BE Brooks Ecological Ltd

Bat Survey
Barnsley BSF Darton

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Reviewed and approved for issue
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Introduction

Brooks Ecological was commissioned to carry out a bat survey at land off Ballfield Lane, Darton, South Yorkshire (SE 297 101). The survey was required to determine if plans to install a wind turbine at the site would impact upon local bat populations.

Bats are afforded full protection under The Wildlife and Countryside Act (1981) plus amendments, and The Conservation (Natural Habitats &c.) Regulations (1994). Under these Acts it is an offence among others, to recklessly kill, injure or disturb bats. It is also an offence to destroy or obstruct a roost even if bats are not in occupancy at the time of the action.

The Conservation (Natural Habitats &c.) (Amendment) Regulations (2007) took effect in August 2007. Under this amendment the majority of defences against an offence are removed, making prevention of impacting upon bats even more important. This amendment increases the need for detailed and well designed bat surveys, prior to carrying out activities that may impact upon bats such as demolition of buildings or removal of trees obstructing roost entrances or flight paths.

Bats can be adversely affected by wind turbines and reports of bat casualties at turbine sites are known. Current research suggests that this may have more to do with the distortion of air pressure around turbine blades than actual impact with bats – obviously the risk to bats is therefore much higher from larger turbines, and in particular the complex effects around multiple turbines.

However given that there is a theoretical possibility that bats could be displaced by or harmed by wind turbines, is important that even single turbines are sited away from transit routes, roost entrances or primary foraging areas for bats.

According to both EU guidance (*Eurobats*) and Natural England (*Technical Information Note TIN051 Bats and Onshore Wind Turbines - Interim Guidance*); certain bat species are more at risk from wind turbines than others. This can be due to varying migration, flight pattern and foraging habits.

The bat species potentially affected at this location, and the scale of risk posed to them as individuals and their populations by wind turbines is represented in table 1.

Table 1 Risk to bat species/populations recorded within 100km of the application site (adapted from Natural England 2009)

Species	Risk status	Population Risk Status
Nathusius' pipistrelle *(Pipistrellus nathusii)*	High	High
Noctule (Nyctalus noctula)	High	High
Liesler's (Nyctalus leisleri)	High	High
Pipistrelles (*Pipistrellus pipistrellus* and *P. pygmaeus*)	Medium	Low
Brown long-eared (Plecotus auritus)	Low	Low
Natterer's (Myotis nattereri)	Low	Low
Daubenton's (Myotis daubentonii)	Low	Low
Whiskered/Brandt's (*Myotis mystacinus* and *M. brandtii*)	Low	Low

Method

At proposed turbine sites EU and Natural England guidance recommends that a series of site surveys are made at the key times of year when bats are active – generally between March and September, consisting of at least one survey/month. Surveys can even extend into the winter months if hibernation roosts have been recorded or are suspected near to the site.

This methodology appears to be 'work in progress' and has been designed to be used on large scale wind farm sites, rather than individual or small scale turbines where the risks of impacting on bats are significantly decreased. Carrying out whole season monitoring of small scale turbine sites seems disproportionate and potentially prohibitive in the uptake of important local energy production projects. The single largest threat to bat conservation in the UK is posed by climate change and it is important that some middle ground is achieved in terms of promoting carbon neutral technologies and achieving species conservation.

Brooks Ecological take a view that, at such sites it is important that a thorough picture of bats' use of the local landscape is arrived at, and that this picture is used to inform the siting (or presence) of the turbine. Determination of such a picture will involve different strategies at different sites – clearly turbines near to cave entrances or ice houses would need significant work in terms of assessing hibernation, for those near trees work would be more focused on inspection of any cavities and observing foraging patterns. We will approach each project individually based on local records and our extensive experience of bat surveys.

Landscape Assessment

In this instance Brooks Ecological was commissioned to carry out the required activity surveys very close to the planning deadline for the project and the work carried out has been steered by our client's discussions with both the Local Planning Authority and Natural England.

Neither permission or time has been available to carry out in depth studies of buildings within the sphere of influence of the site so for the purposes of this assessment their likely use as roosts by bats is assumed (unless evidence to the contrary has been forthcoming).

The primary objective of the surveys is to determine whether the proposal site is used by, or is likely to be used by bats for roosting, foraging or transit, so allowing an assessment of the risk posed to bats. This can be effectively determined through daylight assessment of landscape features and surrounding likely roosting and foraging sites followed up by bat activity surveys in summer unless features suggest bats could use the area in significant numbers at other times of year.

Our brief at this site was to carry out habitat assessment and assess the need for further emergence and activity surveys as required. This looked for key potential bat foraging grounds and commuting corridors was based on a site visit and study of aerial photographs of the landscape within 1km of the site. Features such as belts of woody vegetation or similar linear corridors between areas of invertebrate rich habitat such as cattle grazed pasture, water bodies or woodlands were looked for.

Activity surveys

A combination of 5 nights of Anabat recording, evening emergence activity, and follow up dawn activity surveys were carried out giving several samples of bat's use of the site in summer.

During the activity surveys teams of two surveyors using heterodyne and frequency division bat detectors were employed to note bat passes and record patterns of usage of the wider area around the proposed turbine location. Surveyors also walked transects of the site, surveying all accessible areas, including the grassland, water features, woodland and focussing on linear features, such as hedgerows and woodland edge. Surveys were carried out on the evening of the 4th of June (in ideal conditions for bat activity with temperatures of 15˚C no wind and significant insect activity) and the morning of the 10th of June which was cooler and breezier but still with no rain and good levels of insect and bat activity.

The Anabat SD1 detector was left at the proposed turbine location from the 19th to the 24th May 2010 pointing to the field of the turbine blade. The Anabat allows for sound recordings to be made of any passing bats and subsequent analysis of the sonograms to identify species. This is a very useful tool in such sites as they are especially helpful at detecting and identifying brown long-eared bats (often elusive using traditional detection methods) and for depicting species calls in a cluttered environment. It also allows night long recordings picking up all passes of bats and recording time and duration of the pass and associated activity.

Survey work was directed by Rob Weston BSc (Hons) MSc MIEEM. Rob has several years experience of carrying out bat surveys in a professional capacity and holds a Natural England license in respect of bats (No. 20100611). He is a member of the West Yorkshire Bat Group and runs training in bat surveys for student ecologists.

Results

Landscape assessment

Habitat close to the site is shown on plan BE-D-0727-01. The proposed turbine location is situated within an area of seeded grassland with the ongoing construction site to the south and an improved grassland field to the north which separates the location of the turbine site and the woodland edge/hedgerow which stands c.48m away.

Within the application site and approximately 60m to the east of the proposed site of the turbine is a large mature ash tree containing some potential to support roosting in dead wood and branch scars towards the top of the tree.

The woodland edge and hedge form a linear feature running east-west to the north of the turbine location and forming a boundary between mature woodland to the west and more open fields to the east. This feature is likely to be of value to bats as it constitutes foraging habitat and forms links between other likely valuable habitat features such as Cowcroft Woods just over 50m to the north of the site, farm buildings at Squirrel Hall some 150m to the west and the small valley with spring lines leading towards Birthwaite Hall c. 200m to the north.

Land to the south and west of the turbine site is likely to less valuable to bats being composed of open agricultural and amenity fields with degraded hedgerow networks alongside extensive residential development.

All of the habitat within 50m of the turbine location, with the exception of the wood/hedge is considered to be of low value to foraging bats due to a lack of linear features and species-poor habitats. The completed development around the site will not include any new linear features or other higher value habitats and the grassland is likely to be managed as amenity grassland.

Activity survey- Remote Recording May 19th – 24th

Recordings of several species of bats were made over the 5 night period. These included common pipistrelle, noctule, soprano pipistrelle, an indeterminate *Myotis* bat species, brown long-eared, and a single call which could be a Leisler's bat.

Of these species by far the most calls were attributable to the two pipistrelle species and noctules and of these only the common pipistrelle bats appeared at a time suggestive of roosting nearby. Noctules although appearing first on the recordings are a species which emerge much earlier than other species, fly quickly and could still be roosting some distance from the site. Other species appeared much later at night and are assumed to be using the hedgerow and woodland edge for commuting and foraging through the night. As only one potential call of the rarer Leislers bat was detected during the whole period it has not been possible to confirm the presence of this species or separate this from the commoner Noctule bats.

Emergence Survey 4th June

9 common pipistrelle bats were seen to fly directly from the isolated tree at just after 10pm to the east and must be assumed to have emerged from a roost here.

1 Noctule bat flew high (c. 50m) over the site from west to east.

Low levels of common pipistrelle activity was recorded around the hedgerow and woodland edge to the north of the site.

Bat activity recorded is summarised in plan BE-D-0727-01.

Dawn Survey 10th June

Common pipistrelles were again seen foraging around the hedgerow and woodland to the north of the site.

4 common pipistrelle bats were seen close to the isolated tree at between 3.52am and 4.23 am on site and are assumed to have returned to a roost there.

A single noctule bat flew high over the site (c.50m) in a south east to northwest direction at 3.35.

Bat activity recorded is summarised in plan BE-D-0727-01.

Evaluation and Recommendations

The picture built up of the turbine site in relation to bats is one of an area of habitat which is not good foraging, commuting or roosting habitat, but is in close proximity to features valuable for all of these purposes.

The hedgerow to the north of the site is used by small numbers of up to 4 species of bat during the night for foraging and commuting. The majority of this use is by common pipistrelle bats with soprano pipistrelles, brown long eared bats and

Myotis bats present in much smaller numbers. All of these species are perceived (in available guidance) to be at low risk at a population level from wind turbines. A standoff between the hedgerow and the turbine will be required, whilst the current Natural England guidance suggests a safe distance of 50m from such features there may be room for discussion with the planning and statutory authorities around this distance in view of the relatively low levels of bat activity by species of low risk and the presence of only a single turbine. If the distance issue cannot be resolved then other suitable mitigation should be explored.

Noctule bats have been recorded at the site and are a species deemed to be at high risk from wind turbines, however they have been found in low numbers in our survey and only commute over the site at a high level – a height that would avoid impact with the proposed turbine.

Common pipistrelle bats have been found to roost in the mature tree on the site and to the east of the proposed turbine site. A standoff of minimum 50m between both the roost, and the route between this and the hedgerow (shown to be used by the bats), and the turbine will be required. Again if this is not possible other suitable mitigation will need to be investigated.

References

Bat Conservation Trust (2007) Bat Surveys – Good Practice Guidelines

English Nature (2004) Bat Mitigation Guidelines. English Nature, Peterborough.

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