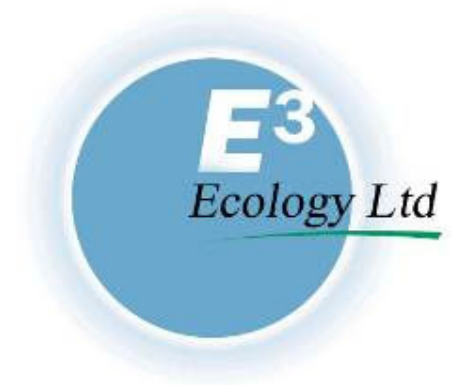




A BAT SURVEY OF PENISTONE GRAMMAR SCHOOL, BARNSELEY – Proposed Turbine Location



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A SUMMARY

E³ Ecology Ltd was commissioned by Anthony Walker and Partners to undertake a bat survey of the location of two proposed wind turbines at Penistone Grammar School, Barnsley. Previous survey work has recorded roosts within the school buildings to the east of the current proposed development boundary.

The proposed development comprises the construction of two 15kW turbines with a hub height of 25m.

Survey work was undertaken in May 2010 and comprised a daytime inspection of the location of the proposed turbines, the erection of remote bat monitoring equipment and dusk and dawn transect surveys of the area surrounding the proposed turbine locations.

The habitats surrounding the proposed turbines comprise large areas of grassland and arable fields, which are bounded by hedgerows. The hedgerows are mature and comprise a range of species but are dominated by *Crataegus monogyna* (hawthorn). The height of the hedgerow running adjacent to the proposed turbine location is approximately 2-3m.

The hedgerows running adjacent to the proposed development provide a potential commuting route between the known roosts within the school complex to the east and habitats to the west.

Survey work in 2009 recorded two small common pipistrelle maternity roosts within the buildings to the east of the site as well as a brown long eared bat roost and smaller roosts of common pipistrelle. Whiskered/Brandt's and noctule bats have also been recorded within the local area during previous survey work.

Survey in 2010, which focussed on the area of land to the west of the existing school buildings recorded common pipistrelle activity throughout the area, as well as a *Myotis* bat using the hedgerow which lies adjacent to the proposed turbine location. The remote monitors, situated near the proposed location of the turbines also recorded common pipistrelle and *Myotis* activity indicating that these areas are used.

Overall it is considered that the location of the proposed turbines appears to be used by relatively small numbers of common pipistrelle and *Myotis* bats as commuting and potentially foraging habitats.

Potential impacts of the proposed development include:

- A high risk causing harm to small numbers of common pipistrelle and *Myotis* bats that may fly into the turbines, once erected or which may suffer from barotrauma caused by the change in pressure associated with the turbine blades.

In order to address the above impacts, the following mitigation is recommended that either:

- Turbines could be moved to a distance of more than 50m from features that could be used by commuting or foraging bats such as hedgerows or tree lines. This would reduce the likelihood that bats would be flying in the vicinity around the turbines, reducing collision risk;

- Or the turbines could be placed on a timer such that during the spring, summer and autumn, when bats are active, the turbines are turned off in the evenings and over night in order to minimise the risk of causing harm to bats.

B INTRODUCTION

E³ Ecology Ltd was commissioned by Anthony Walker and Partners to undertake a bat survey of land to the west of Penistone Grammar School in order to assess the impacts of the erection of two proposed wind turbines on bats.

As bats are small nocturnal species that are highly mobile and as such it can be very hard to demonstrate that they are absent from a site, particularly given a limited number of visits during part of the year. As a result, assessment and development approaches are based on an informed risk assessment, and where appropriate a reasonable worst-case scenario, in order to ensure that bats are not recklessly harmed by the proposals. See Appendix 1 for further details of bat ecology, and Appendix 2 for details of the relevant legislation.

B1 Background to development

Penistone Grammar School is located just north of the village of Penistone at grid reference SE 241 041 within a rural setting. To the east, adjacent to the site lies the reservoir Scout Dike with an area of associated woodland and a small burn linking the reservoir to the River Don, 400m south of the site. The proposed development area is located to the west of the existing school buildings at grid reference SE 239 040.

The location of the site, and habitats present within the surrounding area, are shown in figures 1 and 2 (C5).

B2 Details of the proposed works on site

It is proposed to erect two 15kW turbines as part of the re-development of Penistone Grammar School. The turbines will form a separate planning application to the main school development, which already has planning permission and works have commenced.

C SURVEY AND SITE ASSESSMENT

C1 Consultation, pre-existing information on protected species at survey site

The National Atlas of bat distribution holds records of whiskered, Brandt's, Natterer's, Daubenton's, noctule, Leisler's common pipistrelle and brown long eared bats within this 10km square.¹

The NBN Gateway has records for common and soprano pipistrelles, noctule, Natterer's, and brown long eared bats in the 10km grid square.

Eric Bennett, the local bat recorder was consulted in 2006 and provided the following records of bat roosts in the local area:

Species	Grid reference	Distance from site
Brown long eared	SE 248 059	1.5km
Pipistrelle	SE 233 034	1km
	SE 248 038	<1km
	SE 249 039	<1km

¹ Distribution Atlas of Bats in Britain and Ireland, Phil Richardson 2000, Bat Conservation Trust.

	SE 247 036	<1km
	SE 248 036	1km
Whiskered/Brandt's	SE 247 036	<0.5km from the site

Updated consultation with Mr Bennett in 2009 provided the following additional records of bat roost in the local area:

Species	Location	Town	NGR	No of bats	Date	Distance from site (km)
45 Pipistrelle	Wordsworth Avenue	Penistone	SE 243027	Unknown	Unknown	1.4
Pipistrelle	Gledhill Avenue	Penistone	SE 241023	40	27/06/01	1.8
Pipistrelle	Keats Grove	Penistone	SE247036	6	28/07/91	0.7
Pipistrelle	Windermere Road	Penistone	SE 248038	1	13/07/97	0.7
Pipistrelle	Shelley Close	Penistone	SE248035	39	30/06/90	0.8
Pipistrelle	Keats Grove	Penistone	SE247036	2	16/06/90	0.7
Brandts	Keats Grove	Penistone	SE247036	1	16/06/90	0.7
Pipistrelle	Keats Grove	Penistone	SE247036	76	17/07/89	0.7
Pipistrelle	Rydal Close	Penistone	SE 249039	+Dr	05/07/01	0.7
Pipistrelle	Shelley Close	Penistone	SE248036	1+Dr	02/08/90	0.8
Whiskered	Keats Grove	Penistone	SE247036	8	31/07/87	0.7
Pipistrelle	Keats Grove	Penistone	SE247036	31	31/07/87	0.7
Indet Pip	Westacre	Springvale	SE253032	dr	9/9/08	1.4
Pipistrelle	Manchester Road	Thurstone	SE 233034	+ Dr	22/07/95	1.1
Pipistrelle	Thurstone Co-op	Thurstone	SE233034	2	25/04/88	1.1

RPS undertook bat activity surveys at the site in late August 2006, and recorded a small number of roosts used by single common pipistrelle within buildings to the north of the site.

Survey work undertaken by E³ Ecology in 2009 in the south of the site, the subject of a separate report, has recorded two common pipistrelle maternity roosts of parish value.

C2 Status of protected species in the local/regional area

See Appendix 2 for details of the relevant legislation regarding bats

Both soprano and common pipistrelle bats are relatively common in the northeast and there are previous records for both species in the local area. Soprano pipistrelles are somewhat less abundant and tend to be associated with water; common pipistrelles are more likely to be present in urban areas. The brown long-eared bat is locally common where there are good woodland habitats or tree cover, and is widespread throughout most of Europe and is the third most common species in Britain².

Daubenton's bats are widely distributed where suitable waterbodies are found, and National Bat Monitoring Programme suggests that populations are increasing.

Whiskered/Brandt's and Natterer's bats are less abundant, and tend to be associated with better quality rural habitats. Only a small number of Natterer's maternity roosts are known in the north east of England.

² Swift, S.M. 1998. *Long-Eared Bats*. University Press, Cambridge

C3 Objective(s) of survey

The objective of the survey was to gain a detailed picture of the bat use of the site in order to provide sufficient information to inform the proposed development.

C4 Survey area

Figure 1 (C5), an OS plan, illustrates the site location and the broad foraging habitats present within the vicinity.

Figure 2 is an aerial photograph of the site illustrating habitats within a 500m radius.

Figure 3 illustrates the site layout. Full access was available to all sections of the site.

C5 Habitat description, building descriptions

C5.1 Habitat Description

The habitats surrounding the proposed location of the turbines are dominated by arable land, amenity grassland, with an area of woodland to the south and some mature trees in places. The location is in close proximity to a hawthorn dominated hedgerow, which provides a potential commuting route from east to west across the fields. To the east, there are a number of buildings and areas of associated woodland, which provide some good quality habitats for bats, as well as a commuting route which, could be used by a number of species when commuting between habitats and roosts.

Overall, from the habitats present in the local area, the risk of bats being present and roosting in suitable buildings or trees is considered to be high. The local resource of alternative roost sites is good within the residential area of Penistone.

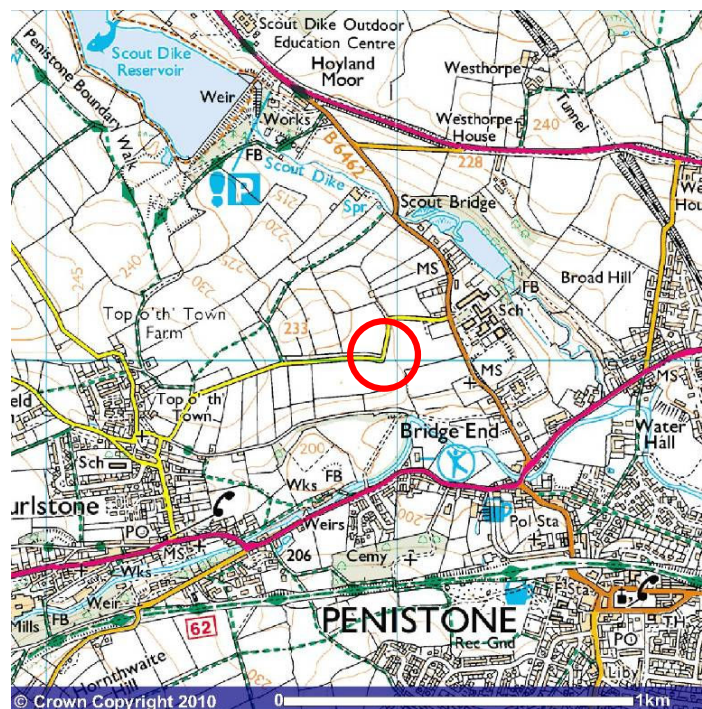


Figure 1 – Site Location

(Reproduced from the ordnance survey map with the permission of the controller of Her Majesty's stationery office. CJ Crown Copyright reserved. Licence number 100039392.)



Figure 2 – Aerial photograph centred on the site with a 500m radius illustrating the setting and the habitats it supports
(Reproduced under licence from Google Earth Pro.)

C5.2 Risk Assessment – Bats

	Risk of supporting roosting bats					
	<i>Minimal</i>	<i>Low</i>	<i>Medium</i>	<i>High</i>		
Setting and Habitats						
Habitats and cover within 200m	City Centre	Open, exposed arable, amenity grass or pasture	Hedges and trees linking site to wider countryside		Excellent cover with mature trees and/or good hedges	
Habitats within 1km	City Centre	Little tree cover, few hedges, arable dominated	Some semi-natural habitats, trees hedges etc		Good network of woods, wetland and hedges	
Potential roosts within 1km	City centre	Few potential roost sites	A number of suitable buildings in the local area		A large number of possible and proven roost sites	
Setting	Inner city	Urban with little green space	Build development with greenspace, wetland, trees		Rural Lowland with woodland and trees.	
Distance to water/marsh	>1km	500m-1000m	200m-500m		<200m	
Distance to woodland/scrub	>1km	500m-1000m	200m-500m		<200m	

	Risk of supporting roosting bats						
	<i>Minimal</i>		<i>Low</i>		<i>Medium</i>		<i>High</i>
Distance to species-rich grassland	>1km		500m-1000m		200m-500m		<200m
Commuting routes	Isolated by development, major roads, large scale agriculture		No potential flyways linking site to wider countryside		Some potential commuting routes to and from site		Site is well connected to surrounding area with multiple flyways

It can be seen that this site lies within an area of high quality habitat for bats where roosts have been recorded. The area is therefore considered to have a high risk of supporting bats.

C6 Field survey

C6.1 Methods – Bats

Dusk and dawn transect were undertaken with direct observation being backed up by detection using an ultrasound bat-detector. In addition two remote Anabat devices were situated within the proposed development area in order to obtain data throughout the night.

Activity surveys recorded numbers of bats detected, feeding activity, flight paths, species as far as is practicable, and social calls. Bats were identified, as far as practicable, in flight using a bat detector and in certain cases by subsequent computer analysis of frequency division recordings.

In the text bats are identified as accurately as possible, within the constraints identified above. If the species name is given without qualification, the record was of good quality. If there is a degree of uncertainty this is indicated by a question mark, e.g. ?brown long-eared. If identification to species is not practicable then just the Genus or 'bats' is used.

C6.2 Timing

The survey was undertaken on the 27th/28th May 2010.

Activity surveys were undertaken on the following dates:

<i>Activity Surveys</i>			
<i>Date</i>	<i>Start Time</i>	<i>End Time</i>	<i>Time of Sunset/rise</i>
27.05.10	21.15	22.45	21.29
28.05.10	03.15	04.45	04.40

C6.3 Weather conditions

<i>Date</i>	<i>Temp.</i>	<i>Cloud Cover</i>	<i>Precipitation</i>	<i>Wind Conditions</i>
27.05.10	14.1	90-50%	None	F1
28.05.10	7.0	80-40%	None	F2-3

C6.4 Personnel qualifications and experience

Survey work and reporting in 2009 was undertaken by James Streets BSc MSc MIEEM supervised by Dr. Tony Martin BSc PhD MLI MIEEM of E³ Ecology Ltd. Details of experience and qualifications are available at www.e3ecology.co.uk.

Assistance with activity survey was provided by Tom Gray for E³ Ecology Ltd.

C7 Results

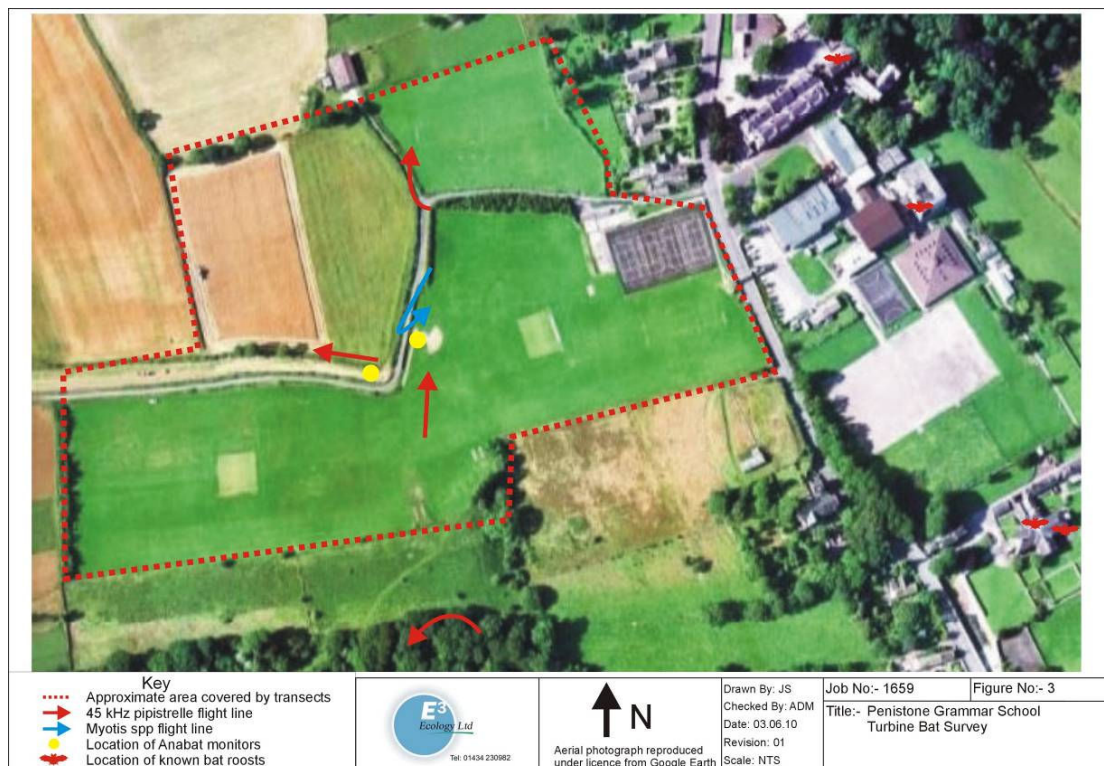
C7.1 Activity Survey

Overview of survey results

An overview of survey results including roost locations, key flight lines and access points is provided in figure 3 below with raw survey data provided within annex G1.

The dusk and dawn surveys have shown that the hedgerow surrounding the proposed location of the turbines is used by common pipistrelle and *Myotis* spp (likely whiskered/Brandt's) on occasion. They utilise these areas as foraging and commuting routes between roosts and foraging habitats. No roosts were recorded within the vicinity of the proposed turbine locations. In addition to areas surrounding the proposed location of the turbines, bats were also recorded to the south of this area, moving across the fields and foraging within an area of scattered trees and coarse grassland.

The remote monitors placed at the location of the proposed turbines recorded 9 passes by common pipistrelle bats, three by *Myotis* bats, and a further four passes where the species of bat could not be confidently determined (although likely to be common pipistrelle).



C8 Interpretation and evaluation

C8.1 Presence/absence/density/abundance

From the survey results, it is considered that the site and surrounding area is used by a small number of common pipistrelle and *Myotis* (likely Whiskered/Brandt's) bats on occasion as foraging and commuting habitat. It may also be used by brown long eared bats infrequently however this species was not recorded during the survey work.

C8.2 Population size class assessment

The buildings within the school complex support a number of bat roosts, namely two common pipistrelle maternity roosts and a number of smaller roosts belonging to individual common pipistrelle and brown long eared bats. These buildings are associated with areas of better quality foraging habitat than those offered within the development footprint of the proposed turbines or those associated with this area. Therefore the majority of individuals associated with these known roosts will forage in areas away from the proposed turbines and only small numbers are likely to use the habitats in and around these locations. Overall it is considered that the site will be used by only small numbers of bats, a low proportion of the local population.

C8.3 Site status assessment

The following criteria have been used to assess the conservation status of the site:

	Species Status in the Region		
Value	Common (<i>Common pipistrelle</i>)	Uncommon (<i>Daubentons, Natterer's, Soprano pipistrelle, Noctule, Brown long eared, Whiskered</i>)	Rare (<i>Nathusius pipistrelle, Leisler's, Brandt's</i>)
Local	Small numbers including individual hibernating bats but excluding maternity sites.	- Feeding perches - Individual bats	Feeding perches
Parish	- Hibernation site for good numbers. - Small to moderate sized maternity roost. - Autumn swarming site used by small numbers.	Small numbers excluding maternity sites.	1 to 4 bats, occasional roosts
District	Large maternity sites.	- Small to moderate sized maternity roost. - Hibernation site - Autumn swarming site used by small numbers	Small numbers, 5 plus, excluding maternity sites.
County		Large maternity sites.	- Small to moderate sized maternity roost. - Hibernation site - Autumn swarming site used by small numbers
Regional			Large maternity sites.
National	Sites meeting SSSI guidelines.		

Overall the proposed development site is considered to be of local value given that there are no roost sites within the development area, and that the area is only used by low numbers of bats.

C8.4 Constraints

C9 Map(s) of survey area

Figures 1 and 2 (C5) illustrate the site location and broad habitats in the vicinity. Figure 3 illustrates the layout of the site and the activity survey results.

D IMPACT ASSESSMENT

Background

Bat populations are most vulnerable to disturbance during June, July and August, when they are breeding, as females need to feed on a regular basis to ensure the survival of their single offspring. The foraging resources required to support this level of feeding are generally associated with areas of water or woodland.

Proposals for the site are shown in figure 4 below:

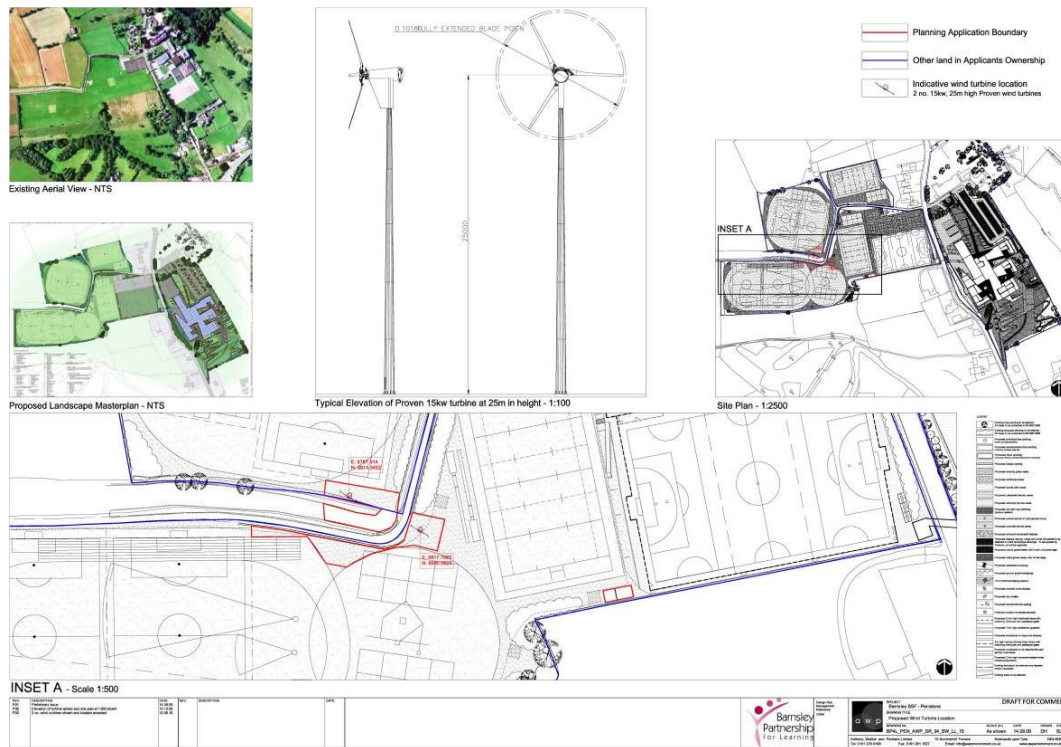


Figure 4 – Landscape Proposals for the site

Overall the proposed development will have the following impacts on bats:

- Causing harm to small numbers of common pipistrelle and *Myotis* bats that may fly into the turbines, once erected or which may suffer from barotrauma caused by the change in pressure associated with the turbine blades.

E MITIGATION AND COMPENSATION

E1 Mitigation strategy

In order to address the above impacts the following could be undertaken:

- Either turbines could be moved to a distance of more than 50m from features that could be used by commuting or foraging bats such as hedgerows or tree lines. This would reduce the likelihood that bats would be flying in the vicinity around the turbines, reducing collision risk;
- Or the turbines could be placed on a timer such that during the spring, summer and autumn, when bats are active, the turbines are turned off in the evenings and over night in order to minimise the risk of causing harm to bats.

APPENDIX 1: BAT ECOLOGY

Habitat and roost preferences

The types of building and trees that are more or less likely to support bat roosts include:

*Presence of **built structures** which appear to have a high probability of use by bats:-*

- *Properties older than 1939, with multiple roofs within 200m of woodland or water.*
- *Properties older than 1914 within 200m of woodland or water.*
- *Listed buildings or monuments.*
- *Traditional ranges of farm buildings.*

The risk of bat roosts being present will be higher where structures have:

- *Pre-20th Century construction.*
- *A lowland rural setting.*
- *Woodland, mature trees, species-rich grassland and/or water nearby.*
- *Large dimension roof timbers with cracks, joints and holes.*
- *Numerous crevices in stonework and structures.*
- *Uneven roof covering with gaps, though not too draughty.*
- *Hanging tiles or roof cladding, especially on south-facing walls.*
- *Roof warmed by the sun.*
- *Disused or little used; largely undisturbed.*

The risk of bat roosts being present will be lower where structures have:

- *Urban setting with little greenspace.*
- *Heavy disturbance.*
- *Small, cluttered roof void (particularly for brown long-eared).*
- *Modern construction with few gaps or crevices that bats can fly or crawl through (though pipistrelles may still be present).*
- *Prefabricated of steel or sheet materials*
- *Active industrial premises*

Habitats that increase the risk of bats being present include:

- *Presence of trees with a high probability of bat use, including ancient woodland or parkland, large trees with complex growth form, and trees with cavities, visible damage and loose bark (Coniferous plantation and young trees are less likely to support roosts). It can be extremely difficult to be certain of the presence or absence of bat roosts in trees meeting the above criteria.*
- *Recent or historical records of bats on the site, or bat roosts in the general area.*
- *Presence of underground structures such as abandoned mines, tunnels, kilns, cellars or fortifications which provide appropriate hibernation conditions.*
- *Where a development has a significant habitat impact on woods, hedgerows with field trees, parkland, diverse grassland and wetland habitats potential impacts on tree roosts, foraging habitats and flight-lines should be considered.*

Species information and population estimates

Pipistrelle maternity colonies generally consist of 25 to 100 individuals, but colonies numbering up to 1000 are not uncommon³. Adult females often form large maternity roosts, occupied between May and August, and frequently number around 300 individuals. Males are often solitary or in small groups during the summer, later congregating with the females at winter hibernation roosts⁴.

³ Roberts, G.M. & Hutson, A.M. 2000. *Pipistrelle*. British Bats No. 6. The Bat Conservation Trust, London

⁴ Corbet, G.B & Southern, H.N., 1964. The handbook of British Mammals).

Maternity colonies of brown long-eared bats are generally small, consisting of 10 to 20 adults^{5,6} (although numbers are likely to be underestimated, due to present in inaccessible areas of the roost). The largest colony recorded was located in northwest England and contained 150 individuals⁷.

Natterer's bats roost within crevices and cavities, typically within hollow trees, old buildings, caves and tunnels⁸. Maternity colonies comprising up to 200 adult females can be found in buildings during the summer months while bachelor roosts comprising up to 28 males have been recorded during the summer months in Scotland⁹. Maternity roosts are not exclusively females, with both adult and immature males comprising up to 25% of the colony. Male only colonies have been found with up to 30 bats¹⁰. Foraging individuals will perch during the night at roosts near to foraging areas, not used as day roosts. Mostly these roosts are trees or shrubs but barns will also be used¹¹.

Whiskered bats, the smallest of the *Myotis* species, roost in trees and buildings. Nursery roosts can number over 100 bats, and are almost exclusively female bats. This species hibernates singly in caves, hanging on the open wall or in crevices¹⁰.

Brandt's bat is thought to have similar roosting behaviour and foraging ecology to the whiskered bat, however, further research is needed to clarify the situation¹⁰.

Maternity roosts are critical to the long-term survival of a colony, and disturbance can lead to the young being abandoned to die. Bats that are disturbed and escape in the winter use up a lot of energy, which they cannot replace, as there are few insects about as food.

⁵ Speakman, J. R. *et al.*, 1991. Minimum summer populations and densities of bats in NE Scotland, near the northern borders of their distributions. *J. Appl. Ecol.*, 225: 327-345

⁶ Entwistle, A.C., 1994. Roost ecology of the brown long-eared bat *Plecotus auritus* in north-east Scotland. Unpublished PhD thesis, University of Aberdeen, UK

⁷ Billington, G., 1993. *Bat Groups*. No. 7. Bat Conservation Trust, London).

⁸ Stebbings, R.E. 1991. Natterer's bat *Myotis nattereri*. In *The handbook of British Mammals*. 3rd Edition Corbet, G.B. & Harris, S. (Eds) Oxford: Blackwell Scientific.

⁹ Swift, S. M. 1997 Roosting and foraging behaviour of Natterer's bats (*Myotis Nattereri*) close to the northern border of their distribution. *J. Zool. (Lond)* **242**: 375-384.

¹⁰ Altringham, J.D. 2003. *British Bats*. The New Naturalist. Pub. Harper Collins.

¹¹ Smith, P.G. & Racey, P.A. 2005. The itinerant Natterer: physical and thermal characteristics of summer roosts of *Myotis nattereri* (Mammalia: Chiroptera) *J. Zool. Lond.* 266: 171-180.

APPENDIX 2: LEGISLATION

Planning Policy

Government Planning Policy Statement 9: Biodiversity and Geological Conservation states the following:

- Plan policies and planning decisions should be based upon up-to-date information about the environmental characteristics of their areas (Paragraph 1(i)).
- Plan policies and planning decisions should seek to maintain, or enhance, or add to biodiversity conservation issues (Paragraph 1(ii)).
- Local planning authorities should consider whether proposed developments can be accommodated without causing harm to biodiversity conservation interests. Where there may be significant harmful effects, local planning authorities will need to be satisfied that any reasonable alternative sites that would result in less or no harm have been fully considered (Paragraph 1(v)).
- Where development will result in unavoidable and significant adverse impacts on biodiversity and geological conservation, planning permission for it should only be granted where adequate mitigation measures are put in place. Local planning authorities should normally seek appropriate measures to compensate for any harm which cannot be presented or mitigated (Paragraph 1(vi)).
- Development proposals provide many opportunities for building-in beneficial biodiversity or geological features as part of good design. When considering proposals, local planning authorities should maximise such opportunities in and around developments, using planning obligations where appropriate (Paragraph 13).

Certain species have been identified as requiring conservation action as species of principal importance for the conservation of biodiversity in England. Local authorities should take measures to protect the habitats of these species from further decline through policies in local development documents. Planning authorities should ensure that these species are protected from the adverse effects of development, where appropriate, by using planning conditions or obligations. Planning authorities should refuse permission where harm to the species or their habitats would result unless the need for, and benefits of, the development clearly outweigh that harm (Paragraph 14).

Bats

Within England all bat species are specially protected under the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) and under Schedule 5 of the Wildlife and Countryside Act of 1981 (as amended).

As a result there is a requirement to consult with Natural England before undertaking any works that may disturb bats or their roost, and under the Conservation (Natural Habitats, &c.) Regulations (as amended) it is illegal to:

- Deliberately kill, injure or capture bats.
- Deliberately disturb bats; in particular any disturbance which 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
 - (b) to affect significantly the local distribution or abundance of the species to which they belong.

- Deliberately obstruct access to a bat roost.
- Damage or destroy a bat roost.

Under the Wildlife and Countryside Act (1981) the above offence of disturbing bats includes low level disturbance and as such under this act it is also an offence to:

- Intentionally or recklessly disturb a bat while it is occupying a roost.
- Intentionally or recklessly obstruct access to a roost.

Under the above legal protection, only the offences under the Conservation (Natural Habitats, &c.) Regulations (as amended) are strict liability offences; the remaining offences, under the Wildlife and Countryside Act (1981), are offences only where they are carried out "intentionally or recklessly".

Defences previously available under the Conservation (Natural Habitats, &c.) Regulations 1994 have now been removed, specifically the 'dwelling-house' defence and the 'incidental result of a lawful operation' defence no longer apply, however the 'incidental result' defence persists within the Wildlife and Countryside Act disturbing bats or obstructing access to a roost and activities that cause low level disturbance may be able to rely on this defence.

Under the Countryside and Rights of Way Act 2000 (CROW Act) the offence in section 9(4) of the 1981 Act of disturbing bats is extended to cover reckless damage or disturbance.

The Hedgerow Regulations 1997 provide for the conservation of important hedgerows and their constituent trees. The presence of a protected species such as bats is a relevant consideration when assessing whether a hedgerow is important and may influence a local planning authority's decision on whether to approve removal of such hedges.

As of October 1 2006, public authorities have a duty to conserve biodiversity under the Natural Environment and Rural Communities (NERC) Act 2006.

APPENDIX 3: ACTIVITY SURVEY RESULTS

Dusk Survey 27.05.10

Surveyor locations/ Time	Transect undertaken throughout the site (see figure 3)
21.15	No activity recorded
21.20	
21.25	
21.30	
21.35	
21.40	
21.45	
21.50	
21.55	
22.00	
22.05	
22.10	
22.15	22.15 – 45kHz Pipistrelle heard not seen to the south of the site
22.20	22.16 – 45kHz Pipistrelle heard not seen foraging
22.25	No activity recorded
22.30	22.27 – Myotis spp. low flying over the hedgerow to the north east
22.35	22.30 – 45 kHz pipistrelle heard not seen in proximity to the hedgerow however.
22.40	22.35 – 45 kHz pipistrelle foraging along the lane to the north of the turbine locations
	End of survey
	Sunset
	Light levels low enough for Pipistrelle open flight
	Light levels low enough for Myotis open flight

Dawn Survey 28.05.10

Surveyor locations/ Time	Transect undertaken throughout the site (see figure 3)
03.30	No activity
03.35	03.36 – 45 Hz pipistrelle commuting from the hedgerow to the north of the site
03.40	No activity
03.45	
03.50	
03.55	03.58 – 45 kHz pipistrelle heard not seen commuting most likely on the northern side of the hedgerow
04.00	No activity
04.05	
04.10	
04.15	
04.20	
04.25	
04.30	
04.35	
04.40	
04.45	
	Sunrise

Anabat recordings summary

Time	Species
22:04:58	45 kHz pipistrelle
22:20:50	45 kHz pipistrelle
22:26:25	<i>Myotis</i> (likely whiskered/Brandt's)
22:43:23	Bat - species not discernable
22:48:48	Bat - species not discernable
23:16:23	<i>Myotis</i> (likely whiskered/Brandt's)
23:16:27	<i>Myotis</i> (likely whiskered/Brandt's)
23:29:31	45 kHz pipistrelle
23:29:35	45 kHz pipistrelle
00:23:35	45 kHz pipistrelle
00:44:25	Bat - species not discernable
01:00:32	Bat - species not discernable
01:08:28	45 kHz pipistrelle
02:07:33	45 kHz pipistrelle
03:35:24	45 kHz pipistrelle

