Technical Appendix 6.4: Further Details on Bat Survey Methodology

Overview of Scottish Natural Heritage (SNH) 2019[1] requirements:

Desk based review

Desk based review of habitat availability in the environs of site is undertaken and the available bat data is reviewed to inform the scope to the bat surveys required. This includes:

- Distances from closest Natura 2000 sites designated for bats (only bat SACs in Ireland are for lesser horseshoe bat *Rhinolophus hipposideros*) - the area of interest (Co. Donegal) is outside the lesser horseshoe bat range in Ireland.
- Examining aerial imagery to identify potential bat foraging and roosting habitats.
- All available bat data needs to be collated for the proposed development area, including species recorded and known roosting sites. This was obtained through Bat Conservation Ireland (BCI) records, however, it was acknowledged that there are few BCI bat records for this locality (using a 10km search around the BWF Site), with only one No. bat roost identified within a bridge closer to Donegal Town.

Note: Both BCI (2012) and SNH (2019) recommend extending the desk-based review to area of 10 km surrounding the application boundary for the site. This was carried out for the BWF Site.

Deployment of static bat detectors

Aims: Static bat detectors were deployed to record the types of bat species present and to provide an overview of how bat activity is broadly distributed over the site.

Survey requirements: SNH (2019) recommend that static bat detectors are deployed at each proposed / potential turbine location for sites with 10 turbines of less. For larger sites (> 10 turbines) detectors are deployed at 10 turbine locations, plus at a ⅓ of the additional proposed turbine locations. As a minimum requirement, static bat detectors should be deployed three times over the main flight periods for bats (April to October) and should be recording *in situ* for a minimum period of 10 nights for each deployment with temperature at sunset 8^{o}C or above, wind speeds less than 5 m/s and avoiding times of heavy / prolonged rainfall.

Seasonal deployments cover the following periods:

Spring (April to May) - recording *in situ* for 10 nights minimum

Summer (June to mid-August) - recording *in situ* for 10 nights minimum

Autumn (mid-August to October) - recording *in situ* for 10 nights minimum

Some sites may demand permanent deployment of at least one static bat detector within the survey area for monitoring bat activity continuously during the whole active bats season (April to October). Recording of bat activity at height can be important for sites where turbines will be erected in forestry. No turbines are proposed on or within 420 m of forestry at the BWF Site.

[1] Scottish Natural Heritage (2019) Bats and Onshore Wind Turbines: Survey, Assessment and Mitigation. Version: January 2019. Jointly prepared by Scottish Natural Heritage, Natural England, Natural Resources Wales, RenewableUK, Scottish Power Renewables, Ecotricity Ltd, the University of Exeter and the Bat Conservation Trust (BCT) with input from other key stakeholders. Available at: https://www.nature.scot/bats-and-onshore-wind-turbines-survey-assessment-and-mitigation

Walked / driven transects & point counts

Aims: Walked / driven transects and point counts are complementary to data collected from static bat detectors; and are important for identifying flight lines and for providing an understanding of the numbers of bats present within the survey area. Driven transects can provide useful information on the wider landscape in the vicinity of the proposed development site. For Barnesmore Windfarm, which is a large, high altitude and exposed site, driven transects were advantageous as ground can be covered efficiently; however, it is important that appropriate microphones are used and are directed above the vehicle. It is also important that the driven transect survey is conducted at a slow speed, remaining below 10 km/h (this was conducted for the BWF Site).

Survey requirements

Under the new guidance (SNH 2019) the application of transect surveys is discretionary, with survey requirements designed on a site by site basis. It was decided that Driven Transects at the BWF Site would be undertaken to enhance coverage of the site, and to provide first-hand surveyor observations from the existing windfarm site.

Roost surveys

There is a requirement to identify maternity roosts and significant hibernation or swarming sites within the application boundary and in the surrounding area at 200 m plus rota radius.

This involves a roost suitability survey in the first instance, and full building inspections as appropriate, following which, emergence surveys are undertaken. Any potential winter roosts are inspected fully. The preliminary assessment at Barnesmore Windfarm did not identify any suitable roost features on the site, or within 200 m of the Application Site.

Monitoring of climatic conditions

SNH (2019) *'strongly encourage'* that an automated weather station is deployed within the study area to collect site-specific weather data including: wind speed, temperature and rainfall. This site-specific weather data is important for the interpretation of bat activity data recorded for a given site. It is suggested that more than one weather station is deployed to allow for equipment failure.

Woodrow utilises weather stations with 3G connectivity that provide data on a real-time basis. This allows weather station functionality to be checked on a daily basis during the survey season and for action to be taken if a station fails or there are concerns regarding the data. This obviates the need for a second weather station.

Calibration and testing of recording equipment

As a standard operating procedure, Woodrow have a stringent schedule of testing all bat recording equipment prior to deployment in the field. This provides an audit trail of checks and ensures that all data can be relied on, forming a robust and defendable data set. Checks undertaken include:

- Pre-deployment device setting and battery checks;
- Pre- and post- deployment microphone sensitivity checks; and,
- Unique numbering of static detectors, SD cards and microphones to allow for reverse checking of possible issues, for example; following an identified microphone failure.

Analysis

Static bat detector data is analysed using Kaleidoscope software to confirm species (or genus for *Myotis* species) and exact number of bat passes for each transect survey or deployment. Analysis guidance is taken from the following books Russ (2012)[2] and Middleton *et al.* (2014)[3] were used to aid in identification of bat calls during data analysis. Transect data was collected using BatLoggers which utilises specialised software called BatExplorer for sound analysis.

[2] Russ, J . (2012) *British Bat Calls: A Guide to Species Identification.*
[3] Middleton, N., Froud, A., French, K., Sowler, S. (2014) Social Calls of the Bats of Britain and Ireland.