Foel Trawsnant Wind Farm

BAT MONITORING STRATEGY

Axis PED

23/09/26

VERSION 1.2

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1.1	08/09/26	Minor typographical correction and clarification following comment	MWH
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1. Introduction

1.1.1 This bat monitoring strategy has been prepared by Fenland Ecology Ltd on behalf of Axis PED Ltd.

1.1.2 The purpose of this document is to demonstrate a consistent, transparent and standardised approach to the bat survey methodologies used for post-construction bat monitoring for the Foel Trawsnant Wind Farm.

1.2 Site & Context

1.2.3 The Site is located at Foel Trawsnant, approximately 2.3km to the northwest of Maesteg, Bridgend in the Neath Valley, West Glamorgan in Wales (in Figure 1, Appendix A). The general topography of the Site is undulating, with small river valleys bisecting several hill-tops and ridges. The habitats consist of upland farmland, with white moorland and enclosed pasture, both of which are used for sheep grazing. An access track to the Site runs north through the southern portion of the Afan Forest Park, which is an area of commercial coniferous woodland. The Site borders enclosed pasture to the north, white moorland to the east and coniferous woodland to the west and south.

1.3 Project Background

1.3.4 On 25 November 2021 Neath Port Talbot County Borough Council (NPTCBC) granted planning permission for the installation of 11 wind turbines with a maximum blade tip height of 145m together with ancillary infrastructure at Foel Trawsnant (Application Ref P2014/0825).

1.3.5 An amendment to this planning permission was approved on 7 July 2022 (Application Ref P2022/0517), allowing an increase in the rotor diameter of five turbines (T5, T6, T9, T10 & T11) up to 133 m and three turbines (T1, T2 7 T8) up to 117 m, with no increase in overall height. The number of turbines constructed was also reduced from 11 to 8 (removing turbines T3, T4 & T7). This shall be referred to herein as the 'approved development'.

1.3.6 Planning condition 22 of P2022/0517 relates to the production of a bat monitoring strategy and states:

'No development hereby granted planning permission shall occur until the following has been submitted to and approved in writing by the Local Planning Authority:
a) A detailed programme of ongoing, post-construction monitoring of bat injuries, fatalities and activity at the site, covering all turbine locations and spring, summer and autumn in each monitoring year. The detailed monitoring programme shall include:

- *Methods for data gathering and analysis (to include use of specially trained dogs for carcass searches, static detector bat activity monitoring linked to SCADA systems within the turbines);*
- *Location of monitoring;*
- *Timing and duration of monitoring;*
- *Appropriate persons and equipment to carry out monitoring;*
- *Timing and format for presenting and dissemination of monitoring results including submission to all data relevant databases;*

- *Contingency prescriptions that will be carried out in the event of failure to undertake required surveillance; AND*

b) A detailed curtailment plan, which shall be fully implemented, if on-going monitoring (as required by a. above) identifies anything other than a low risk to bat species at moderate or high risk of collision with wind turbines; and;
c) Confirmation of a commitment to the use of wind turbines with SCADA systems to effect any curtailment plan which may be required.
The monitoring programme and any required curtailment shall be carried out in accordance with the approved details, within the agreed timescales.'

1.3.7 It should be noted that for the purpose of minimising risk to bats from the wind farm, Condition 23 of P2022/0517 require the implementation of a stand-off from Turbine 2, and states:

'No development hereby granted planning permission shall occur until a detailed scheme for the manipulating of woodland to achieve the minimum buffer to Turbine 2 has been submitted to and approved in writing by the local planning authority. The detailed scheme is to include confirmation that the trees will be clear felled for the minimum 86m horizontal distance and evidence to confirm that legal control of the land to undertake the required works has been secured. The approved scheme shall be fully implemented prior to the first operation of Turbine 2 and retained for the duration of the development.'

1.4 Purpose

1.4.8 This bat monitoring strategy details the post-construction monitoring requirements of the approved development for the purpose of discharging Condition 22 of P2022/0517. The strategy provides methodology for ecological monitoring, contingency prescriptions and a plan for curtailment, if required.

1.4.9 It shall be the responsibility of the operator of the approved development to implement this post-construction monitoring strategy.

1.4.10 The details of woodland manipulation that are required for discharge of Condition 23 of P2022/0517 shall be provided in a separate report.

1.5 Legislation & Guidance

1.5.11 All British bat species are protected under UK legislation, 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) (further detail is provided in Appendix B).

1.5.12 This document has followed the guidance to post-construction monitoring of bats for wind turbines in NatureScot (2021) *Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation*.

1.5.13 Where appropriate, reference has also been made to the guidance set out in:

- Eurobats (2015) Publication Series 6: Guidelines for consideration of bats in wind farm projects - Revision 2014.

- International Finance Corporation, KfW Group, European Bank for Reconstruction and Development (2023) *Post-Construction Bird and Bat Fatality Monitoring for Onshore Wind Energy Facilities in Emerging Market Countries*. International Finance Coropration.

1.5.14 The current Bat Conservation Trust best practice guidance for bat survey does not provide any additional guidance on the monitoring of wind turbines (Collins 2023[1]). This document has been referred to only where it provides useful contextual information regarding bats.

1.5.15 As set out in Section 2 pre-construction monitoring has evaluated the risk to bats from the approved development in accordance with NatureScot (2021) only during the autumn period. This strategy therefore takes a precautionary approach to the post-construction monitoring. Where appropriate, any additional pre-construction monitoring data in accordance with NatureScot (2021) may be considered to evaluate the proposed strategy (for example, by informing the approach to curtailment). Any changes to the strategy would only be made in consultation with NPTCBC and Natural Resources Wales (NRW).

1.6 Competence

1.6.16 This strategy has been prepared by an ecologist with over 20 years experience of bat ecology, survey and impact assessment. The strategy has been quality assured by an ecologist with extensive experience in bat licencing and the post-construction monitoring to bats as part of large-scale infrastructure projects.

[1] Collins, J (ed) (2023) *Bat Surveys for Professional ecologists: Good Practice Guidance (4th Edition)*. The Bat Conservation Trust, London.

2. Existing Baseline

2.1.1 The following section summarises the existing baseline surveys that have been undertaken to characterise the bat population at the Site. Reference has been made to the following documents:

- Wood Environment & Infrastructure Solutions UK Limited (2019) *Foel Trawsnant Wind Fram Amended Scheme – Environmental Statement Volume 2*
- Wood Environment & Infrastructure Solutions UK Limited (2019) *Foel Trawsnant Wind Fram Amended Scheme – Appendix 9B Baseline Bat Report (Non-avian Ecology)*
- WSP Environment & Infrastructure Solution UK Limited (2022) *Foel Trawsnant Wind Farm – Environmental Statement Addendum*
- WSP Environment & Infrastructure Solution UK Limited (2022) *Foel Trawsnant Wind Farm – Bat Survey Report*.

2.2 Baseline survey

2.2.2 The previous methods and periods of bat survey are outlined in Table 1. This has involved a combination of desk study, roost assessment and activity monitoring.

TABLE 1 PREVIOUS METHOD AND PERIOD OF BAT SURVEY

Year	
Desk Study	A 10 km desk study area for pre-existing information on nature conservation sites that are designated for bats and historical records of bats and their roosts
2010	Preliminary roost assessment
	Activity transects between May and October 2010 (two transects on seven occasions and one transect on five occasions)
2012 / 13	Preliminary roost assessment
	Two activity transects (versions of 2010 transects modified to reflect the revised site boundary) on five occasions between June and October 2012 and once in April 2013.
	SM2 Bat+ static detectors at six locations for 5 nights per month between June and October 2012 and April/May 2013.
2018	Preliminary roost assessment
	Two transect routes each month between April and October 2018.
	SM2 Bat+ static bat detectors at nine locations on seven occasions of 5 night per occasion in the period April and October 2018
2022	Preliminary roost assessment
	Elekon Batlogger A+ static detectors at eight turbine locations for 20 nights in September and October 2022.

2.3 Results & assessment

Designated sites

2.3.3 The previous assessment has confirmed that there are no nature conservation sites (statutory or non-statutory) within 10 km of the Site that are designated for the bat populations they support.

Bat roosts

2.3.4 Desk study and preliminary roost assessment did not identify any known roosts or suitable roosts within 200 m of the Site. However, the likely presence of nearby roosts is recognised by the 2022 ES addendum, which states:

'No roosts were identified on or in the immediate vicinity of the site, although it is likely that bats opportunistically roost in the woodlands near the site, based on occasional atypically early contact times.'

Bat activity

2.3.5 The bat species recorded during previous bat activity surveys comprise common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, noctule, *Nyctalus / Eptesicus* species[2], *Myotis* species[3], *Plecotus* (long-eared bat[4]), greater horseshoe bat and unidentified bat species.

2.3.6 Activity transects and static monitoring (Table 1) confirmed that there have been no substantive changes in bat activity over the survey period from 2010 to 2022. Bat activity has been identified at turbine locations, but the majority (70 to 90%) of bat activity was located away from the these locations and associated with features known to be suitable for bats (woodland edge and linear features). The bat activity was also dominated by common and widespread bat species, particularly common pipistrelle which represented at least 70% of the total registrations over the monitoring period. Overall, the assessments presented in the Environmental Statements have concluded that the bat populations are unexceptional, both in terms of level of activity and the species recorded.

Species at risk from collision

2.3.7 Appendix 3 of the NatureScot (2021) guidance categorises the bat species that are at risk from wind turbines, with the most sensitive species being those defined as 'moderate risk' or 'high risk'.

2.3.8 Monitoring has identified the following 'high risk' species at the Site: common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, noctule and Leisler's bat. Serotine bat has not

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[2] These include noctule and Leisler's bat and, because of the similarity of their acoustic calls, may also include serotine bat.

[3] *Myotis* are likely to represent whiskered bat, Brandt's bat, Daubenton's bat or Natterer's bat based upon the known species distribution across Wales and their habitat requirements, and they are not considered to represent Bechstein's bat or Alcathoe bat.

[4] These are likely to represent brown long-eared bat given the very restricted distribution of grey long-eared bat, with no confirmed records of this latter species within Wales.

been confirmed at the Site but may be a constituent of unidentified *Nyctalus / Eptesicus* calls.

2.3.9 A collision risk assessment was undertaken in autumn 2022 in accordance with NatureScot (2021) guidance. This made a comparison of Site monitoring with national EcoBat data and concluded that where common pipistrelle[5] was recorded (Turbines 1, 2, 5 and 6) the risk was low. An assessment during the spring or summer periods has not been made.

2.4 Mitigation

2.4.10 The design of the approved development minimised risk to bats through the implementation of stand-offs from suitable habitat in accordance with NatureScot (2021).

2.4.11 Assessment demonstrated that Turbine 2 of the approved development represented an increased risk to bats due to its proximity to suitable habitat. Condition 23 of P2022/0517 enforces the required stand-off from Turbine 2 by requiring the removal of woodland.

2.4.12 No further mitigation for bats was specified by the Environmental Statement supporting the approved development.

[5] The usage of the Site by other high-risk species recorded in autumn 2022 (soprano pipistrelle, Nathusius' pipistrelle and noctule bat) was not considered notable and the collision risk low.

3. Monitoring

3.1.1 The following section describes the strategy for post-construction monitoring of bat fatalities and activity at the Site and covers all turbine locations. A reference that outlines the proposed strategy for monitoring is provided in Appendix B.

3.2 Data gathering

Reporting

3.2.2 A report shall be provided annually to NPTCBC and NRW following each full season of monitoring, in advance of the start of subsequent bat activity season (i.e. prior to 01 April). The report will include the results and assessment of the monitoring that is detailed below. The report shall include details of any implemented curtailment measures and, where necessary, recommendations for change (refer to Section 4).

Competence

3.2.3 Field survey and analysis of bat data shall be undertaken by appropriately experienced ecologists[6] and ecology detection dog specialists. Where necessary the ecologists shall hold or be accredited to a relevant Natural Resource Wales survey licence (i.e. for the possession and collection of dead bats).

Monitoring period

3.2.4 The period of post-construction monitoring period shall take place for at least 3 years following construction[7]. The final period of monitoring shall depend upon the evaluation of the monitoring results and shall be agreed in consultation with NPTCBC and NRW.

Carcass searching

3.2.5 Trained search dog and handler teams are the most effective and efficient way of identifying dead bats at wind turbine sites (Mathews *et al.* 2021[8]). Carcass searching shall be undertaken by survey teams comprising appropriately trained detection dogs and experienced dog handlers. The survey team shall follow the following methodology which is based upon Appendix 4 of NatureScot (2021) as developed by Exeter University.

Location and period of survey

3.2.6 Carcass monitoring shall be undertaken within 100 m x 100 m plots that are centred on each turbine (indicative locations are illustrated in Figure 1).

3.2.7 Carcass searching shall be undertake over 60-day survey periods in each of summer and autumn. This approach is appropriate because if fatalities are low at this time of year when bats are most active, then they are highly unlikely to be active at other times of the year. Spring carcass searching shall be undertaken in the first year to evaluate the the risk to migratory bat species, and the need to continue spring monitoring shall be reviewed after this. In the event that a risk to migratory species is determined or where

[6] CIEEM Competency Framework

[7] It may not be necessary for monitoring to take place in consecutive years.

[8] Mathews, F., Richardson S., Lintott, P. & Hosken, D. (2016) *Understanding the Risk to European Protected Species (bats) at Onshore Wind Turbine Sites to inform Risk Management*. Final report. University of Exeter.

multiple casualties[9] are identified during other survey periods, then spring monitoring will continue in subsequent years.

3.2.8 An initial 'sweep' of the plots shall be made prior to surveys to remove any existing carcasses[10] and to put out test carcasses for monitoring. In each period the carcass monitoring shall involve searches on survey occasions at 2 to 4 day intervals within the blocks set out in Table 2.

TABLE 2 FREQUENCY OF CARCASS MONITORING IN EACH SEASON

Days of Survey Blocks					
1 - 10	**11-20**	**21- 30**	**31 - 40**	**41 - 50**	**51 - 60**
Initial sweep, then 3 surveys at intervals of 2 – 4 days (e.g. d1, d4, d7, d10)	No survey	Initial sweep, then 3 surveys at intervals of 2 – 4 days	No survey	Initial sweep, then 3 surveys at intervals of 2 – 4 days	No survey

3.2.9 Monitoring of Turbine 2, where a higher risk to bats was identified, shall be conducted on all survey occasions. A random sample of the remaining seven turbines shall be monitored, so that a total of five turbines is monitored during each survey. If more than one casualty is associated with an individual turbine on any one survey occasion, then that location shall also be monitored on all occasions from that point forward (up to the maximum eight turbines). The percentage of turbines searched represents the **turbine search rate** (e.g. for five of seven turbines the rate shall be 71.4%).

Recording of Data

3.2.10 When any bat casualty is identified the data recorded shall comprise:

- Date & time
- Weather conditions
- GPS location
- Vegetation height at location
- Visible injuries
- Species
- Sex (if possible)
- Photograph

3.2.11 Weather conditions between survey visits shall also be reported.

[9] Taken to mean an annual level of bat fatality that is greater than incidental, refer to the risk-based approach detailed in Section 4 of this report.
[10] Data from existing carcasses shall be recorded but shall not be included in the final determination of site-level fatalities.

3.2.12 Unless being used as part of a carcass removal study, bats should be collected, stored and frozen to allow subsequent DNA confirmation of species (if necessary). Where appropriate carcasses may be sent to a vet for post-mortem investigation of mortality.

Efficiency trials & predator removal monitoring

3.2.13 Efficiency trials will be undertaken during each survey to correct for any factors that may affect searching. In accordance with the NatureScot (2021) guidance the trials shall involve the methods below to determine observer efficiency:

- An efficiency trail shall be undertaken a minimum of once per season for each survey team (comprising dog handler and detection dog).
- The trial shall be completed in at least two 100 x 100 m plots that are located within the Site and which comprise habitat that is representative of those beneath the turbines.
- The extent of the plots should be marked and walked systematically by the survey team.
- A minimum of 10 bat carcasses should be used to allow for a meaningful correction to the data.
- No more than 5 bats carcasses shall be used in each plot.
- The trial carcasses should be marked to distinguish them from actual casualties (with cable tie or ear notching).
- Bat carcasses should be dropped from waist height at randomly selected points in each plot (with the GPS location recorded).
- The person placing the bats must not be involved in the search and should not reveal the exact number of bats to the observer until the trial is concluded.
- Care should be taken to avoid transferring human scent to the specimen, for example by using tongs or disposable gloves. To allow human scent from footprints to dissipate, an interval of at least one hour should be left between placing the bats and conducting the searcher efficiency trial.

3.2.14 This trial would determine the **percentage observer efficiency** for each survey team in each season. The percentage observer efficiency should be maintained above 80%. Survey teams shall be replaced if their associated observer efficiency falls below this threshold for more than two survey periods.

3.2.15 The removal rate by predators shall be quantified by utilising 100 m x 100m survey plots according to the following method:

- Checking of carcass removal shall be conducted on each survey occasion alongside the search of turbines.
- Either marked bat carcasses or carcasses or part-carcasses of similar coloured mammals shall be utilised for the estimate.
- The trial shall be completed in at least two 100 x 100 m plots that are located within the Site, and which comprise habitat that is representative of those beneath the turbines.
- A minimum of 10 carcasses should be used to allow for a meaningful correction to the data.

- No more than 5 carcasses shall be used in each plot.
- Carcasses should be placed at dusk as this simulates the time at which turbine-linked fatalities would be available to predators.
- The trial carcasses should be marked to distinguish them from actual casualties (with cable tie or ear notching).
- Bat carcasses should be dropped from waist height at randomly selected points in each plot (with the GPS location recorded).

3.2.16 This method will allow the calculation of a **percentage predator removal** rate for each block of surveys.

Reporting the number of site level casualties

3.2.17 The number of casualties across the site or, where appropriate, individual turbines shall be determined from the carcass search data, observer efficiency, predator removal rate and turbine search rate. This should be calculated for each survey occasion using the following:

Formula a

$$True\ n\ killed = \frac{number\ found}{observer\ efficiency\ x\ (1 - predator\ removal\ rate)\ x\ turbine\ search\ rate}$$

3.2.18 *True n killed* represents the calculated number (n) of individual fatalities on that survey occasion following the correction for observer efficiency, predator removal rate and the turbine search rate.

3.2.19 Predators will continue to remove carcasses as the surveys continue and the cumulative effect of this removal needs to be corrected in the calculation. The predator removal rate on the following survey occasion shall therefore be corrected for the subsequent interval using the following:

Formula b

$$predator\ removal\ rate = day\ 1\ rate + 0.5\ x\ day\ 2\ rate$$

- day 1 rate - represents the percentage predator removal rate of the preceding survey occasion.
- day 2 rate - represents the percentage rate of the current survey occasion.

3.2.20 The corrected rate of predator removal shall then be applied to *formula a* to calculate the number of fatalities from that interval.

3.2.21 This process shall be applied across each survey block to determine a total number of fatalities. This number can then be used to calculate an average number of fatalities per day. This may be the mean average number or if reasonable levels of variation in the

numbers are detected then the median average number should be used (to prevent outliers having a disproportionate effect on the data).

3.2.22 This final calculated number will be reported as the casualty rate across the site or individual turbines (as appropriate).

Acoustic monitoring

3.2.23 Post-construction acoustic monitoring shall be undertaken at each turbine. Wildlife Acoustic's Song Meter® with Analysis and Remote Transfer (SMART) system[11] shall be used for monitoring.

3.2.24 **To facilitate effective adaptive management and curtailment this monitoring shall integrate with the turbines' Supervisory Control and Data Acquisitions (SCADA) system** (further detail provided in section 4).

Methodology

3.2.25 The acoustic monitoring methodology shall comprise the following:

- At each turbine location separate microphones shall be sited both at nacelle height (or nearest feasible equivalent) and at ground level.
- All detectors shall record full spectrum sound data.
- Monitoring data shall be gathered throughout the main bat active season (01 April to 31 October). The monitoring period may be extended into other months when the prevailing weather conditions (temperatures at least 9°C, low wind speed and no continuous rain) indicate that bats may remain active.
- During each night the activity shall be recorded in the period from 30 minutes before sunset until 30 minutes after sunrise.
- The recorded bat calls will be auto-analysed with Kaleidoscope Pro. The recorded bat calls shall be quality assured to an appropriate level[12] by an Accomplished analyst[13].
- Wind speed and temperature data (and other relevant environmental data available via SCADA) shall also be recorded continuously at nacelle height.

Data analysis and presentation

3.2.26 The following data shall be reported from the monitoring strategy:

- The relative proportion of bat passes from species or species groups at high or moderate risk of collision (common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, noctule bat, Leisler's bat, serotine bat and barbastelle bat).
- Bat activity indices expressed as the rate of bat passes per night.

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[11] SMART system guide

[12] As a minimum this should comprise 10% of all calls, excluding *Pipistrellus* sp. for which there is a high level of confidence in auto-identification. As set out in Collins (2023), due to the complexities of bat calls it is not possible to eliminate the possibility of some misidentification, which may lead to some false positive calls. The levels of confidence in auto-identification following quality assurance shall be sufficiently high that any false positive results are considered likely to be marginal.

[13] CIEEM Competency Framework

- Temporal patterns of activity, including activity relative to sunset/sunrise and seasonal variations.
- The pattern of bat activity with mean nightly temperature and mean nightly wind speed.

Integration with fatality monitoring

3.2.27 The bat activity data shall be reviewed alongside the data from carcass searching to identify any site-specific conditions that are associated with increased risk of fatality. The integrated analysis shall be applied to identify high-risk operating conditions and inform the development and refinement of site-specific curtailment (refer Section 4).

Contingency prescriptions

3.2.28 In the unlikely event that any monitoring cannot be completed as scheduled (for example, due to weather, equipment failure or survey team availability), then the following measures will apply:

- Surveys will be rescheduled within the same seasonal window where possible.
- Where rescheduling is not possible, additional survey effort will be undertaken in the next suitable period.
- NPTCBC will be notified within two weeks of any disruption.

4. Curtailment plan

4.1.1 The following section sets out a strategy for curtailment at the approved development. Although the risks to bats are considered to be low, research has demonstrated that there may be difficulties in predicting the risk of bat mortality associated with turbines (Mathews *et al.* 2021); for example, in some contexts turbines may attract bats (Richardson *et al.* 2022[14]). Curtailment may therefore be applied where the monitoring strategy identifies a risk to bats from one or more of the turbines of the approved development.

4.2 Approach

4.2.2 The approach shall be based upon the carcass and activity monitoring set out in Section 3. This shall provide a framework for adaptive measures to turbine management that shall provide additional mitigation where there is anything more than a low risk to bats from collision.

4.3 Acoustically-Triggered Curtailment

4.3.3 The SMART system uses Acoustically-Triggered Curtailment (ATC), which links real-time (or near real-time) bat activity data and SCADA-derived environmental data to turbine control systems. The system sends a 'pause' to the relevant turbine when specific parameters are met. This method of control via ATC has been applied effectively on other wind turbines in the UK and around the world (Wildlife Acoustics *pers. comm.* and Hayes *et al.* 2019[15]).

4.3.4 Pausing shall initiate the feathering of blades to the fully open position using the pitch controls and disengagement of the generator. This will slow blade rotation speed to below 2 RPM. The emergency brake shall not be used.

4.3.5 ATC shall be activated when predefined combinations of environmental conditions and sustained bat activity indicative of elevated collision risk are recorded. These shall be applied when there is more than a low risk to bats. In the first year the requirement for curtailment shall therefore apply a combination of the following criteria that shall be subject to continual review:

- Wind speeds below 4.0 m/s at nacelle height
- Temperatures equal to or exceeding 10°C.
- No heavy or persistent rainfall precipitation.
- When sustained bat calls are recorded by the nacelle monitor within a 10-minute rolling window of detection.

[14] Richardson, S. M, Linott, P. R., Hosken, D. J., Economou, T. and F. Mathews (2022) Scientific Reports 11:3636 *Peaks in bat activity at turbines and the implications for mitigating impact of wind energy developments on bats*.

[15] Hayes MA, Hooton LA, Gilland KL, Grandgent C, Smith RL, Lindsay SR, et al. (2019) Ecol Appl: e01881 *A smart curtailment approach for reducing bat fatalities and curtailment time at wind energy facilities*.

4.3.6 This approach encompasses all bats regardless of species. This also represents an efficient approach to the real-time analysis of sound data[16] as those species detected near the nacelle are likely to be those at high or moderate risk from collision.

4.3.7 Data from bat activity monitoring and SCADA-derived environmental data will be stored in a proprietary database and can be made available at any time for validation and confirming that the system is operating according to the specified parameters.

4.4 Carcass monitoring responses

4.4.8 Carcass searching shall be used to validate and refine the ATC approach to curtailment. Recorded fatalities shall be interpreted alongside acoustic activity and SCADA-derived operational data to identify causal conditions.

4.4.9 For the purpose of informing an adaptive approach to turbine management, this shall apply the following risk-based approach:

- **Low risk -** no evidence of bat mortality or isolated incidental fatalities not indicative of a pattern of impact.
- **Moderate risk -** repeated or site-specific fatalities that indicate an emerging collision risk.
- **High risk -** sustained or increasing mortality indicative of a significant collision risk requiring adaptive management.

4.4.10 The thresholds between these categories and the trigger for a response shall be established from the site-specific monitoring of fatality rates and acoustic activity of high- or moderate-risk bat species during operational conditions.

4.4.11 Where monitoring confirms evidence of bat mortality indicating more than a low level of risk, additional or enhanced curtailment measures shall be implemented. This may include:

- Increasing the cut-in wind speed further in increments of at least 0.5 m/s.
- Extending the duration of nightly curtailment.
- Expanding curtailment to a greater proportion of the active season.

4.4.12 Measures shall be implemented within one month of exceeding the trigger. Where monitoring indicates elevated mortality, interim precautionary curtailment may be applied immediately pending formal review.

4.4.13 This approach to curtailment would therefore be applied in a stepped manner, with an escalation of measures where monitoring identifies increased bat activity or evidence of elevated mortality. This approach enables mitigation to respond to the site-specific conditions and to be proportionate to actual risk.

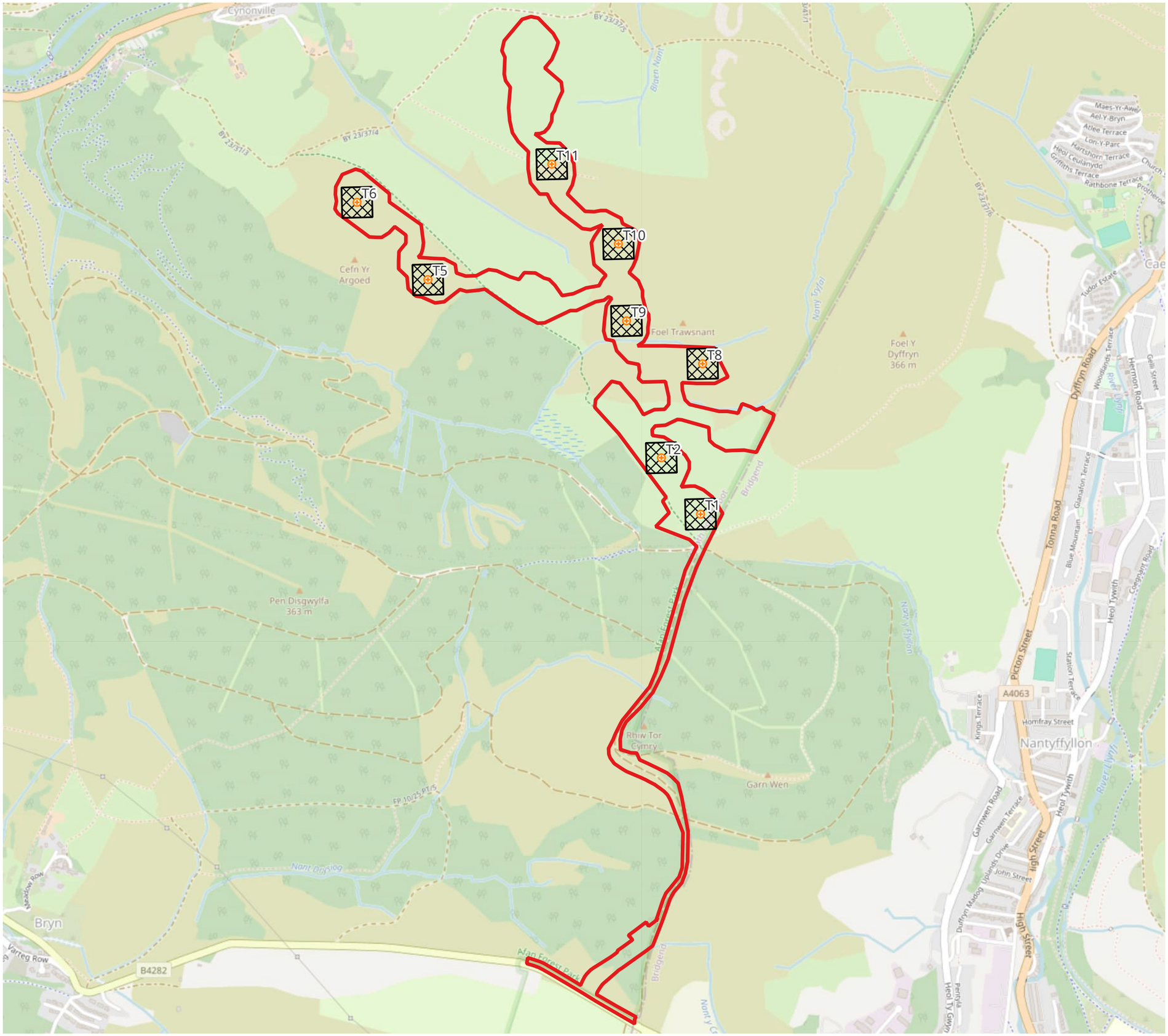
[16] Real time monitoring using proprietorial SMART data transfer, analysis using Kaleidoscope Pro and storage for quality assurance as set out in Section 3.

4.5 Review and change management

4.5.14 The thresholds for curtailment shall be subject to continual refinement using the site-specific monitoring data, particularly the relationship between observed bat activity and fatality rates that are derived from the activity monitoring set out in Section 3.

4.5.15 As a minimum the thresholds and parameters of curtailment shall be reviewed annually as part of the annual report and agreed in consultation with NPTCBC and NRW.

Appendix A Figures



Site Boundary

Turbine Locations

Indicative Carcass Monitoring Locations

0 0.25 0.5 km

N

FIGURE 1

MONITORING PLAN

REVISION
-

SCALE
1:20,000 @ A3

CLIENT
Aĭerion UK Limited

DATE
05/05/26

PROJECT
Foel Trawsnant Wind Turbines

DRAWN
MWH

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Appendix B Monitoring Strategy

TABLE 3 MONITORING STRATEGY TO EVALUATE COLLISION RISK

Impact	Risk	Action & Justification	Survey Effort & Timing
The collision of bats with the wind turbines	The baseline data undertaken in autumn in accordance with NatureScot (2021) identified a low risk to common pipistrelle. However, monitoring in accordance with this guidance has not been completed in spring and summer. Based on the available data a precautionary approach to the monitoring strategy is required to robustly inform the adaptive management of turbine curtailment.	Monitoring of bat mortality with: - Carcass searching - Bat acoustic monitoring. Carcass searching should be informed by efficiency trials and predator removal monitoring. These are required as multiple factors may influence the quality of carcass searching by detection dogs and because the ratee of carcass removal by predators is known to be high. Acoustic analysis of bat sound data should be quality assured to reduce ethe risk of false positive registrations. The survey work should be overseen by technical specialists and by ecology detection dog specialists.	Monitoring to be undertaken for at least 3 years following construction. The final length of the monitoring period will be agreed in consultation with NPTCBC and NRW. **Carcass monitoring** Monitoring seasons: - Spring (April, May) - Summer (June, July, mid-August) - Autum (mid-August, September, October) In each season: - 60-day monitoring in blocks as set out in Table 2. - Sample of at least 5 No. turbines searched (always including Turbine 2). - Include additional turbines if the casualty rate at that turbine exceeds 1 bat on any occasion. - Efficiency trials at least once per season. Comprising monitoring of two 100 x x100 m blocks (further detail in report). - Carcass removal monitoring on each survey occasion, undertaken in two 100 x 100 m blocks (further detail in report). **Acoustic monitoring** Nacelle and ground-level monitoring at each turbine of full-spectrum bat sound data. - Undertaken over 01 April to 31 October. - 30 minutes prior to sunset and 30 minutes after sunrise.

Appendix C Legislation & Policy

The following provides a summary of the legislation that is relevant to the protection and conservation of habitats, flora and fauna. This section does not constitute legal advice.

The Conservation of Habitats and Species Regulations 2017 (as amended)

Although the UK is no longer bound by EU law, the legal protections established under the Habitats and Birds Directives continue to be enforced in the UK under the European Union (Withdrawal) Act 2018. In addition to strengthened powers of enforcement, the important part so of the legislation are:

Designation of Habitat Sites & Appropriate Assessment: The legislation ensures the preservation of important habitats and species through the designation of Habitat Sites (SPA or SAC[17]) as part of the National Site Network. Where any plan or project is likely to impact the features for which a Habitat Site is designated, then the competent authority must undertake an Appropriate Assessment to ensure that the integrity of the Habitat Site is not affected.

Species Protection: European Protected Species (EPS) are those listed on Schedule 2 of the Habitats and Species Regulations 2017 (as amended). Regulation 43 of those Regulations makes it an offence to:

- Deliberately capture, injure or kill an EPS;
- Deliberately disturb an EPS
- Damage or destroy a breeding site or resting place of an EPS; or
- Possess, control or transport, sell or exchange, or offer for sale, any live or dead EPS or part an EPS or anything derived from an EPS or any part of an EPS.

Under the Regulations, disturbance may be taken to include any activity that is likely to:

- Impair their ability:
  - i. To survive, to breed or reproduce, or to rear or nurture their young, or
  - ii. In the case of animals of a hibernating or migratory species, to hibernate or migrate; or
- To affect significantly the local distribution or abundance of the species to which they belong.

The Wildlife & Countryside Act 1981 (as amened)

The Wildlife and Countryside Act 1981 consolidates and strengthens earlier laws related to wildlife conservation, the protection of specific species, and the management of designated areas.

Sites of Special Scientific Interest: The Act allows for the designation and protection of SSSIs, which are areas of land recognized for their ecological or geological importance. Landowners must follow certain regulations to avoid damaging these sites.

[17] Ramsar sites that are designated under the *Convention on Wetlands of International Importance especially as Waterfowl Habitat 1971* (the Ramsar Convention), in the UK, are treated by legislation and policy as having the same level of protection as Habitat Sites, particularly in terms of appropriate assessment.

Protection of Species. Under Section 9 of the Act (section 9(4)(b), 9(4)(c) and 9(5) only), it is an offence (in relation to EPS) to:

- Intentionally or recklessly disturb a bat while it is occupying a structure or place of shelter or protection;
- Intentionally or recklessly obstruct access to any structure or place used by a bat for shelter or protection;
- Sell, offer or expose for sale, or have in their possession or transports for the purpose of sale, any live or dead bat or any part of, or anything derived from a bat (or be responsible for adverts suggesting the intention to do this).

There is a defence under setion10(3)(c) of the Act, which may apply in some limited circumstances. This defence states that any act made unlawful by section 9 is not an offence if it can be shown that *'the act was the incidental result of a lawful operation and could not reasonably have been avoided'*.

Breeding Sites and Resting Places

Currently guidance on the interpretation of the Habitat Regulations continues to be provided by the European Commission's (2021) *Guidance on the strict protection of animal species of Community interest under the Habitats Directive* (the '2021 Guidance'[18])

In relation to the legal protection of breeding site or resting place the 2021 Guidance states:

> *'The protection applies all year round if these sites are used on a regular basis ... [thus] it follows from Article 12(1)(d) that such breeding sites and resting places also need to be protected when they are used only occasionally or are even abandoned but where there is a reasonably high probability that the species concerned will return to these sites and places. If, for example, a certain cave is used every year by a number of bats for hibernation (because the species has the habit of returning to the same winter roost every year), the functionality of this cave as a hibernating site should be protected in summer as well so that the bats can reuse it in winter.'*

Species Protection & Licensing

The Habitat & Species Regulations introduces also a system for obtaining licenses to carry out certain activities that could potentially harm protected species or habitats. Licences may be granted by the appropriate Statutory Nature Conservation Body, i.e. Natural Resources Wales in Wales. Licences may only be granted only after the Statutory Nature Conservation Body is satisfied that

- The proposal are necessary 'to preserve public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment'
- There are no satisfactory alternatives

[18] https://op.europa.eu/en/publication-detail/-/publication/bbc7ace0-27e2-11ec-bd8e-01aa75ed71a1/language-en [accessed 06/07/25]

- The proposals will not be detrimental to the maintenance of the Favourable Conservation Status the species concerned.

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