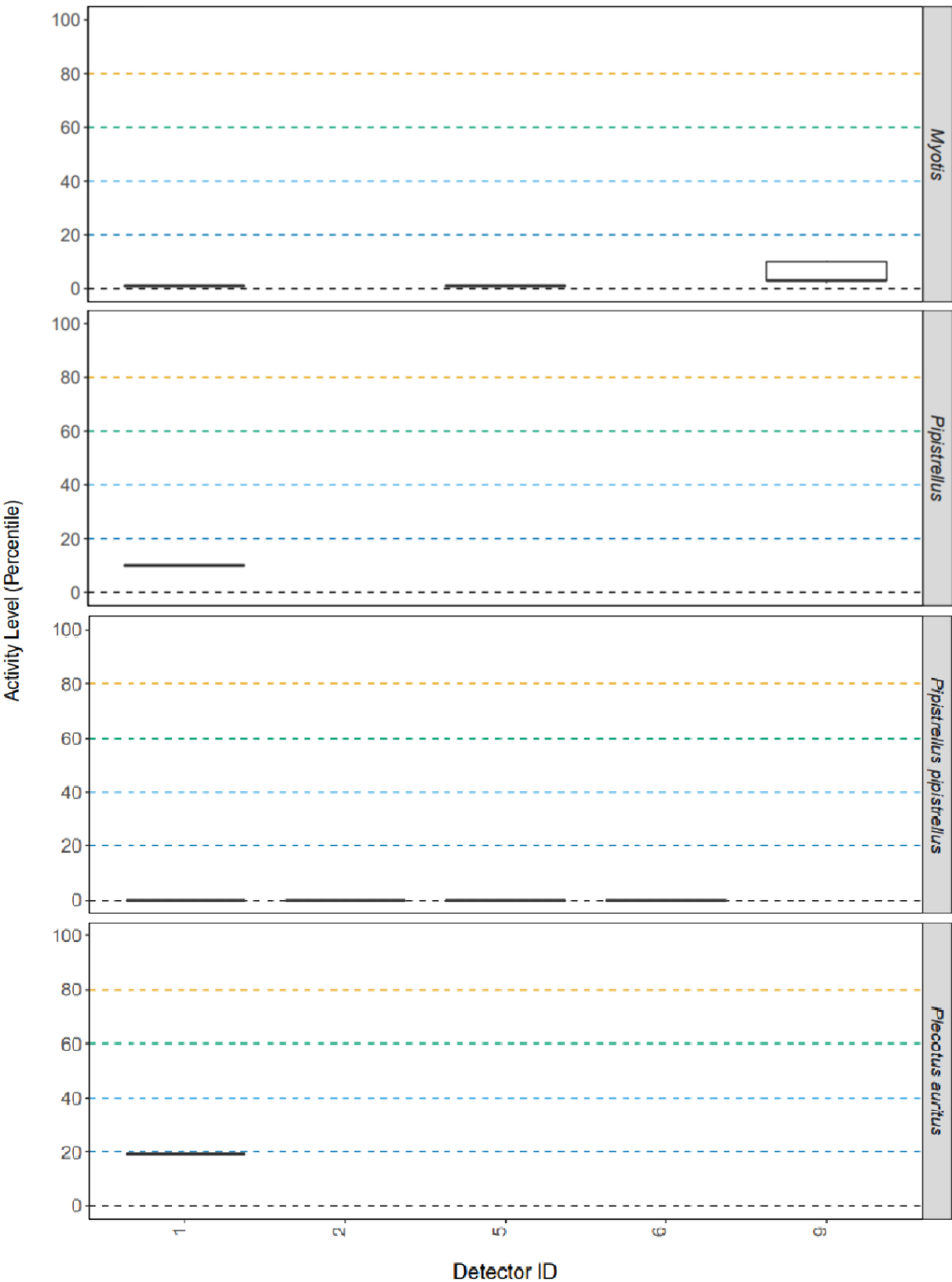
- Common pipistrelle: data suggests an overall low level of activity across the bat survey area (median percentile of 0), based on 85 recordings uploaded to the Ecobat database. This means that activity levels of common pipistrelle within the bat survey area are lower than those recorded in the wider landscape on the same night.
- *Plecotus* sp.: data indicates an overall Low level of activity across the site (median percentile of 19), based on two 2 recordings uploaded to the Ecobat database.
- *Myotis* sp.: data indicates an overall low level of activity across the site (median percentile of 2), this is based on 18 *Myotis* recordings uploaded to the Ecobat database.
- Greater horseshoe bat: data indicates an overall Low level of activity across the site (median percentile of 6), based on one recording uploaded to the Ecobat database.

Local scale

3.2.9 Ecobat outputs showing the results of activity levels for each species of bat recorded at each automated monitoring location within the bat survey area are present in **Table 3.4**. For detailed Ecobat outputs, refer to **Appendix E**.

¹³ At the time of analysing data, Ecobat had a built-in programming error for *Pipistrellus* species group record counts, this is the group where bats cannot be differentiated between the different pipistrelle species (common, soprano and Nathusius pipistrelle). As such, while automatically presented on graphics this group is not discussed with reference to Ecobat in this section. It is considered that the recordings identified to species level, for common and soprano pipistrelle, provide suitable data to inform the assessment without the addition of the *Pipistrellus* group for which only 11 passes were recorded.

Graph 3.2 Ecobat output showing median activity levels at automated monitoring locations in autumn 2022



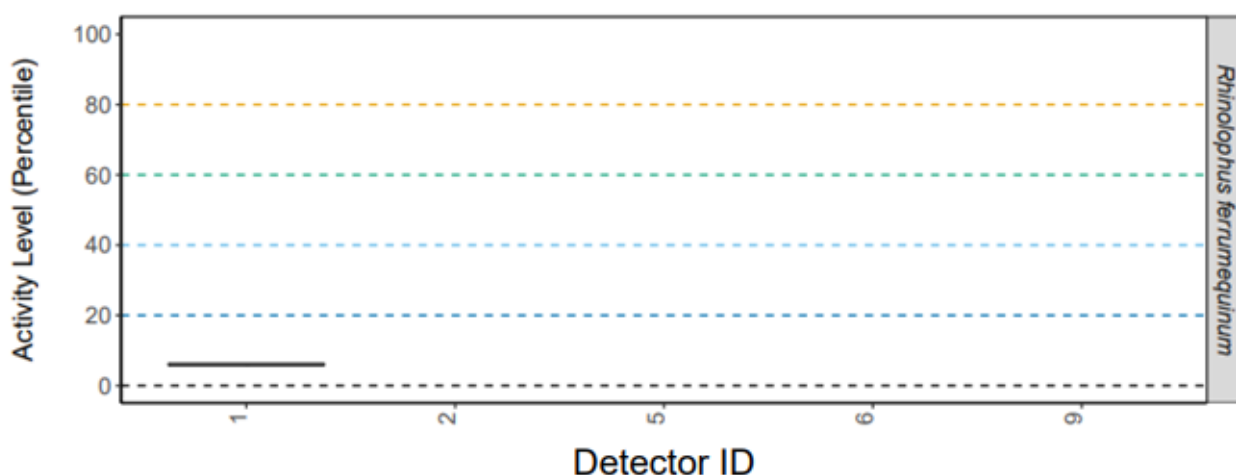


Table 3.5 Ecobat output showing median activity levels at automated monitoring locations in the autumn of 2022

Species/ Species Group	1	2	3	4	5	6	7	8	9	10	11
CP	L	L			L	L		-	-	-	-
Pipistrellus	L	-			-	-		-	-	-	-
<i>Plecotus</i> sp.	L	-			-	-		-	-	-	-
M	L	-			L	-		-	L	-	-
GH	L	-			-	-		-	-	-	-

Activity level classes: H = High, M-H = Moderate – High, M = Moderate, L-M = Low – Moderate and L = Low. Species codes: CP = common pipistrelle; *Pipistrellus* = common/soprano/Nathusius' pipistrelle; *Plecotus* sp. = long-eared bat; M = *Myotis* sp. and; GH = greater horseshoe bat.

- 3.2.10 The Ecobat outputs for 'local scale' show that common pipistrelle was recorded low levels at monitoring locations 1, 2, 5 and 6 within the bat survey area. All species and species groups incorporating the *Myotis* species group were recorded at Low at all locations where it was recorded, as was brown long-eared bat and greater horseshoe bat.

3.3 Environmental conditions

- 3.3.1 Full weather observations recorded are presented in **Table C.1(Appendix C)** for the automated monitoring period.

4. Summary

4.1 Previous surveys

- 4.1.1 There were no reported substantive differences between the data collected for the 2014 ES, and the 2018 survey data; in summary, the bat community was recorded as unexceptional, both in terms of levels of bat activity and the species recorded. The majority of activity was from common pipistrelles typically around 80 – 90% of passes in each survey, however, activity was very strongly associated with features that are known to be attractive to bats (woodland edges and linear features such as streams), with 70 – 90% of bat passes in each survey being recorded on detectors placed at these locations (control locations away from proposed turbines).
- 4.1.2 Four species / species groups that fall into the ‘high risk’ species category and high population vulnerability were recorded (noctule, *Nyctalus* sp., *Nyctalus/Serotine* and *Nathusius*’ pipistrelle), although this includes passes recorded at detector locations placed away from turbine locations and forms less than 2% of contacts (1.86% in 2012/2013; 0.67% in 2018) and they did not therefore form a potentially significant component of the bat community at the site.
- 4.1.3 Determining the relative value of a bat community at a site can be difficult without ‘reference’ detector datasets from the wider countryside or region, the previous studies did not have the Mammal Society Ecobat standardisation tool¹⁴ available at that time. However, the previous studies reported that the data suggested that the community at the site is less diverse than might be expected when compared to the desk-study records for the area and on professional experience of surveys in similar habitats in south and mid-Wales. Overall, previous work concluded that the bat community is categorised as being of ‘negligible’ importance (i.e. no more notable than other areas locally).

4.2 Overview autumn 2022

- 4.2.1 In total, at least four species were confirmed to use the Site during the autumn survey period.
- 4.2.2 *Myotis* recordings could be from whiskered bat, Brandt’s bat, Daubenton’s bat or Natterer’s bat. From the known species distribution across Wales and the habitat requirements and it is not considered that passes were from Bechstein’s bat or Alcaethoe bat.
- 4.2.3 While *Plecotus* sp. recordings cannot typically be assigned to species level based on acoustic files alone, the known distribution of the grey long eared bat is very restricted in the UK with no confirmed records of this species occurring in this region of Wales. It is, therefore, unlikely that this very rare species occurs in the bat survey area, and it is assumed all long-eared bat records collected during the survey work relate to brown long-eared bats.

Bat activity

- 4.2.4 Common pipistrelle was the most widely recorded species across the Site recorded at four turbine locations and make up 70.91 % of all recordings across all monitoring locations and the entire monitoring period, with *Myotis* bats making up approximately 16% each of

¹⁴ The Mammal Society (2017). Ecobat (Online) Available at: <http://www.ecobat.org.uk/> (Accessed October 2022).

recordings and *Pipistrelle* sp. accounted for 10 percent, all the other recorded species or groups of species each accounted for less than 2% of the total.

- 4.2.5 The greatest levels of activity was recorded at turbine location 1, with all four species/species groups being recorded at this location, analysis through Ecobat however determined that levels of bat activity recorded during the autumn monitoring period for all species recorded at all turbine locations was classed as low.

4.3 Conclusion

- 4.3.1 When comparing results from the different studies consideration should be given that autumn is usually associated with lower levels of bat activity and it is also difficult to compare survey work across different years and seasons which have used different survey approaches, however similarities can be seen across results with common pipistrelle being the most recorded species in the 2022 surveys and in the 2010, 2012/13 and 2018 surveys.
- 4.3.2 In previous survey work a greater number of species were recorded with bat activity recorded at all turbine locations across the site; the greatest levels of activity were recorded at detectors placed along woodland edges and linear features, the detector locations at or near turbine locations within open areas of the site recorded substantially less activity.
- 4.3.3 Due to the change in survey guidance for the 2022 survey, only the turbine locations were surveyed (no detectors alongside treelines, or woodland). In comparison to the previous studies surveys in 2022 recorded fewer species and bats were not recorded at all turbine locations, with only low levels of activity recorded at the surveyed turbine locations.
- 4.3.4 With regard to the 'the 'high risk' species category with high population vulnerability (noctule, Nathusius' pipistrelle and Liesler's bat) the number of passes during previous studies was too low to allow for any potentially notable patterns of activity to be identified and the usage of the site by these species did not appear notable, in the autumn 2022 survey none of these species were recorded.
- 4.3.5 The results from the 2022 survey are in line with the previous studies of the site which determined that the bat community appears unexceptional, both in terms of bat activity and the species recorded.

5. Collision Risk Assessment

5.1 Methodology

- 5.1.1 A collision risk assessment for bats has been carried out within this report following the steps outlined in the Bats and Onshore Wind Turbines guidance document³. Estimating the vulnerability of bat populations to windfarms is based on the following factors:
- Relative abundance and collision risk of bat species.
 - The project size and habitat suitability within the site.
 - Bat activity levels recorded at the site.
- 5.1.2 It should be noted that assessment is based on data from the autumn monitoring period only and therefore results present collision risk analysis for autumn only.
- 5.1.3 **Table 5.1** outlines the relative abundance and level of potential vulnerability from wind farms of populations of Welsh bat species which has been used to inform the assessment.

Table 5.1 Level of potential vulnerability of Welsh bat populations to wind farms

Wales		Collision Risk		
Relative Abundance		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 Lesser horseshoe bat		
	Rarest species	Alcathoe's bat Bechstein's bat Brandt's bat Greater horseshoe bat Grey long-eared bat Whiskered bat	Barbastelle Serotine	Nathusius' pipistrelle Noctule Leisler's bat

Extracted from *Bats and Onshore Wind Turbines*: Yellow = low population vulnerability, Orange = medium population vulnerability, Red = high population vulnerability.

- 5.1.4 The level of potential vulnerability identified in **Table 5.1** has been considered alongside scheme details and bat activity levels recorded within the site. This requires a two-stage process, **Table 5.2** provides an indication of the potential site risk based on evaluation of habitat and the size of the development (Stage 1). An overall assessment of risk can then be made, shown in **Table 5.3**, considering the results of the initial site risk assessment in relation to bat activity output from Ecobat (Stage 2). This also considers the relative vulnerability of each species of bat present at the population level. Full details on how the habitat risk and project size was determined are presented in **Table F.1 (Appendix F)**.

Table 5.2 Stage 1 - Initial Site risk assessment

Site Risk Level (1-5)		Project Size		
Habitat Risk		Small	Medium	Large
	Low	1	2	3
	Moderate	2	3	4
	High	3	4	5

Green (1 – 2) – lowest/ low site risk; Amber (3) – medium site risk; Red (4 – 5) – highest/ high site risk

Table 5.3 Stage 2 - Overall risk assessment

Site Risk Level (from Table 4.2)	Ecobat Activity Category (or equivalent justified categorisation)					
	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	16	18
Highest (5)	0	5	10	15	20	25

Low (green) – 0-4; Medium (amber) 5 -12; High (red) – 15 - 25

5.1.5 The scores in the table are a product of multiplying site risk level and the Ecobat activity category. The activity categories equate to those given in **Table 5.1** for high collision risk species.

5.2 Results

5.2.1 As detailed in **Table 5.1**, the following high collision risk species were recorded on site during all survey work:

- Common pipistrelle.

Stage 1 - Initial Site risk assessment

5.2.2 Based on a habitat suitability assessment of the site and following the criteria set out in **Table F.1 (Appendix F)** the Site is considered to provide Moderate potential habitat risk. The majority of the Site topography is undulating, with small river valleys bisecting several hill-tops and ridges. The Site comprises of upland farmland, and enclosed pastureland, both used primarily for sheep grazing. The site access track runs north through the southern portion of the Afan Forest Park, which is dominated by commercial coniferous woodland. The Site borders enclosed pasture land to the north, white moor to the east and coniferous woodland to the west and south. The site is connected to the wider landscape by linear features including woodland and streams, but the bat survey area is bound by busy A roads and residential areas which reduce connectivity.

- 5.2.3 Following the criteria set out in **Table F1, Appendix F** the **project size is Medium**. There will be less than 10 turbines, which falls within the 'Small' project size category, however, the turbines are proposed to be over 100m in height which falls within the 'Large' project size category. Overall, the 'Large' category is typically allocated for the largest developments (>40 turbines). Therefore, due to the low number of turbines¹⁵ it is considered that the 'Medium' project size best reflects the balance of scheme proposals.
- 5.2.4 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)**.

Stage 2 - Overall risk assessment

- 5.2.5 The overall assessment of collision risk has been undertaken for each high-risk species. In order to understand collision risk at average levels of bat activity and at unusually high levels of bat activity, both the highest Ecobat activity category and the most frequent activity category (median) is shown in **Table 5.4**.

Table 5.4 Stage 2 - Overall collision risk assessment for autumn monitoring period

Species	Maximum Ecobat Category (number of nights activity recorded at that category)	Maximum Risk Category	Median Ecobat Category	Median Risk Category
Common pipistrelle	Low (8)	3	Low	3

Overall assessment: Low (green) – 0-4; Medium (amber) 5 -12; High (red) – 15 - 25

- 5.2.6 The maximum Ecobat activity category was the same as the median for common pipistrelle. The overall collision risk category for the approved development is Low for common pipistrelle during the autumn monitoring period.
- 5.2.7 An overall collision risk assessment has also been undertaken for each turbine location as presented in **Table 5.5**.

Table 5.5 Stage 2 - Overall collision risk assessment for autumn monitoring period

Turbine Reference	Common pipistrelle	
	Ecobat Median Category	Overall Collision Risk Category
1	Low	3
2	Low	3
3*		
4*		
5	Low	3

¹⁵ At time of writing an eight turbine scheme is being taken forward

Turbine Reference	Common pipistrelle	
	Ecobat Median Category	Overall Collision Risk Category
6	Low	3
7*		
8	-	-
9	-	-
10	-	-
11	-	-

Overall assessment: Low (green) – 0-4; Medium (amber) 5 -12; High (red) – 15 - 25

*Location 3, 4 and 7 has been removed from scheme designs.

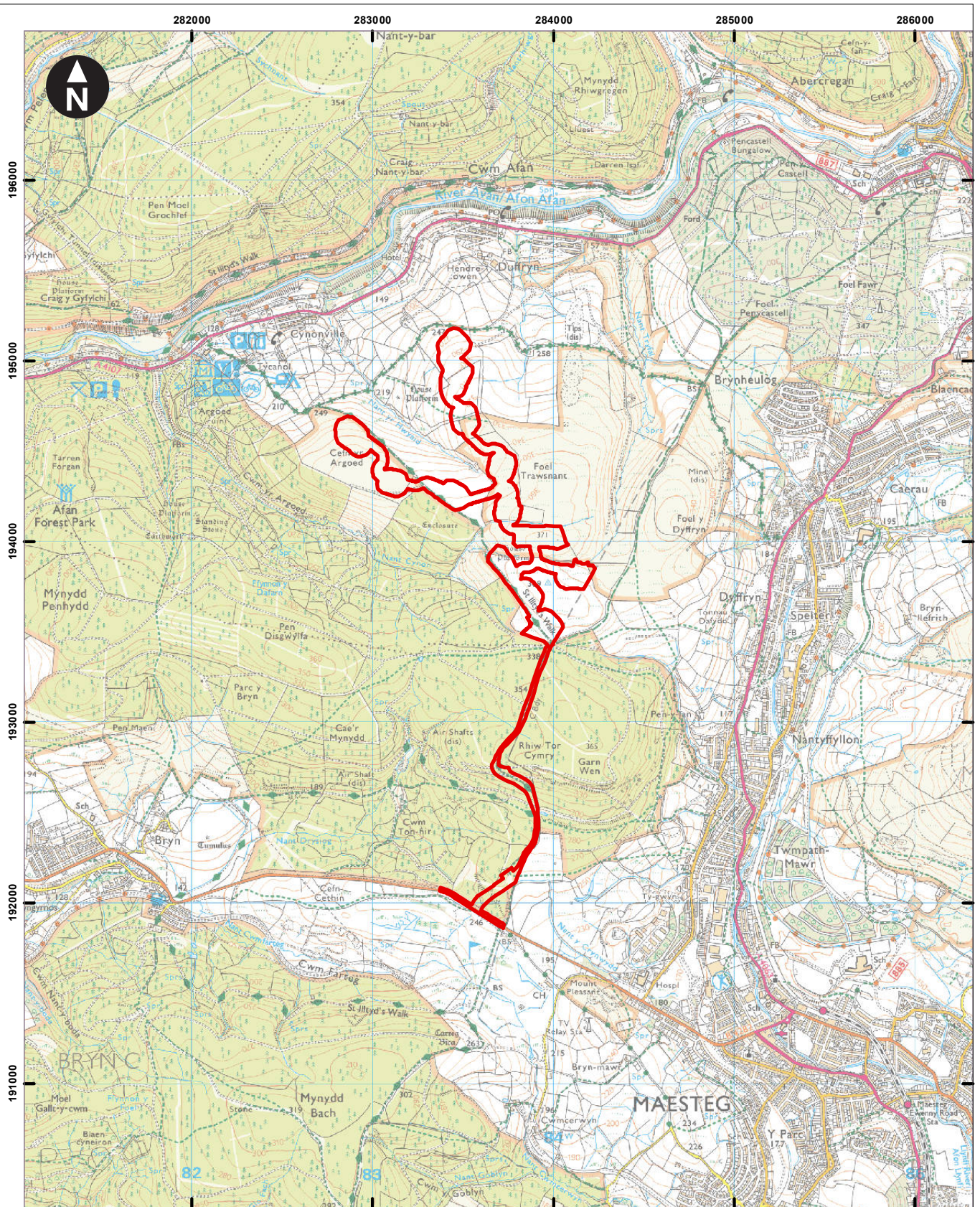
- 5.2.8 Collision risk for common pipistrelle during the autumn monitoring period is classed as low - at turbines 1, 2, 5 and 6.

5.3 Conclusion

- 5.3.1 A collision risk assessment has been undertaken for common pipistrelle which was the only high collision risk species recorded on the Site during the autumn 2022 monitoring period. The overall collision risk category for the approved development for common pipistrelle during the autumn period is low. The overall collision risk category for each turbine location where common pipistrelle was recorded was also low (turbines 1, 2, 5 and 6).
- 5.3.2 The collision risk assessment process used in this report was not available when the previous studies were completed, therefore directly comparing the results is not possible. During the previous studies the levels of common pipistrelle activity was lower at the open turbine locations with the higher levels of activity recorded away from turbine location on treelines. For other 'high-risk' species recorded (soprano pipistrelle, noctule and Nathusius' pipistrelle) the usage of the site was not considered notable and the collision risk was considered low. Overall the previous studies and assessments outlined the risk of significant effects on the bat populations recorded on site was considered low, the results from the autumn 2022 surveys are consistent with this assessment.

Appendix A

Figures



Key



Site boundary

Pennant Walters (FoelT) Ltd
Foel Trawsnant Wind Farm
Bat Technical Note

Figure 1.1
Site boundary

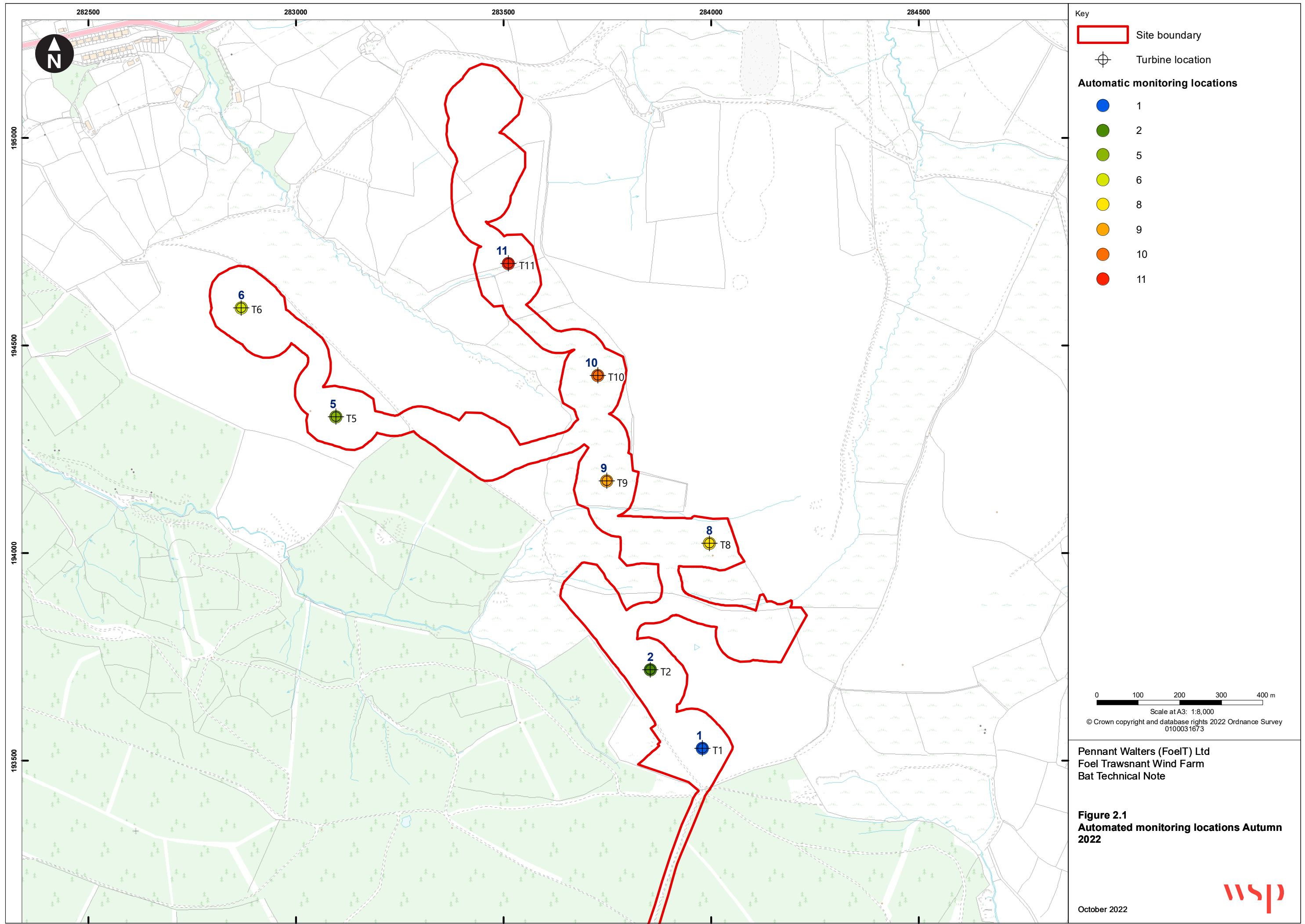
0 500 1,000 1,500 m

Scale at A4: 1:30,000

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0100031673

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Appendix B

Legislation

All British bat species are listed in Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and Schedule 2 of the *The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019*. They are afforded full protection under Section 9(4) of the Act and Regulation 43 of the Regulations. These make it an offence, *inter alia*, to:

- Deliberately capture, injure or kill a bat.
- Deliberately disturb a bat (this applies anywhere, not just at its roost), in particular in such a way as to be likely to:
 - ▶ Impair their ability to survive, breed or reproduce, or rear or nurture their young.
 - ▶ Impair their ability to hibernate or migrate.
- Affect significantly the local distribution or abundance of that bat species.
- Damage or destroy a breeding Site or resting place of any bat.
- Intentionally or recklessly disturb a bat while it is occupying a structure or place that it uses for shelter or protection.
- Intentionally or recklessly obstruct access to any place that a bat uses for shelter or protection (this is taken to mean all bat roosts whether bats are present or not).

Appendix C

Tables relating to survey methods

Table C.1 Automated monitoring weather conditions 2022

Date	Sunrise	Sunset	Temperature (°C)			Average Wind Speed (m/s)	Precipitation (mm)	Average Humidity (%)
			Max	Average	Min			
05/10/2022	07:21	18:43	18	15.2	11	7.61	0	80.9
06/10/2022	07:23	18:41	18	14.8	11	5.58	0	76.4
07/10/2022	07:25	18:38	18	14.5	10	6.50	0	81.5
08/10/2022	07:26	18:36	16	11.4	7	3.17	0	79.8
09/10/2022	07:28	18:34	17	12.8	7	3.53	0	80.8
10/10/2022	07:30	18:32	16	11.8	7	3.64	0	76.7
11/10/2022	07:31	18:30	14	9.6	4	2.39	0	78.5
12/10/2022	07:33	18:27	15	13.5	12	2.94	0	84.8
13/10/2022	07:35	18:25	15	12.5	9	1.83	0	93.5
14/10/2022	07:36	18:23	16	14.1	12	3.89	0	88.2

Appendix D

Tables relating to survey results

Table D.1 Autumn 2022 summary of automated detector monitoring results

Turbine Location	Number of nights recording	CP	Pip sp	BLE	M	GH	Total
1	6	68	11	2	3	1	85
		(11.3)	(1.83)	(0.3)	(0.5)	(0.16)	(14.16)
2	10	5	0	0	0	0	5
		(0.5)					(0.5)
3	N/A Turbine removed from scheme						
4	N/A Turbine removed from scheme						
5	10	2	0	0	1	0	3
		(0.2)			(0.1)		(0.3)
6	10	3	0	0	0	0	3
		(0.3)					(0.3)
7	N/A Turbine removed from scheme						
8	10	0	0	0	0	0	0
9	10	0	0	0	14	0	14
					(1.4)		(1.4)
10	10	0	0	0	0	0	0
11	10	0	0	0	0	0	0
Total	76	78	11	2	18	1	110
Proportion		70.91%	0.10%	0.02%	0.16%	0.01%	

Appendix E

Ecobat analysis

Table E.1 Ecobat summary table showing the number of nights recorded bat activity fell into each activity band for each species.

Detector ID	Species/Species Group	Nights of High Activity	Nights of Moderate/ High Activity	Nights of Moderate Activity	Nights of Low/ Moderate Activity	Nights of Low Activity
1	<i>Myotis</i>	0	0	0	0	3
1	<i>Pipistrellus</i>	0	0	0	0	1
1	<i>Pipistrellus pipistrellus</i>	0	0	0	0	3
1	<i>Plecotus auritus</i>	0	0	0	0	1
1	<i>Rhinolophus ferrumequinum</i>	0	0	0	0	1
2	<i>Pipistrellus pipistrellus</i>	0	0	0	0	2
5	<i>Myotis</i>	0	0	0	0	1
5	<i>Pipistrellus pipistrellus</i>	0	0	0	0	1
6	<i>Pipistrellus pipistrellus</i>	0	0	0	0	2
9	<i>Myotis</i>	0	0	0	0	5

Table E.2 Ecobat summary table showing key metrics for each species recorded. The reference range is the number of nights for each species that your data were compared to.

Detector ID	Species/Species Group	Median Percentile	95% CIs	Max Percentile	Nights Recorded
1	<i>Myotis</i>	1	1 – 1	1	3
1	<i>Pipistrellus</i>	10	0	10	1
1	<i>Pipistrellus pipistrellus</i>	0	0 – 0	0	3
1	<i>Plecotus auritus</i>	19	0	19	1
1	<i>Rhinolophus ferrumequinum</i>	6	0	6	1
2	<i>Pipistrellus pipistrellus</i>	0	0 – 0	0	2
5	<i>Myotis</i>	1	0	1	1
5	<i>Pipistrellus pipistrellus</i>	0	0	0	1
6	<i>Pipistrellus pipistrellus</i>	0	0 – 0	0	2
9	<i>Myotis</i>	3	2.5 - 10	10	5

Appendix F

Collision risk assessment method

Table F.6 Full details relating to Stage 1 – Initial site risk assessment

Site risk level (1-5)		Project size		
Habitat risk		Small	Medium	Large
	Low	1	2	3
	Moderate	2	3	4
	High	3	4	5
Habitat risk	Description			
Low	- Small number of potential roost features, of low quality. - Low quality foraging habitat 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 for 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 foraging for 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 site.			

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 turbines). May have some other wind developments 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.

Appendix G

Scientific names of species

Common name	Scientific name
Barbastelle	<i>Barbastella barbastellus</i>
Serotine	<i>Eptesicus serotinus</i>
Bechstein's bat	<i>Myotis bechsteinii</i>
Brandt's bat	<i>Myotis brandti</i>
Daubenton's bat	<i>Myotis daubentonii</i>
Whiskered bat	<i>Myotis mystacinus</i>
Leisler's bat	<i>Nyctalus leisleri</i>
Noctule	<i>Nyctalus noctula</i>
Common pipistrelle	<i>Pipistrellus pipistrellus</i>
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>
Brown long-eared bat	<i>Plecotus auritus</i>
Grey long-eared bat	<i>Plecotus austriacus</i>
Greater horseshoe	<i>Rhinolophus ferrumequinum</i>
Lesser horseshoe	<i>Rhinolophus hipposideros</i>

