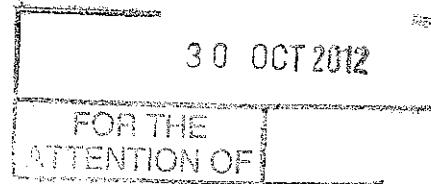


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Carr Hall Farm,
Wilpshire



Bat and Bird (Owls & Raptors) Survey Report

October 2012

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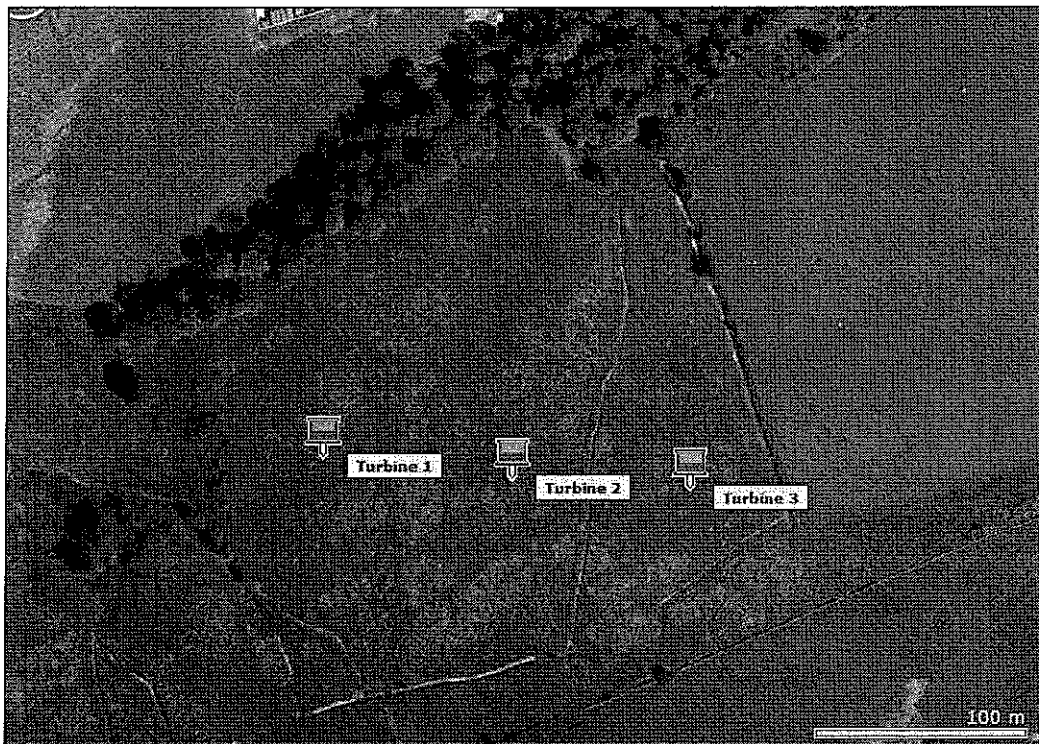
1 Introduction

This report presents the results of bat surveys and an owl and raptor scoping survey undertaken at Carr Hall, Wiltshire, Lancashire, BB1 9LJ. The surveys were commissioned in relation to the proposed installation and operation of 3 no. 50 kW wind turbines each with a rotor radius of 9.6 metres and a maximum height of 46 metres. This report should be read in conjunction with the previous report entitled '*Ecological Appraisal & Bird Survey Report*' (Quants Environmental, June 2012).

The turbines are proposed to be positioned on the upper gradient of a pasture field to the south of Carr Hall Garden Centre. The grid reference for each turbine location are presented below and illustrated in Figure 1.

- Turbine 1 - SD 69953 32889
- Turbine 2 - SD 70044 32878
- Turbine 3 - SD 70131 32872

Figure 1: Aerial image of the proposed turbine locations



2 Survey Methodology

2.1 Desk Study

East Lancashire Biological Record Centre (ELBRC) was contacted for records of bats within 2km of the site. In addition, the National Biodiversity Network (NBN Gateway) website was accessed for additional records of bat species within the relevant grid squares (SD63 & SD73).

2.2 Bat scoping survey

Structural and habitat features up to 200 metres from the proposed locations of the turbines were subject to a general assessment to determine the suitability of the features to support foraging / commuting bats and potential roost sites

2.3 Dusk emergence survey

A dusk emergence survey was undertaken by Ryan Knight AIEEM (holding Natural England Bat Licence No. 20120937) on 4th September 2012. The surveyor was positioned on the southern perimeter of Carr Hall Wood (approximately 160 metres north of the nearest proposed turbine location) which would allow a determination of emergence activity within the area between Carr Hall Wood and the wind turbines. The position of the surveyor is illustrated in Figure 2

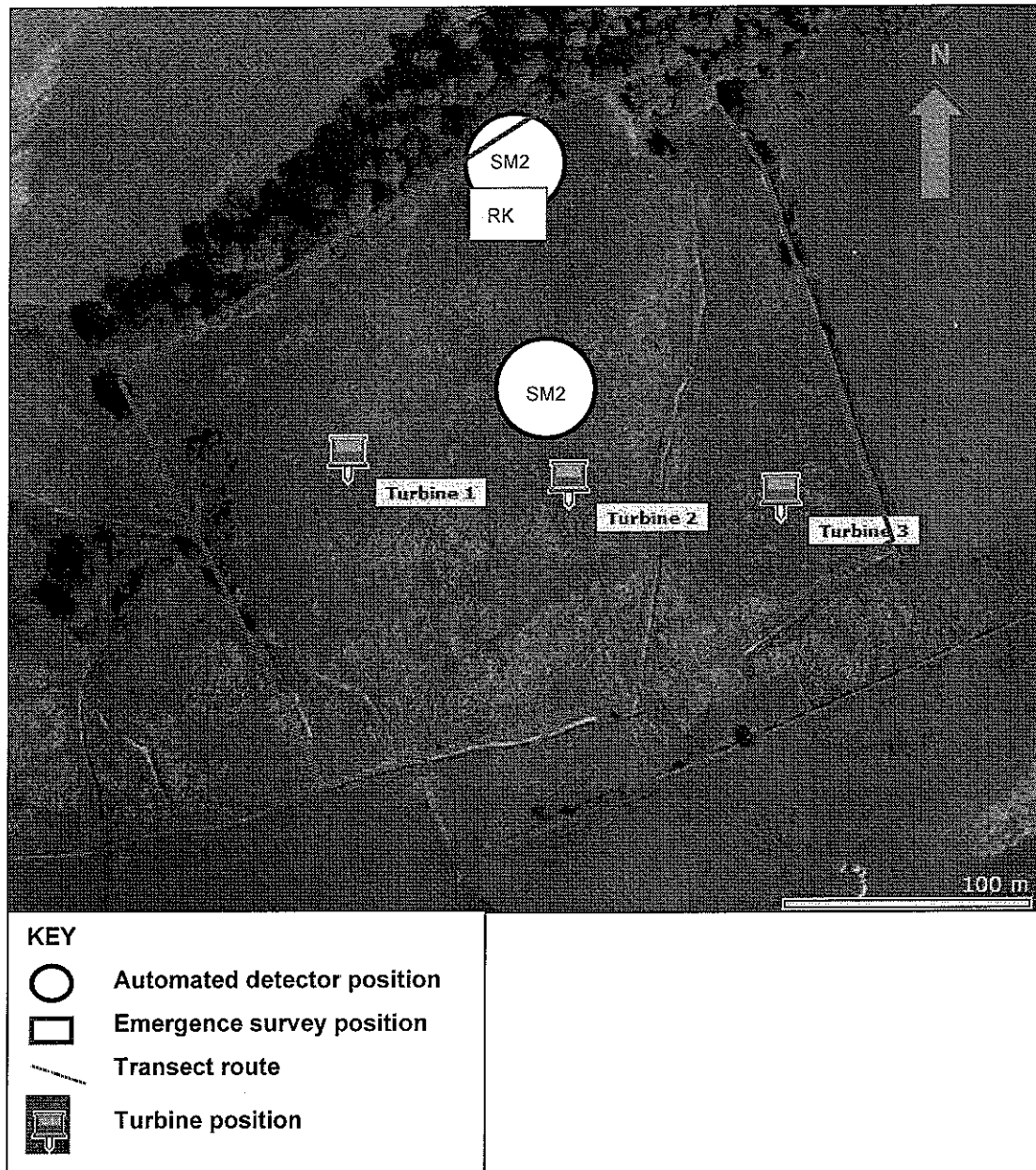
2.4 Bat activity survey

A bat activity survey was undertaken following the emergence survey to assess the levels of bat activity within proximity to the proposed turbine locations. The activity survey involved walking a transect route which covered the habitat features up to 200 metres from the proposed turbine location (two complete circuits of transect route shown on Figure 2). The dusk emergence / activity survey conditions are summarised in Table 2.

Table 2: Emergence / activity survey conditions

Date	28 th August 2012
Sunset	20:09
Survey duration	Emergence survey 18:45 – 21:10 / activity survey 21:10 – 22:15
Weather conditions	Dry. Wind 1 (Beaufort scale), cloud cover 40% 15°C @ 18:45 - 11°C @ 22:15

Figure 2: Location of surveyor for bat emergence survey (RK), activity survey transect route (red line) and location of automated detectors (SM2).



2.5 Automated bat surveys

Remote bat recording devices (Wildlife Acoustics Song Meter SM2+) were used to assess bat activity levels in the location of the wind turbines and the nearest habitat feature to the turbines i.e., woodland. Figure 2 presents the locations in which the paired static detectors were located. The detectors were deployed on four occasions between August and mid-October 2012 as detailed in Table 1. A static detector was placed in the location of the proposed turbines for 10 nights in total. A pair of static recorders was used simultaneously for 5 nights between 12th and 17th October 2012 to compare activity levels between the area of the proposed turbines and the fringe of Carr Hall Wood to the north (i.e. the nearest feature likely to be of value to bats as per BCT guidance¹).

¹ Hundt L (2012) Bat Surveys: Good Practice Guidelines, 2nd edition, Bat Conservation Trust ISBN-13: 9781872745985

Table 1: Automated bat survey inputs employed for Carr Hall Garden Centre.

Date	Survey	Location
28 th August 2012	RK - Bat emergence / activity & Automated detector -	Carr Hall Wood southern boundary & field transect Turbine field location
29 th August 2012	Automated detector	Turbine field location
4 th to 7 th September 2012	Automated detector	Turbine field location
4 th to 10 th October 2012 ²	Automated detector	Turbine field location & Carr Hall Wood southern boundary
12 th to 17 th October 2012	Automated detector	Turbine field location & Carr Hall Wood southern boundary

2.6 Limitations

The surveys were conducted during the core bat activity period (April to October³) and it is considered there were no significant survey limitations. The survey effort employed was considered to be proportionate to the scale of likely impact of the proposed installation of 3 small / medium scale (50kW output per turbine) turbines located at distances of 75-160 metres from the nearest habitats of moderate/high roost potential and foraging suitability for bats.

2.7 Owls and Raptors

A daytime scoping survey of potential nest/roost sites up to 500 metres from the location of the turbines was undertaken which included an assessment of the habitats in terms of potential to support owls / raptors. The survey included a search for potential nest/roost sites and evidence of nesting / roosting birds including pellets, faecal splashing, feathers etc.

Activity surveys for owl / raptor activity was undertaken at dusk on 28th August 2012 by Ryan Knight of Quants Environmental. The surveys involved walking along the field boundaries within 200-400m of the proposed turbines in combination with short vantage point intervals. The survey walking route is presented in Figure 2. The weather conditions for the surveys are presented in Table 1.

The owl and raptor survey follows on from the bird surveys undertaken on 29th May & 14th June 2012, in which no owls or raptors were observed (Ecological Appraisal & Bird Survey Report, June 2012, Quants Environmental).

In addition, the site was visited on 8 separate occasions, in varying periods of the day, as part of the automated bat detector survey inputs. Each visit included an experienced bird surveyor (Ryan Knight AIEEM) walking to the centre of the field in which the turbines will be positioned.

² Song meter readings erroneous due to microphone malfunction

³ See Table 10.2 of Hundt L (2012) Bat Surveys: Good Practice Guidelines, 2nd edition, Bat Conservation Trust ISBN-13: 9781872745985

3 Survey Results

3.1 Desk study

Records of bats within 2km of the site are presented below. ELBRC hold only four records of bats within the search area. The paucity of records is most likely due to an absence of survey effort rather than limited bat activity levels in the area. The records include brown long-eared and soprano pipistrelle bat roosts located approximately 1.4km to the north-west and pipistrelle species roosts located over 900 metres to the north of the site. There are no roost or activity records within 900 metres of the site.

NBN Gateway⁴ holds records of Daubenton's, soprano & common pipistrelle, whiskered / Brandt's, brown long-eared and whiskered bats in the relevant 10km grid squares (SD63 & SD73)

Table 3: Bat records within 2km of the site provided by ELBRC

Date	Grid Ref	Site Name	Species	Information
23 08.07	SD707343	Barn	<i>P. auritus</i>	Roost
23 08.07	SD707343	House	<i>P. pygmaeus</i>	Roost
10 09.07	SD700339	House	<i>Pipistrellus</i> sp	Roost
15 01.10	SD699340	House	<i>Pipistrellus</i> sp	Maternity Roost

3.2 Surrounding habitat

All three turbines are proposed to be positioned in a west to east alignment within a semi-improved acid grassland pasture field at approximately 190 to 200 metres above sea-level. The field was grazed by sheep at the time of the site visits in September/October 2012. The field is bound by post-and-wire fences and remnant stone walls to the south, east and west. The adjacent landscape to the south, east and west is dominated by pasture land which is likely to be of low value to bats given the absence of typical foraging features and exposed nature of the hillside which rises to 235 metres elevation approximately 300 metres to the south. Based on the habitats present, the rough pasture within which the turbines are to be positioned may be of some value to foraging bats, such as noctule, due to the likely presence of invertebrate prey from the rough grassland.

The predominant habitat feature of suitability to bats within proximity to the proposed turbines location is the woodland to the south of Carr Hall Garden Centre and located approximately 75 metres from the nearest turbine (Turbine 1 / Figure 1). The majority of trees are in good structural condition; however, suitable roosting features were noted within three oak trees including holes within trunk and splits in branches.

In accordance with Natural England guidance⁵ buffer zones of at least 50 metres should be maintained between the turbine blade tips and any habitats likely to be used by bats. In this instance a required distance of 53.63 metres between Carr Hall Wood and Turbine 1 has been calculated for the given dimensions of the turbine, as presented in Table 3 below.

⁴ <http://data.nbn.org.uk/>

⁵ Natural England Technical Information Note TIN051 Bats and onshore wind turbines Interim guidance First edition 11 February 2009

Table 3: Required distance between blade tip and Carr Hall Wood.

Buffer required (m)	Blade length (m)	Hub height (m) ⁶	Feature height (hedge, tree, pond etc) (m)	Required distance between centre of tower and edge of feature (m)
50	9.6	36 + 15 = 51	10	43.26

3.3 *Dusk emergence survey and activity survey*

Dusk emergence survey

The results from the dusk emergence survey are summarised in Table 2. Noctule and common pipistrelle bats were recorded during the dusk emergence survey. No indication / evidence of bat emergence activity was observed:-

- Both common pipistrelle and noctule bats were recorded 31 minutes and 36 minutes after sunset respectively which suggests the roosts of both species are located some distance from the emergence surveyor position, given the typical emergence periods for these species.

It should be noted that emergence of species such as brown long-eared and natterer's bats are difficult to detect within a woodland environment given their late emergence and faint echolocation calls.

Activity survey

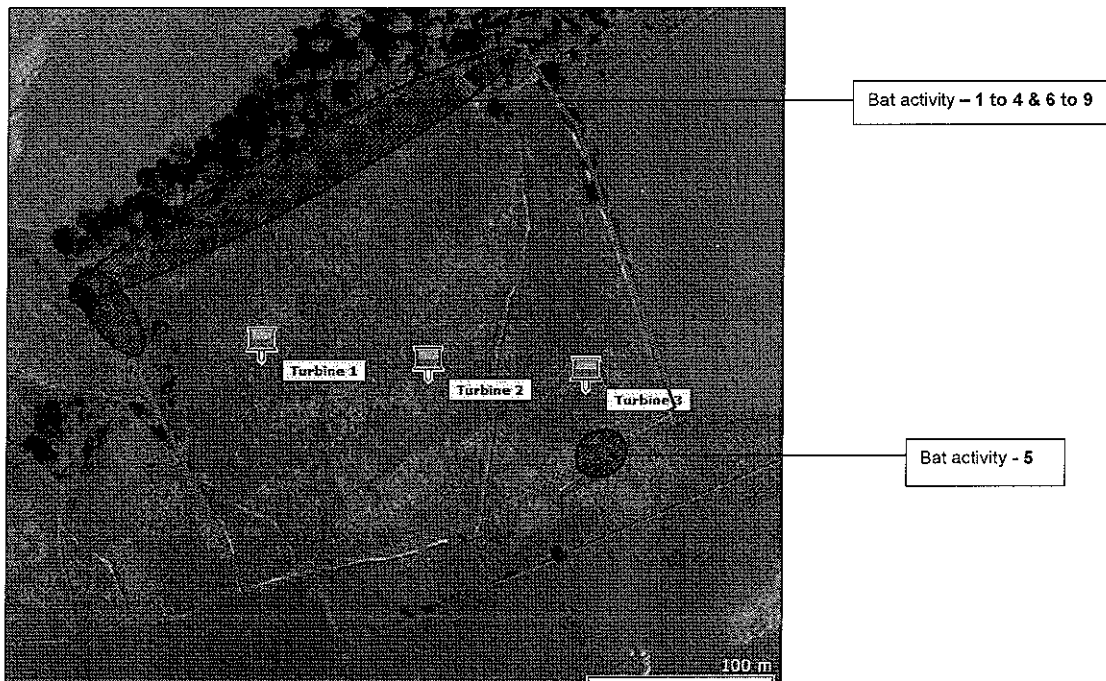
The results from the activity survey are summarised in Table 2. The vast majority of activity recorded was localised to Carr Hall Wood; common pipistrelle, brown long-eared & *Myotis* species were recorded in this location along the transect route. It should be noted, a single foraging pass of common pipistrelle was noted in the south-east corner of the field, some distance from typical foraging features associated with this species i.e., woodland, hedgerows, riparian habitats.

⁶ Based on 36 metre hub-height + 15 metre difference in ground elevation between the woodland and the nearest proposed turbine position

Table 2: Bat Emergence / Activity Survey Results

Bat dusk emergence survey			
Time		Species	Notes
19:45 to 20:30		n/a	No activity or emergence
20:40 to 20:45		Common pipistrelle	Faint occasional foraging passes, possibly on northern edge of woodland
20:45		Noctule	Brief pass (4-5 secs) not seen
20:45 to 21:10		Common pipistrelle	Occasional foraging passes registered
Bat activity survey (Results are numbered and relate to the bat activity map in Figure 3)			
1	21:15	Common pipistrelle	Distant foraging pass
2	21:15	Brown long eared	Brief foraging pass in tree canopy
2	21:17	Common pipistrelle	Foraging loops along tree line
4	21:22	Common pipistrelle	Foraging loops along tree line / feeding buzzes
5	21:41	Common pipistrelle	Brief pass not seen
6	21:52	<i>Myotis</i> sp	Brief foraging pass
7	21:55	Common pipistrelle	Foraging passes / feeding buzzes
8	22:07	Common pipistrelle	Distant foraging
9	22:15	Common pipistrelle	Foraging passes

Figure 3: Bat activity map (red line = transect route; blue highlighted area = area of bat activity)



3.4 Automated survey

A summary of the information collected from automated static surveys conducted from the turbine and woodland location is presented in Tables 4 and 5. A graphical comparison of common pipistrelle activity levels from the woodland and turbine locations during 12th to 17th October is presented in Figure 3. As predicted based on the results of the habitat assessment, bat activity levels were significantly higher at the woodland location compared to the turbine locations in the open grassland habitat.

Turbine location

Species and activity registered from the turbine location includes; a single noctule pass; a single soprano pipistrelle pass; and up to eight common pipistrelle passes in one night.

Woodland location

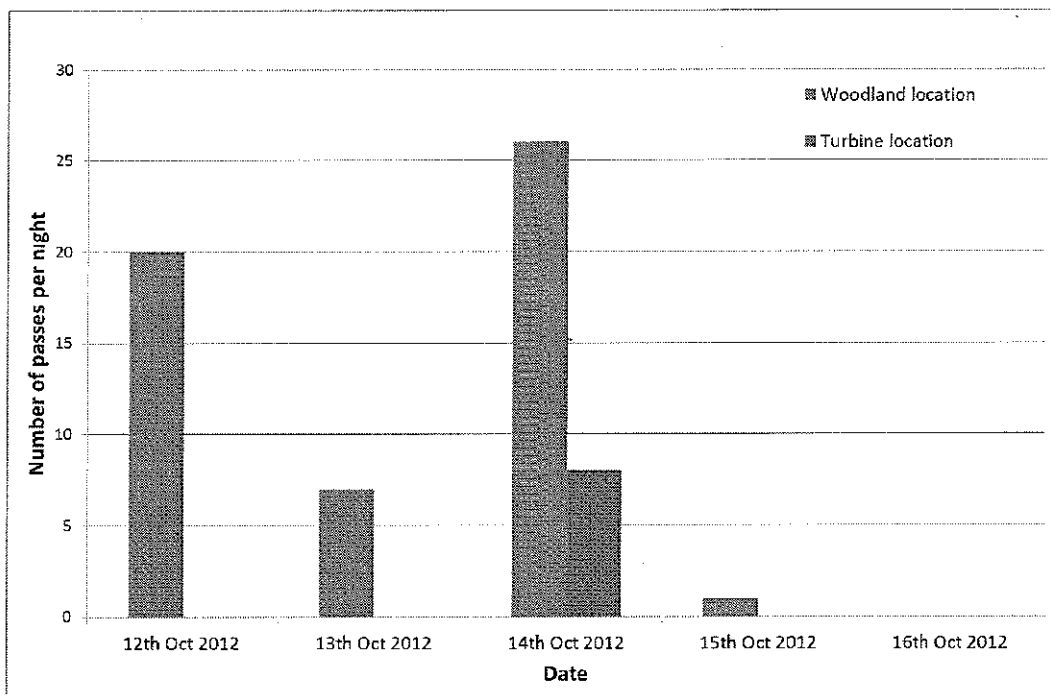
Species and activity registered from the turbine location includes; 8 passes of soprano pipistrelle recorded on a single night; 3 passes of brown long-eared over the 5 night period; and, up to 25 passes of common pipistrelle in a single night.

Table 4: Turbine location - results of automated bat survey

28th August 2012 (automated detector used in conjunction with heterodyne detector survey)		
Species	Number of passes	Times of registration
Noctule (same observation as recorded by heterodyne detector)	1	20:44
Common pipistrelle	6	21:17 / 21:17 / 21:21 / 22:27 / 22:30 / 22:32
29th August 2012		
Soprano pipistrelle (53-55kHz)	1	20:57
4th / 5th September 2012		
Common pipistrelle	3	20:50 / 21:41 / 23:45
5th / 6th September 2012		
Common pipistrelle	6	22:13 / 22:14 / 22:26 / 01:02 / 01:50 / 01:59
6th / 7th September 2012		
Common pipistrelle	3	20:37 / 03:51 / 5:52
12th / 13th October 2012		
No readings	0	-
13th / 14th October 2012		
No readings	0	-
14th / 15th October 2012		
Common pipistrelle	8	19:05 / 19:08 x 2 / 19:12 x 2 / 20:00 / 20:23 / 21:02
15th / 16th October 2012		
No readings	0	-
16th / 17th October 2012		
No readings	0	-

Table 4: Woodland location - results of automated bat survey

12 th /13 th October 2012		
Species	Number of passes	Times of registration
Common pipistrelle	20	19:01 to 19:50
13 th / 14 th October		
Common pipistrelle	7	18:54 to 19:01
Brown long eared	1	19:28
14 th / 15 th October		
Common pipistrelle	25	18:37 to 02:52
Soprano pipistrelle	8	20:04 to 20:09
Brown long eared	2	00:28 / 00:42
15 ^h / 16 th October 2012		
Common pipistrelle	1	19:08
16 ^h / 17 th October 2012		
No readings	0	-

Figure 3: Number of common pipistrelle passes recorded from the turbine and woodland locations between 12th & 17th October

3.5 Owls and raptors

No evidence of nesting / roosting owls e.g., pellets, droppings, feathers etc, and no potential cavity roost/nest sites were observed in the woodland area adjacent to the turbine field site. Whilst the trees within the woodland are mature specimens of mainly oak *Quercus robur*, no trees with a trunk diameter of over 1.2 metres were observed; trees with trunk diameters less than this will rarely contain holes and cavities of a suitable size for cavity-nesting owls. The trees are generally in good structural condition with a minimal amount of dead wood, which possibly indicates to management of the woodland.

No owls or raptors were observed during the dusk transect survey. A kestrel hunting over the turbine field site on 7th September was the only observation of a raptor noted during any field visit. Additional bird observations recorded during the field visits include greater spotter

woodpecker, jay, blackbird, carrion crow, lapwing (25 in arable field >400 metres to north of nearest turbine), grey wagtail, magpie, great tit and long tailed tit

With regard to owls and raptors, the desk-study revealed records of kestrel, little owl and tawny owl from the tetrad (2km grid square SD73B) within the turbine locations are positioned. No other records of owl or raptor were received. No suitable barn owl nest/roost sites have been identified within at least 500 metres of the turbine locations and it is considered unlikely that this species breeds in the immediate area. No suitable breeding habitat for other rare or specially protected owls or raptors such as short-eared owl, merlin, peregrine or hen harrier has been identified within at least 1km of the site. In Britain, short-eared owl, merlin and hen harrier favour open country remote from excessive human disturbance; such habitats are not present in the immediate vicinity of the proposed turbines. As with most areas of pasture in the wider area, the potential for rare owls and raptors to occur on an occasional transitory basis cannot be discounted, e.g. on passage. However, the site is assessed as likely to be of negligible value for such species.

4 Conclusions and Recommendations

4.1 Bats

Natural England guidance states that buffer zones of at least 50 metres should be maintained between the proposed turbine blade tips and any habitats likely to be used by bats. The nearest turbine is located approximately 75 metres from the edge of the woodland around Carr Hall. The turbines are not situated between two distinct / linked foraging habitats; the habitats to the south comprise pasture on an exposed hillside which is likely to be of negligible value for bats.

No indication / evidence of emergence bat activity was observed from the woodland edge, adjacent to the turbine field. During the bat activity survey, most activity was recorded in and around the woodland; common pipistrelle, brown long-eared and *Myotis* bat foraging behaviour was observed. A single common pipistrelle bat was noted on the southern boundary of the turbine field during the activity survey, within 25 metres of Turbine 3.

Up to 8 common pipistrelle passes were recorded within the location of the turbines in any single night. The activity recorded is likely to be those of 1 to 2 foraging individuals. Activity was significantly higher along the woodland fringe compared to the turbine location.

- Common pipistrelle is thought to be the most common species at the local, county and regional levels^{7 8 9}.
- The common pipistrelle population is of 'low risk' in terms of populations likely to be threatened due to impacts from wind turbines⁵. This is due to their typical flight behaviours and population status.

A single soprano pipistrelle pass was recorded on 29th August 2012.

- Soprano pipistrelle is thought to be the second most common species at the local, county and regional levels.
- The soprano pipistrelle population is of 'low risk' in terms of populations likely to be threatened due to impacts from wind turbines⁵.

A single record of a noctule bat was recorded on 28th August 2012; the only recording of noctule species throughout the duration of all surveys. Noctules typically forage in open areas and over tree canopies; the areas of foraging are wide ranging and dependent on the available invertebrate food source at a given time of year.

- The noctule population is of 'high risk' in terms of populations likely to be threatened due to impacts from wind turbines⁵.
- Whilst not as abundant as species such as common & soprano pipistrelle, brown long-eared and Daubenton's; noctules are believed to be common and widespread in suitable habitats throughout England.
- Based on the number of noctule observations (i.e. one brief pass of a commuting bat on 28th August), it is concluded that the area of the proposed turbines is of low value for this species.

Given their predominantly arboreal feeding / foraging behaviour and 'low risk' status⁵, brown long-eared and *Myotis* sp. are not considered likely to be significantly affected by the turbine development.

While bats are still active over 50 metres from the woodland, the findings suggest low bat activity levels within the turbine field site. Given the size and scale of the development (3 x 50kW wind

⁷ Richardson, P (2000) *Distribution Atlas of Bats in Britain and Ireland 1980-1999*. Bat Conservation Trust. London.

⁸ Harris S, Morris P, Wray S & Yalden D. (1995) *A review of British mammals: population estimates and conservation status of British mammals other than cetaceans*. JNCC. Peterborough.

⁹ * UK Mammals: Species Status and Population Trends. JNCC/Tracking Mammals Partnership. 2005.

turbines) and the location of the turbines from the important foraging woodland feature, no significant impacts on bat populations are predicted.

It is considered that post-installation bat activity monitoring measures such as use of remote automated detectors and corpse searching beneath the turbines is not appropriate at this site due to the predicted low levels of bat activity in the turbine area

4.2 Birds & habitats

Kestrel was the only raptor species noted during any bird field observations at the site. Kestrel is included on the Amber list of birds of conservation concern¹⁰. No evidence of potential nest / roost sites were observed within 500 metres of the proposed turbines. The area of the proposed turbines is not considered likely to be of value to any rare or specially protected owls / raptors such as barn owl, short-eared owl, merlin, hen harrier or peregrine. Therefore, no significant impacts on owls / raptors are predicted.

In accordance with best-practice, any ground works should be undertaken outside the main bird nesting season of March-August inclusive if possible. If this is not possible, the extent of the proposed ground works should be checked by a suitably qualified ecologist immediately before the start of works. If active nests are found to be present, these should be left in situ undisturbed until the nests are no longer active.

It should be noted that the construction period for 3 x 50kW turbines is very short. At this site, temporary aluminium track ways will be used rather than constructing any road ways; this significantly reduces the duration of construction activity and the track ways will significantly reduce the potential for impacts on the grassland vegetation. The grassland is not considered to be of high botanical value. It is recommended that all ground disturbed by the cabling/installation process should be left to vegetate naturally from the local seed/vegetation source, i.e. no re-seeding.

¹⁰ Eaton MA, Brown AF, Noble DG, Musgrove AJ, Hearn R, Aebischer NJ, Gibbons DW, Evans A and Gregory RD (2009) Birds of Conservation Concern 3: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man. British Birds 102 pp296–341

Appendix 1: Legislation and Conservation Context

Bats

All British bat species are fully protected through The Conservation of Habitats and Species Regulations 2010 as a European Protected Species (EPS). They also receive some protection through inclusion in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended).

Under the legislation, it is an offence to deliberately capture, injure or kill a bat. It is an offence to damage or destroy a breeding site or resting place of a bat. It is also an offence to intentionally or recklessly disturb a bat while it is occupying a structure or place which it uses for shelter or protection; or obstruct access to any structure or place which it uses for that purpose.

It is also an offence to deliberately disturb a bat; in particular any disturbance which is likely (a) 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 (b) to affect significantly the local distribution or abundance of the species to which they belong

The 'appropriate authority' (Natural England in England) has powers to issue licences for various purposes including - (a) scientific or educational purposes . and (e) preserving 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. The appropriate authority shall not grant a licence under this regulation unless they are satisfied - (a) that there is no satisfactory alternative, and (b) that the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range. It is an offence for any person authorised by virtue of a licence to which this paragraph applies to contravene or fail to comply with any condition which the licence requires him to comply with.

Several species of bat including brown long-eared and soprano pipistrelle *Pipistrellus pygmaeus* are identified as UK Biodiversity Action Plan (BAP) priority species.

Nesting birds

All wild birds in the UK are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy the nest (whilst being built or in use) or its eggs. Bird species listed in Schedule 1 of the 1981 Act, e.g. barn owl, receive further protection which makes it an offence to intentionally or recklessly disturb these species while building a nest or in, on or near a nest containing eggs or young; or to disturb dependent young of such a bird.

Appendix 2: Species recorded at Carr Hall with use of SM2.

