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Lane End Farm

On behalf of Hallmark Power Ltd.

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Breeding Birds Survey and Bat Roost Inspection

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1 SUMMARY

- 1.1.1 This report presents the findings of a series of breeding bird surveys and a bat roost inspection survey undertaken on land at Lane End Farm, Bradnop near Leek, Staffordshire. The surveys were commissioned in relation to the proposed erection of a single small wind turbine.
- 1.1.2 As part of the application, breeding bird surveys and a bat roost inspection survey was required in light of an objection raised by Natural England based on a previously submitted application involving two small wind turbines. Application Number 13/00345/FUL.
- 1.1.3 Avian Ecology Ltd. therefore undertook the requested surveys in spring and summer 2013 to provide further information. This report details the results and offers recommendations, if required and provides an appraisal of findings in relation to the development.
- 1.1.4 No bat roost was identified within the Town Field Farm house and barn, although historic feeding signs were found.
- 1.1.5 The turbine is located 50 metres from any suitable bat habitat feature and over 200m from any potential bat roost, and therefore complies with Natural England (TIN051) guidance.
- 1.1.6 The breeding bird surveys identified an assemblage of common and widespread breeding birds. The proposed turbine is considered unlikely to represent a threat to the integrity of any populations of any bird species considered vulnerable to wind turbine developments in accordance with Natural England guidance TIN069.
- 1.1.7 Overall, no negative effects are anticipated on any bat roost and although minor collisions of common and widespread bird species may occur (as is the case with any wind turbine development), no negative effects on any population level are anticipated.

2 INTRODUCTION

2.1 BACKGROUND

- 2.1.1 Avian Ecology Ltd. was commissioned by Hallmark Power Ltd. to undertake a series of breeding bird surveys and a bat roost inspection survey on land at Lane End Farm, Bradnop near Leek, Staffordshire. The surveys were commissioned in relation to the proposed erection of a single small wind turbine (24.6m hub, 19.2m rotor diameter).
- 2.1.2 A previous application was submitted on the land for two small wind turbines: Application Number: 13/00345/FUL. As part of the previous application, the requirement for further surveys was requested by Natural England in their consultation response dated: 30/04/2013, as detailed below.

'The buildings at Town End Farm have the potential to be used by bats, and this and other potential roost sites should be investigated further at an appropriate time of year.

If, following further investigation of these features, no evidence of roosting bats is found, then given the limited opportunities for foraging bats offered by the surrounding area, together with the distance of the proposed turbines from potential commuting corridor features, we would agree that no further detailed surveys of bat activity in the area would be required.

In view of this, **Natural England wish to register an objection** to the proposals as currently submitted, pending further survey work for bats and birds, as recommended in the EMEC ecological report.'

2.1.3 Therefore, for the proposed single turbine application further breeding bird and bat roost inspection surveys were undertaken. Surveys have been undertaken in line with recommendations outlined in the Ecological Appraisal report issued by EMEC Ecology (2013).

2.2 SITE DESCRIPTION

- 2.2.1 The site comprises pasture fields surrounded by dry stone walls. Scattered scrub and scattered broadleaved trees are also present. A stream flows along the eastern boundary of the turbine field with further streams in the wider context..
- 2.2.2 The site is located approximately 1km south-east of Bradnop. The surrounding land comprises further pasture bordered by dry stone walls with occasional mature trees. Town Field Farm (farm house and barn) occurs to the south the proposed turbine.

2.3 AIMS AND OBJECTIVES

- 2.3.1 The aims and objectives of the study was to identify the potential presence of a bat roost within Town Field Farm and outbuildings and establish the breeding bird community present within the project site and surrounding habitats.
- 2.3.2 An updated appraisal of breeding birds and potential bat roosts is then provided to inform the planning application.

2.4 LEGISLATIVE FRAMEWORK

<u>Birds</u>

2.4.1 All wild birds, their nests and eggs are, with few exceptions, protected under the Wildlife and Countryside Act 1981 (as amended). Over eighty species or groups of species are listed under Schedule 1 of the Act, which confers special protection with increased penalties for offences committed. Additional protection is provided to species listed under Directive 2009/147/EC on the conservation of wild bird (the 'Birds Directive'). Following recent revisions, fifty-nine species are now listed on the UKBAP, now protected under the 'UK Post-2010 Biodiversity Framework'.

<u>Bats</u>

- 2.4.2 All species of British bat are listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), and are therefore afforded special protection. It is an offence to:
 - Intentionally kill, injure or take any wild bat;
 - Intentionally damage, destroy or obstruct access to any place that a wild bat uses for shelter or protection; and
 - Intentionally or recklessly disturb any wild bat while it is occupying a structure or place that it uses for shelter or protection.
- 2.4.3 Bats are further protected under the Conservation of Habitats and Species Regulations 2010 (as amended) which make it an offence to:
 - Capture or kill a bat;
 - Significantly disturb a bat (in any location); and
 - Damage or destroy a breeding site or resting place of any bat.

3 METHODOLOGY

3.1 BREEDING BIRD SURVEYS

- 3.1.1 Breeding bird surveys (BBS) were undertaken by Pete Antrobus; a highly experienced ornithologist, with over 20 years' experience. Mr Antrobus is fully conversant in recognised survey methodologies.
- 3.1.2 The BBS were undertaken in the spring and summer of 2013. The methodology employed was based-upon the Common Bird Census (CBC), as detailed in Gilbert *et al.* (1998). This involved walking the survey area and noting species observed in order to enable an estimation of the number of breeding bird territories present.
- 3.1.3 Survey effort concentrated on land that fell within the landownership boundary and all areas within approximately 500m of the proposed turbine. Where access permitted, the survey area was walked using tracks and field margins to complete a predetermined route around the landownership boundary. All species and their behaviour (singing, carrying food etc.) were mapped in the field.
- 3.1.4 All surveys were undertaken during daylight hours and in fine conditions (dry, warm, light breeze and no rain). Survey effort is presented in Table 1.

Survey Date	Start Time	Finish Time		
Visit 1 – 20/05/2013	08.00	10.30		
Visit 2 – 11/06/2013	08.00	10.00		
Visit 3 – 27/06/2013	10.00	11.45		

Table 1: Breeding Bird Survey Effort

3.2 BAT ROOST INSPECTION

- 3.2.1 A bat roost inspection survey was undertaken on Town Field Farm and outbuildings and the Town Field Farm Barn on 25th July 2013 by Andrew Logan MSc MCIEEM and Stacey Whiteley BSc ACIEEM and supervised by Roy Leigh ACIEEM (Natural England Bat Licence number: 2014407).
- 3.2.2 The barn is located c.220m south of the proposed turbine and the farm house is located c.270m south.
- 3.2.3 All buildings within the complex were surveyed internally and externally for evidence suggesting the presence of roosting bats, such as droppings, feeding remains and characteristic staining associated with bat roosts. Full details are provided below:

Equipment Used

- 3.2.4 To aid the roost inspection the following equipment was used:
 - Telescopic ladders reach 4m in height.
 - Clu-lite torch.
 - Explorer Platinum Endoscope with detachable camera.
 - Anabat SD2 bat detector
 - Digital Camera
 - Binoculars

External Inspection

- 3.2.5 The external inspection of the buildings were undertaken; the objective of the survey was to locate any signs of bay activity, for example:
 - Bat droppings;
 - Feeding remains;
 - Grease staining/ urine marks;
 - Corpses or skeletons;
 - Potential access points to internal roosts.
- 3.2.6 The bats signs listed above are visible for the outside of the building. The following areas were searched using binoculars:
 - Ground floor casing;
 - Rendering;

- Any cracks/ holes in brickwork/ woodwork;
- Between wall cavities at window points.

External Inspection

- 3.2.7 Bats regularly utilise specific areas within roof spaces (see below), which were searched as a priority for any bat field signs:
 - Dividing walls;
 - Beneath hip joints and junctions
 - Staining above/ around gaps;
 - Staining around tile gaps;
 - Timber / wall joints.

4 **RESULTS**

4.1 BREEDING BIRD SURVEYS

- 4.1.1 Throughout this report a summary of each species' conservation status is given using the following abbreviations:
 - S1 WCA: species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended).
 - Annex 1: species listed on Annex 1 of the EC Birds Directive.
 - S41 NERC: species listed on Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.
 - UKBAP; species listed on the UK Biodiversity Action Plan.
 - LBAP: species listed on the local (Staffordshire) Biodiversity Action Plan.
 - BoCC: Birds of Conservation Concern as listed by leading bird conservation organisations in the UK, including the RSPB and BTO. Red and amber categories are given. Eaton *et al* (2009)

Species	Conservation status	20/05/13		11/06/13		20/06/13		Estimated
opecies		Min	Max	Min	Max	Min	Max	(pairs)
Curlew Numenisus arquarta	S41, BoCC – Amber, UKBAP	3	4	1	2	1	2	1
Skylark Alauda arvensis	S41, UKBAP, BoCC - Red	4	4	6	10	4	5	5
Meadow pipit Anthus pratense	-	7	10	7	10	5	8	5
Swallow Hirundo rustrica	BoCC - Amber			1	1			1

Spacias	Conservation status	20/05/13		11/06/13		20/06/13		Estimated
Shecies		Min	Max	Min	Max	Min	Max	(pairs)
Wren	-			1	1			1
Troglodytes								
troglodytes								
Robin	-			1	1			1
Erithacus								
rubecula								
Blackbird	-	1	1	3	3			2
Turdus merula								
Whitethroat	BoCC - Amber	1	1	1	1			1
Sylvia								
communis								
Magpie	-	1	1					1
Pica pica								
Jackdaw	-	1	1					1
Corvus								
monedula								
Carrion crow	-			1	1	1	1	1
Corvus corax								
Chiffchaff	-	1	1					1
Phylloscopus								
collybita								
Linnet	S41, UKBAP,	1	1					1
Carduelis	BoCC - Red							
cannabina								
Reed bunting	BoCC- Amber			1	1	1	1	1
Emberiza								
schoeniclus								

Table 2: Breeding bird species recorded within 500m of the proposed turbine.

- 4.1.2 In addition to the species listed in Table 2, the following species were also recorded, but not considered to be breeding during the Breeding Bird Surveys:
 - Four swifts *Apus apus* were recorded to fly over the site on 20/05/2013.
 - A buzzard *Buteo buteo* flew over the site on 20/06/2013, high, heading east.
 - Four lesser black-backed gulls *Larus fuscus* were recorded flying north west on 20/06/2013.
- 4.1.3 The majority of curlew *Numenisus arquarta* activity was recorded within the semiimproved grassland outside the land ownership boundary to the north west. The fields were grazed by sheep during the surveys.
- 4.1.4 Two barn owl *Tyto alba* boxes had been recently installed within the Town Field Farm barn, located c.220m from the proposed turbine. The boxes were not internally inspected during any field visit but numerous pellets were found inside and outside the barn buildings. From internal inspection of the roof void, the boxes appeared to be recently used, with feathers and staining at the box edges. It is possible a pair may be breeding within the barn structure.

4.2 BAT ROOST INSPECTION

- 4.2.1 The bat roost inspection was undertaken on 25th July 2013 at 11.00. The weather was dry, sunny 20°C and very low wind speeds.
- 4.2.2 Town Field Farm house was of traditional stone construction, having recently been repointed on the outside walls. The pitched roof was covered in slate tiles in good repair. The building had the following features, in line with BCT guidelines 2012:
 - Pre 20th century or early 20th century construction;
 - Roof warmed by the sun on south facing slope;
 - Weatherboarding in good repair, no holes or tears visible in the loft space; and,
 - Low level of disturbance by humans.
- 4.2.3 Access was available to all roof spaces and no limitations of survey are anticipated.
- 4.2.4 The roof void was split into two separate compartments (east and west). The floor of the roof spaces were open, with exposed insulation material between the wooden supports. No clutter was present, making it easy to identify any feeding remains or droppings on the floor.
- 4.2.5 The roof space was low, approximately 1-2m in height, underlined with bitumen felt in good condition, with no tears or holes. The ceiling was largely open with wooden struts exposed. Cobwebs masked the majority of timbers indicating limited bat use.
- 4.2.6 The roof void of the barn was much larger, up to 2.5m in height and of wooden construction, with bitumen felt lining and slate tiled roof. The floor of the roof void was wooden cladding (recently laid) and empty, allowing the easy identification of bat droppings and feeding remains.
- 4.2.7 The barn was of similar construction to the farm house, of traditional stone construction, having recently been re-pointed on the outside walls. The pitched roof was covered in slate tiles in good repair.
- 4.2.8 No roosting bats were found in the roof space of Town Field Farm or the barn structure and the loft spaces showed no signs of recent use. A small number of bat droppings were found in the Town Field Farm house most likely relating to common pipistrelle *Pipistrellus pipistrellus* and brown long-eared *Plecotus auritus*; however the droppings were very old. Dropping identification was based on professional experience; the droppings were too old and decomposed to allow DNA analysis. Some feeding remains were found within the farm house roof space, and barn. No evidence of current or recent use was found in any structure.
- 4.2.9 The old droppings (<3 in the farm house) and feeding remains indicate the structures may be used occasionally by one or two bats as a transient roost but no main or maternity roost is present.
- 4.2.10 Features present are considered offer limited suitable opportunities for roosting bats, including brown long-eared and common pipistrelle bats. Therefore, the buildings are considered to offer low potential to support roosting bats.

5 LIKELY EFFECTS AND CONCLUSIONS

5.1 BREEDING BRIDS

- 5.1.1 The potential impacts of wind turbines on birds fall broadly into two categories; collision risk and displacement. The risks to individual species vary depending on ecology and behaviour and some species are widely classified as more vulnerable than others.
- 5.1.2 In general, vulnerable species are considered to be rarer raptors, upland waders and significant concentrations of wildfowl.
- 5.1.3 The breeding bird surveys identified a general farmland breeding bird assemblage onsite, some of local conservation concern, such as skylark. The ornithological value of the site itself is considered to be low; however the wider environment, comprising farmland and grazed improved grassland, is likely to support a range of locally notable breeding bird species of farmland habitats.
- 5.1.4 Farmland birds are not considered to be adversely affected by operational wind turbines. Research in both Spain (De Lucas *et al.*, 2005) and the UK (Devereux *et al.* 2008) has shown that various groups of farmland birds are largely unaffected following wind farm construction.
- 5.1.5 The only species considered sensitive to wind turbine developments recorded during the surveys is curlew. On one survey date up to seven curlew were recorded and the remaining two surveys identified a potential breeding pair within the semi-improved grassland fields to the north of the land ownership boundary, over 100m from the proposed turbine.
- 5.1.6 As a worst case, the construction phase could lead to a small reduction in the breeding population of these species within 500m of the proposed turbines as identified by (Pearce-Higgins et al., 2012). This is likely to be limited to a small number of individual birds. There is also potential for these species to be disturbed and therefore displaced during the construction of the access track if works are required within the breeding season. The access track has been designed to stick as close to boundary features as possible to minimise impact on the wider habitats. As a worst case, should these works be required in the breeding season, there is potential for low level displacement of breeding waders to occur as a result of the works.
- 5.1.7 Waders are not typically considered vulnerable to collision effects (e.g. Langston and Pullan 2003, Whitfield, 2007), and subsequently collisions are likely to be so rare as to have a negligible effect on the species at any population level.
- 5.1.8 None of the species recorded during the breeding bird surveys were species considered vulnerable to wind turbine development (NE, 2010). In the context of the proposed development, only waders and common passerines have the potential to occur within the local area with any frequency.
- 5.1.9 Wind turbine developments have been implicated in the displacement of skylark territories. Hötker, Thomsen and Jeromin (2006) summarise the results of 6 studies specific to skylark during the non-breeding season, which report a mean displacement distance of 38m.

- 5.1.10 However, a recent study conducted Steinborn and Reichenbach (2011), which took the influence of habitat quality into account, did not find any detectable displacement of skylark from good to poor habitat due to turbine proximity.
- 5.1.11 There is some evidence that resting and breeding birds become accustomed to the disturbance effects of wind turbines, resulting in reduced displacement distances over time; a process generally referred to as 'habituation'. Approximately half of the long-term studies reviewed by Hötker, Thomsen and Jeromin (2006) indicated the occurrence of habituation; however few species-specific studies contained sufficient data for assessment.
- 5.1.12 Adopting a precautionary approach, it is considered possible that the development may have a minor adverse impact on breeding curlew and skylark at the local scale, due to displacement effects. However, this is not considered significant given the scale of the development and the abundance of similar habitat within the wider landscape.
- 5.1.13 Collision impacts are considered to represent a minor adverse impact on commoner bird species and a negligible impact to scarcer species. Similarly, displacement impacts may have a small-scale impact on some species; however neither impact is considered to represent a threat to the integrity of any species at a population level.
- 5.1.14 Barn owl evidence was recorded within the Town Field Farm barn building suggesting current use. Barn owl are protected under Schedule 1 of the Wildlife and Countryside Act (1981, as amended) and is a widespread species in farmland habitats across the UK. Although afforded strict protection under UK legislation, barn owl are not generally considered vulnerable to wind turbine developments due to their foraging behaviour: when foraging barn owl fly at relatively low altitudes in order to detector their prey, this therefore rarely brings them within the rotor swept height area of a turbine.
- 5.1.15 Overall, there may be minor negative impacts on commoner and widespread species, although these are unlikely to represent a threat to the integrity of any species at population level. No adverse impacts on populations of pertinent species, (following NE criteria), as none were recorded during the surveys, are anticipated.
- 5.1.16 It is therefore concluded that a single turbine development at this location is unlikely to have a significant impact on ornithological interests.

5.2 BATS

- 5.2.1 Bats and their habitats are protected under the Wildlife and Countryside Act 1981 (as amended), and by the Conservation of Habitats and Species Regulations 2010. In summary, these make it an offence to damage, destroy or obstruct any place used by bats for breeding and shelter, disturb a bat, or kill, injure or take any bat.
- 5.2.2 The internal inspection surveys found some old feeding remains and droppings within the roof voids, but due to the lack of suitable features which will attract roosting bats (e.g. crack, holes, loose tiles), potential is considered to be low and the buildings are only likely to support small numbers of transient bats on an infrequent basis.

- 5.2.3 The recent structural work (external wall re-pointing) will likely restrict the use of the building by bats however some sections may still be accessible and it is possible that an individual or small number of bats may be present any time of the year.
- 5.2.4 The proposed development of a single small wind turbine does not require the destruction of any roost site and the turbine is located over 250m from any potential bat roost.
- 5.2.5 Due to the distance of the proposed turbine from Town Field Farm, and the nature of the infrequently used transient roost, no impacts on any roosting bats are anticipated by the proposed development.
- 5.2.6 The proposed turbine also conforms to Natural England TIN059 (2009) guidance, being located in excess of 50m from any bat habitat feature. The nearest feature is a stone wall, 55m from the proposed turbine.
- 5.2.7 Overall, based on the findings of the EMEC Ecology report (2013), and the bat roost inspection survey undertaken by Avian Ecology (2013), the site is considered to be low risk in line with BCT guidelines (2012). Whilst minor impacts on individual bats cannot be precluded, impacts on bat populations are considered highly unlikely to occur.

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